

EXAMINATION

2002 NRC RO Exam

1

ID: Q #1 RO/SRO

Points: 1.00

Reactor power is increased from 20 to 100%.
The CRD Flow Control Valve AO 1(2)-0302-06A is in manual.

In order to maintain CRD cooling water flow constant, the NSO will have to manually _____
the CRD Flow Control Valve (AO 1(2)-0301-06A) which will _____ CRD Drive Water
Differential Pressure.

- A. CLOSE; INCREASE
- B. OPEN; INCREASE
- C. CLOSE; DECREASE
- D. OPEN; DECREASE

2

ID: Q #2 RO/SRO

Points: 1.00

Rod step 20 has control rods H-10, F-8, H-6 and K-8 with a rod limit from position 08 to 12.

Control rod H-10 is withdrawn to position 12.
Control rod F-8 is withdrawn to position 10.

The NSO then selects control rod H-6, which is currently at position 08.

On the RWM display, control rod H-6 will indicate:

- A. green.
- B. white.
- C. red.
- D. cyan.

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3

ID: Q #3 RO/SRO

Points: 1.00

All RWM blocks are enabled.

The NSO is performing QCGP 1-1, NORMAL UNIT STARTUP.

Rod step one contains control rods H-1, F-1, D-2, B-4, A-6, A-8, A-10, B-12, D-14, F-15, H-15, K-15, M-14, P-12, R-10, R-8, R-6, P-4, M-2, K-1.

Control rods H-1, F-1 and D-2 are fully withdrawn.

How would the RWM respond if B-5 pushbutton was depressed and attempted to be withdrawn?

- A. RWM would prevent the rod from being selected.
- B. RWM select block would prevent rod motion.
- C. RWM withdrawal block would prevent rod motion when the control rod reached position 02.
- D. RWM would allow the rod to be moved until low power setpoint was reached.

4

ID: Q #4 RO/SRO

Points: 1.00

Unit 2 is operating at 100% power in a normal electrical line-up when the reactor scrams and the auxiliary power transfer fails.

Which of the following components are de-energized?

- A. 2A Recirculation Motor Generator Set
- B. 2A Condensate/Condensate Booster Pump
- C. 2B Recirculation Motor Generator Set
- D. 2B Condensate/Condensate Booster Pump

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ID: Q #5 RO/SRO

Points: 1.00

Unit 1 was operating at full power when a plant casualty occurred.

Unit 1 scrambled as a result of the transient.

The Unit NSO noted that U1 HPCI started automatically while U1 RCIC remained in a standby lineup as expected.

Both Unit 1 and the 1/2 Emergency Diesel Generators (EDGs) started automatically but the Unit 1 EDG TRIPPED on an overspeed condition.

Bus 13-1 has tripped on overcurrent.

Assuming all equipment was in a normal operating configuration prior to the transient, and that the remaining auto actions occurred, what is the expected status of Unit 1 RHR pumps?

- | | <u>A & B</u> | <u>C & D</u> |
|----|------------------|------------------|
| A. | OFF | OFF |
| B. | OFF | RUNNING |
| C. | RUNNING | OFF |
| D. | RUNNING | RUNNING |

6

ID: Q #6 RO/SRO

Points: 1.00

The HPCI Flow Controller is powered from:

- A. 125 VDC.
- B. Instrument Bus.
- C. 250 VDC.
- D. Essential Service.

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7

ID: Q #7 RO/SRO

Points: 1.00

Annunciator 902-3 D-5, CORE SPRAY SYS 2 BUS/LOGIC PWR FAILURE is up on Unit 2.

(NOTE: During the Exam, clarification was given that the alarm referred to loss of LOGIC power.)

A casualty occurs on Unit 2 resulting in the following conditions:

RPV water	-150 inches and lowering.
Reactor pressure	300 psig and lowering.
Drywell pressure	8 psig and rising.

At this point in this event, predict how the Unit 2 Core Spray system has responded and describe any actions required to restore it.

- A. "B" loop will auto-initiate and inject, while "A" loop will NOT auto-initiate, but may be manually started locally.
- Manually initiate Core Spray Subsystem 2A and restore Core Spray Subsystem 2B 125 VDC control power.
- B. "A" loop will auto-initiate and inject, while "B" loop will NOT auto-initiate, but may be manually started locally.
- Manually initiate Core Spray Subsystem 2B and restore Core Spray Subsystem 2B 125 VDC control power.
- C. "A" loop will auto-initiate and inject, while "B" loop will NOT auto-initiate, and can not be manually started from the Control Room or locally.
- Manually start the Unit 2 Diesel Generator, verify it energizes Bus 24-1, manually initiate Core Spray Subsystem 2B and restore Core Spray Subsystem 2B 125 VDC control power.
- D. "B" loop will auto-initiate and inject, while "A" loop will NOT auto-initiate, but may be manually started locally.
- Manually start the Unit 2 Diesel Generator, verify it energizes Bus 24-1, manually initiate Core Spray Subsystem 2B and restore Core Spray Subsystem 2B 125 VDC control power.

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ID: Q #8 RO/SRO

Points: 1.00

If the reactor mode switch is in RUN, which ONE of the following conditions will cause either a half scram or a full scram?

- A. Reactor power is 10% , Main Steam Isolation Valves 1C & 2D are both closed.
- B. Reactor power is 10% , Turbine Stop Valves 3 & 4 are both closed.
- C. Reactor power is 45% , Main Steam Isolation Valves 1A & 1D are both closed.
- D. Reactor power is 45% , Turbine Stop Valves 2 & 3 are both closed.

9

ID: Q #9 RO/SRO

Points: 1.00

A reactor scram occurred on Unit 2 approximately 1 minute ago.
The scram has NOT been reset.

The NSO can verify all rods in by noting that individual rod position is indicating:

- A. an orange 00.
- B. a green 00.
- C. a green double dash.
- D. an orange double dash.

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10

ID: Q #10 RO/SRO

Points: 1.00

The operator is withdrawing a control rod which is part of the current latched step. The limits of the step and the bounds of the control rod being withdrawn is 00 - 48. The operator withdraws the rod one notch and notices that the selected rod indicates ?? on the RWM display.

Which of the following statements best describes the RWM system condition as it stands right now?

- A. The RWM system will immediately block all movement of the rod that indicates ?? until a substitute position is entered. No other rods are effected by this event.
- B. The RWM will immediately initiate a full core scan and if proper position information is not obtained on the next scan, the RWM will consider itself failed and block all rod movements.
- C. The rod is treated just like a withdraw error. Insert and withdrawal blocks are applied to all other rods and a withdrawal block is applied to the selected rod once it reaches a known position.
- D. The RWM immediately declares the rod OOS and allows the operator to continue with rod movement on the next rod in the sequence.

11

ID: Q #11 RO/SRO

Points: 1.00

The plant is operating at 100% power and a Traversing In-Core Probe (TIP) trace is in progress. A spurious reactor scram occurs and reactor water level decreases to -10 inches and then recovers.

IDENTIFY the response of the TIP system.

- A. The TIP system will continue the trace without interruption.
- B. The shear valve automatically fires.
- C. The TIP system automatically withdraws and the shear valve fires if the ball valve fails to shut.
- D. The TIP system automatically withdraws and the ball valve shuts.

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12

ID: Q #12 RO/SRO

Points: 1.00

With Unit One at 50% power, the NSO selects rod D-9 for withdrawal.

The following indications are observed on the 4 Rod Display:

Two bypass lights are lit for "A" level selected LPRMs.
Two bypass lights are lit for "B" level selected LPRMs
One bypass light is lit for "C" level selected LPRMs.
Three bypass lights are lit for "D" level selected LPRMs.

Will the operator be able to withdraw control rod D-9 with the present plant conditions?

- A. No, RBM 7 is INOP due to less than 50% of it's assigned inputs.
- B. Yes, RBM 7 is automatically bypassed due to too few inputs.
- C. No, RBM 8 is INOP due to less than 50% of it's assigned inputs.
- D. Yes, RBM 8 is automatically bypassed due to too few inputs.

13

ID: Q #13 RO/SRO

Points: 1.00

A plant startup is in progress with all IRMs on Range 1 and the Mode Switch is in the Startup/Hot STBY position.

Which ONE of the following describes the operation of the SRM instruments with all of the shorting links **removed**?

A FULL Reactor Scram will occur if SRM...

- A. 21 and 23 BOTH reach 1×10^5 CPS.
- B. 22 goes less than 100 CPS.
- C. 23 is WITHDRAWN from the core.
- D. 24 reaches 5×10^5 CPS.

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14

ID: Q #14 RO/SRO

Points: 1.00

A Unit 1 startup is in progress.

SRM's are fully inserted and reading approximately 10,000 cps when annunciator 901-5 A-4, "SRM HIGH OR INOP", alarms and the associated rod block occurs.

The NSO observes that SRM 21 is now reading approximately 5,000 cps, while SRM's 22, 23 and 24 are still indicating 10,000 cps.

Which of the following operations / malfunctions could explain the observed indications?

- A. SRM 21 "INOP INHIBIT" pushbutton on the 901-36 panel is depressed.
- B. 24/48 VDC Bus A voltage is low.
- C. SRM 21 is automatically withdrawing from the core.
- D. SRM 21 high voltage power supply is low.

15

ID: Q #15 RO/SRO

Points: 1.00

Which of the following would constitute the MAXIMUM disagreement between APRM flow converter channels that would still allow control rod withdrawal?

- A. 17%
- B. 11%
- C. 9%
- D. 5%

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16

ID: Q #16 RO/SRO

Points: 1.00

Given:

- RVLIS backfill has been secured for 18 days.
- The RPV has rapidly depressurized from 1003 psig due to a steam leak in the drywell.
- Drywell temperature is 235 degrees F.
- RPV pressure is 275 psig and slowly lowering.
 - Pressure corrected lower wide range instruments indicate -10 inches and lowering.
 - Narrow range instruments indicate +10 inches and steady.

What is the status of Rx level instrumentation and which of the following conditions can be used to determine RPV water level is > -68 inches if the recirc pumps are off?

Reactor water level instrumentation...

- A. will become inaccurate when pressure drops below 250 psig; determine level > -68 inches by indicated level lowering on the narrow range instruments.
- B. will become inaccurate when pressure drops below 250 psig; determine level > -68 inches by indicated level rising on the upper wide range instrument.
- C. became inaccurate when pressure dropped below 450 psig; determine level > -68 inches by indicated level lowering on the narrow range instruments.
- D. became inaccurate when pressure dropped below 450 psig; determine level > -68 inches by indicated level rising on the lower wide range instruments.

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17

ID: Q #17 RO/SRO

Points: 1.00

Unit One is operating at full power when a loss of Bus 18 occurs. Shortly afterwards, a loss of the 250 VDC system occurs.

Predict the effect on the 901-5 panel reactor water level instrumentation.

- A. All level instruments will still be available.
- B. Only Wide range level instrumentation will be available.
- C. All Narrow range level instrumentation will be downscale.
- D. All Medium range level instrumentation will be downscale.

18

ID: Q #18 RO/SRO

Points: 1.00

RCIC automatically started and is maintaining reactor water level at -40 inches. Annunciator 901-4 F-15 "RCIC TURBINE BEARING OIL PRESSURE LOW" is alarming. The Unit One NLO reports that RCIC lube oil pressure is 3 psig decreasing despite efforts to restore pressure. Oil levels are all normal.

Continued operation of RCIC in this condition will result in reactor water level:

- A. decreasing due to RCIC trip on overspeed from the governor valve failing open.
- B. maintaining due to ALL RCIC trips, except overspeed, being bypassed on an autostart.
- C. decreasing due to RCIC low oil pressure trip.
- D. maintaining due to the RCIC emergency oil pump auto starting.

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19

ID: Q #19 RO/SRO

Points: 1.00

A Group II isolation will occur if the Unit One Drywell reaches _____, and this may be bypassed to allow opening the 2" vent valve to SBGTS by a keylock switch on the _____.

- A. 1.55 psig; 901-5 panel
- B. 1.55 psig; 912-1 panel
- C. 2.5 psig; 901-5 panel
- D. 2.5 psig; 912-1 panel

20

ID: Q #20 RO/SRO

Points: 1.00

Torus sprays are being tested on Unit One when a recirc system leak results in a Rx Scram and entry into the QGAs.

The ANSO has started Torus Sprays, Torus Cooling and RHR Service Water.

The MO-1-1001-16A, RHR Hx Bypass Valve is fully closed.

The NSO also notes that the maximum RHR service water flow with the MO-1-1001-5A, RHR Hx SW Disch Valve, full open is 2500 gpm at a discharge pressure of 275 psig.

What action(s) should be taken per QCOP 1000-04, RHRSW System Operation?

- A. Cross connect the "A" and "B" RHR Service Water loops.
- B. Secure Torus sprays.
- C. Start a 2nd RHR Service Water Pump.
- D. Stop the RHR Service Water pump and reverse heat exchanger flow.

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21

ID: Q #21 RO/SRO

Points: 1.00

A transient occurred on Unit 1 resulting in a reactor scram and a Group 2 isolation.
The Inboard MSIVs are closed.
Drywell pneumatic receiver pressure is 75 psig.
The ANSO places the Target Rock Relief Valve Control Switch to "MANUAL"

(NOTE: During the exam, clarification was given that Nitrogen makeup was for drywell pneumatics.)

Which of the following supplies will provide motive force for Target Rock Relief Valve operation?

1. Drywell pneumatic compressors
2. Drywell pneumatic receiver
3. Relief Valve accumulator
4. Nitrogen Makeup System

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

22

ID: Q #22 RO/SRO

Points: 1.00

Unit 2 has experienced a Group 1 isolation and reactor scram.

The ANSO reports that ALL relief valve indicating lights on the 902-3 panel are EXTINGUISHED.

Without operator action, Reactor pressure will increase until a...

- A. relief valve opens at 1115 psig.
- B. relief valve opens at 1135 psig.
- C. safety valve opens at 1240 psig.
- D. safety valve opens at 1250 psig.

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23

ID: Q #23 RO/SRO

Points: 1.00

Unit 2 is operating at rated conditions.
An operating RFP trips.

Which of the following describes the plant response with no operator action?

- A. The recirc pumps will runback to 70% immediately.
- B. The recirc pumps will runback to minimum immediately.
- C. When reactor water level reaches 26 inches within 45 seconds, the recirc pumps will runback to 70%.
- D. When reactor water level reaches 26 inches within 45 seconds, the recirc pumps will runback to minimum.

24

ID: Q #24 RO/SRO

Points: 1.00

Given the following conditions:

- 1/2B SBGT SELECT switch is in PRIM
- 1/2A SBGT SELECT switch is in STBY
- SBGT has received an initiation signal.

Which of the following conditions would result in 1/2A SBGT train flow increasing?

- A. The SBGT failed to maintain Reactor Building to Outside DP more negative than -0.25 inches.
- B. The inlet to B SBGT Train (1/2-7505B) fails to open.
- C. A loss of Instrument Air to the flow control damper has occurred.
- D. A failure of the heater for the 1/2B SBGT to start.

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25

ID: Q #25 RO/SRO

Points: 1.00

If the Unit Two ESS UPS fails an operator would verify that the ESS ASCO ABT has switched to _____.

- A. MCC 25-2
- B. Bus 27
- C. Bus 28
- D. MCC 28-2

26

ID: Q #26 RO/SRO

Points: 1.00

Following a loss of offsite power, Bus 24-1 is being carried by the EDG. Prior to closing the Bus 24 TO BUS 24-1 breaker while synchronizing Bus 24 to Bus 24-1, the operator is to verify that the Diesel and Bus meet the requirements for synchronization.

(NOTE: During the exam, clarification was given that Bus 24 had been reenergized.)

This is done by verifying the synchroscope is:

- A. rotating slowly in the fast direction with the synchroscope approaching the 11 o'clock position.
- B. rotating slowly in the slow direction with the synchroscope approaching the 12 o'clock position.
- C. rotating slowly in the fast direction with the synchroscope approaching the 12 o'clock position.
- D. rotating slowly in the slow direction with the synchroscope approaching the 1 o'clock position.

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27

ID: Q #27 RO/SRO

Points: 1.00

How is the amount of fuel regulated to the cylinders for the diesel when it is at speed?

- A. The fuel injectors are set at a predetermined value which will maintain the amount of fuel constant therefore maintaining speed constant.
- B. As speed changes on the diesel the governor changes the speed of the fuel pump to send the proper amount of fuel.
- C. The governor positions the fuel racks which controls the amount of fuel injected into the cylinders which controls the speed of the diesel as load is added or removed.
- D. The load limit control automatically controls the fuel rack position which controls the amount of fuel injected into the cylinders which controls the speed of the engine.

28

ID: Q #28 RO/SRO

Points: 1.00

An automatic actuation of the Halon Fire Protection System for the New Computer Room has occurred.

Which of the following describes the operational implications?

Both air conditioning units trip closing the intake damper, the room exhaust damper:

- A. closes and the process computer is susceptible to errors in data processing and calculations at 80 degrees F.
- B. closes and the process computer will automatically trip.
- C. remains open and the process computer is susceptible to errors in data processing and calculations at 80 degrees F.
- D. remains open and the process computer will automatically trip.

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29

ID: Q #29 RO/SRO

Points: 1.00

Both units are operating at full power with the plant in a normal configuration.

On a complete loss of instrument air, the emergency isolation dampers will fail _____ and the fan dampers will fail _____.

(NOTE: During the exam, clarification was given that the question referred to Reactor Building Ventilation.)

- A. OPEN; CLOSED
- B. OPEN; OPEN
- C. CLOSED; CLOSED
- D. CLOSED; OPEN

30

ID: Q #30 RO/SRO

Points: 1.00

A storm front is approaching causing atmospheric pressure to drop.

How will this be indicated in the Control Room and what is the expected system response?

Reactor Building Delta-P will _____ and Rx Building Exhaust Fan Vortex dampers will _____ further.

- A. become more negative; close
- B. become less negative; close
- C. become less negative; open
- D. become more negative; open

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31

ID: Q #31 RO/SRO

Points: 1.00

Both units are operating at full power.

The Unit one HPCI exhaust line develops a leak at the Torus penetration. (Outside the Torus, in the Torus Room)

(NOTE: During the exam, clarification was given that HPCI was NOT running.)

If no operator action is taken Rx building basement Torus area water levels:

- A. will NOT be affected and local Oxygen Concentration will NOT be affected.
- B. will increase, but local Oxygen Concentration will NOT be affected.
- C. will increase and local Oxygen Concentration will be affected.
- D. will NOT be affected, but local Oxygen Concentration will be affected.

32

ID: Q #32 RO/SRO

Points: 1.00

During a loss of Service Water, which ONE of the following systems can supply cooling water to the CR HVAC "B" AHU air conditioning unit?

- A. Reactor Building Closed Cooling Water (RBCCW)
- B. Residual Heat Removal Service Water (RHRSW)
- C. Turbine Building Closed Cooling Water (TBCCW)
- D. Circulating Water (CW)

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33

ID: Q #33 RO/SRO

Points: 1.00

Which of the following would require immediate suspension of core alterations?

- A. The "B" control room ventilation air handling unit trips.
- B. An inadvertent reactor building ventilation isolation.
- C. Shutdown cooling is declared inoperative.
- D. The "B" fuel pool cooling pump trips.

34

ID: Q #34 RO/SRO

Points: 1.00

Part of the overall ECCS design bases is to:

- A. prevent fuel cladding melting for any mechanical failure of the primary system up to and including a break area equivalent to the largest primary system pipe.
- B. provide a barrier which in the event of a loss of coolant accident will control the release of fission products to the secondary containment and limit the release of radioactive materials to the environment.
- C. prevent fuel cladding melting for any mechanical failure of the primary system with at least one source of offsite power.
- D. provide a means of alternate core cooling following a shutdown from 100% rated thermal power when the reactor is isolated from the condenser and shutdown mode of RHR is unavailable.

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35

ID: Q #35 RO/SRO

Points: 1.00

Plant conditions are as follows:

- Unit Two is recovering from a scram.
- Preparations are underway to start-up the 2B recirc. pump.
- 2A recirculation pump is running at 32% speed.
- Reactor vessel dome pressure = 980 psig.
- A recirc loop temperature = 540 degrees F.
- B recirc loop temperature = 500 degrees F.
- Bottom head coolant temperature = 390 degrees F.

Which of the following describes the limitations, if any, imposed on starting the 2B recirc pump?

- A. The pump should NOT be started because bottom head coolant temperature is too low.
- B. The pump should NOT be started because the loop differential temperature is too high.
- C. The pump should NOT be started because the 2A recirc pump is running too fast.
- D. The pump can be started immediately.

36

ID: Q #36 RO/SRO

Points: 1.00

The illuminated red light above the Relief Valve Control Switches indicates the ____ (1) ____ is activated on Unit One and the ____ (2) ____ is activated on Unit Two.

- A. (1) valve position reed switch;
(2) valve position reed switch
- B. (1) valve solenoid open limit switch;
(2) valve solenoid open limit switch
- C. (1) valve solenoid open limit switch;
(2) valve position reed switch
- D. (1) valve position reed switch;
(2) valve solenoid open limit switch

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37

ID: Q #37 RO/SRO

Points: 1.00

Which one of the following is a prerequisite to Purging/Deinerting the Primary Containment through SBT?

- A. Both the drywell and torus must be sampled within eight days.
- B. Torus must be vented for four hours.
- C. The drywell and torus pressure must be equalized within one hour.
- D. Both divisions of Rx Bldg Vent rad monitoring must be verified operable within four hours.

38

ID: Q #38 RO/SRO

Points: 1.00

Why is it NOT permissible to run the Mechanical Vacuum Pump when the reactor mode switch is in the RUN position?

- A. Because this would bypass the Low Condenser Vacuum scram with the mode switch in RUN.
- B. Because this would provide an unfiltered release pathway to the Main Chimney.
- C. Because the Mechanical Vacuum Pump would trip on high temperature once steam was being dumped to the condenser through the bypass valves.
- D. Because the SJAE's are required to be on when the mode switch is in RUN and they both use the same suction path.

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39

ID: Q #39 RO/SRO

Points: 1.00

The purpose of the Pre-Fire Plans is to provide _____

- A. the fire brigade leader with guidance for fighting a fire in a specific area of the plant.
- B. the Shift Manager guidance concerning personnel accountability during a fire (assembly).
- C. direction to the crew for initiating fire actions from the control room.
- D. identify actions to the Off-Site Fire Department to egress into the protected area.

40

ID: Q #40 RO/SRO

Points: 1.00

Which readily available hand held fire extinguisher should be your first choice to extinguish a small electrical fire on the 902-5 panel in the control room?

- A. Dry Chemical
- B. Pressurized water
- C. Carbon Dioxide
- D. AFFF Foam

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41

ID: Q #41 RO/SRO

Points: 1.00

A yellow bordered alarm, 901-3 A-14; Torus Hi/Lo Level, has just annunciated. The NSO has confirmed torus level is -0.5 inches. The crew should immediately enter:

1. QGA 200, Primary Containment Control
2. The suppression pool water level Technical Specification
3. Annunciator procedure 901-3 A-14

- A. # 1 and # 3 only
- B. #1, # 2, and # 3
- C. # 2 and # 3 only
- D. # 3 only

42

ID: Q #42 RO/SRO

Points: 1.00

Unit 2 has experienced a total loss of annunciators due to a loss of the normal power supply.

The operators should align reserve power supply from:

- A. 250 VDC B bus.
- B. 125 VDC B bus.
- C. the instrument bus.
- D. the essential service bus.

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43

ID: Q #43 RO/SRO

Points: 1.00

Unit 2 is operating at 100% power on the 95% Flow Control Line when a trip of the 2B Recirc Pump occurs.

RPV water level will:

- A. decrease first and return to normal.
- B. decrease to the low level scram setpoint.
- C. increase first and return to normal.
- D. increase to the RFP high level trip setpoint.

44

ID: Q #44 RO/SRO

Points: 1.00

Unit 2 is operating at 100% power.

Condenser backpressure is 3".

Main Condenser Flow Reversal is in progress from the Control Room.

The NSO notes that Condenser Backpressure is 4.5" and rising .25 inches every five seconds..

All valves are stroking normally.

The NSO should:

- A. stop the reversing operation and return the valves to their original position.
- B. have the operator stationed at the Local Panel (2252-71) take Local Control and complete the flow reversal.
- C. have the operator stationed at MCC 27-2 attempt to reset the breaker and thermals for any valve that tripped to complete the flow reversal.
- D. dispatch an operator to complete the flow reversal manually.

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45

ID: Q #45 RO/SRO

Points: 1.00

Unit One was operating at full power with all systems in their normal lineup when both feed breakers to 480 vac MCC's 18-2 and 19-2 simultaneously trip.

What is the operational impact of failsafe design associated with this loss of AC power?

- A. The alternate feed breakers automatically close to restore power to essential loads.
- B. A half scram and half Groups II and III Isolations occur due to lost loads.
- C. A full reactor scram and full Groups II and III Isolations occur due to lost loads.
- D. The alternate feed breakers automatically close maintaining all power and loads.

46

ID: Q #46 RO/SRO

Points: 1.00

Why is the Emergency Seal Oil Pump required to be tripped within 2 hours of a Unit One blackout?

- A. To extend the battery capability beyond the analyzed four-hour design period.
- B. To ensure that Unit One RCIC remains available for the four-hour design period.
- C. There would be no need for the Hydrogen Seal Oil pump since the generator would be no longer rotating after 2 hours.
- D. The battery sizing calculations assumed that specific loads are shed from the bus during the analyzed four-hour period.

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47

ID: Q #47 RO/SRO

Points: 1.00

Unit 2 is operating at 100% power when a reactor scram occurs.

Instrument Air is _____ the extraction steam non-return check valves in order to prevent _____.

- A. vented off; turbine overspeeding
- B. applied to; turbine overspeeding
- C. vented off; condenser overpressurization
- D. applied to; condenser overpressurization

48

ID: Q #48 RO/SRO

Points: 1.00

Unit 2 is in RUN.

The scram discharge volume DISCH VOL HI WTR BYP keylock switch is in BYPASS.

Both scram discharge volumes have increased to 50 gallons.

The blue SCRAM lights on the full core display will be _____ and the Scram Solenoid Group lights will be _____.

- A. de-energized; de-energized
- B. energized; de-energized
- C. energized; energized
- D. de-energized; energized

EXAMINATION

2002 NRC RO Exam

49

ID: Q #49 RO/SRO

Points: 1.00

Unit 2 was operating at 100% power when an inadvertent Group 1 occurred. Relief valves are cycling on their auto setpoints. Reactor pressure is 1116 psig and rising at a rate of one pound per second. The "B" relief valve closed five seconds ago.

The "B" relief valve is expected to automatically open _____.

- A. immediately
- B. in approximately five seconds
- C. in approximately nine seconds
- D. in nineteen seconds

50

ID: Q #50 RO/SRO

Points: 1.00

Which of the following statements correctly describes the operation of the Reactor Recirculation MG sets with RPV level at -59" and RPV pressure 800 PSIG?

- A. LPCI loop select logic causes the drive motor breakers to trip and the ARI system causes the field breakers to trip after a 9-second time delay.
- B. The ARI system causes the field breakers to trip and the drive motor breakers do NOT trip.
- C. PCIS logic causes both drive motor breakers to trip and the ARI system trips the field breakers immediately.
- D. The ARI system causes the drive motor breakers to trip and the field breakers to trip after a 9-second time delay.

EXAMINATION

2002 NRC RO Exam

51

ID: Q #51 RO/SRO

Points: 1.00

A reactor startup is in progress in accordance with QCGP 1-1, Normal Unit Startup, the DW is still inerted.

While placing the first FRV in service, the REACTOR VESSEL HIGH LEVEL annunciator ALARMS.

The NSO takes action to reduce vessel level to normal by increasing RWCU system blowdown from 100 GPM to 200 GPM.

What consequence could result from the increased RWCU blowdown?

- A. Drywell temperature would increase, causing the QGAs to be initially entered on High Drywell Pressure.
- B. RWCU system demins will isolate on high post strainer temperature.
- C. RWCU system demins will isolate on high post strainer DP.
- D. Reactor level will decrease and a Group II isolation will be received.

52

ID: Q #52 RO/SRO

Points: 1.00

A LOCA on Unit 2 has caused high Drywell pressure.

Drywell temperature is required to be monitored prior to spraying the Drywell in order to verify Drywell parameters are within the:

- A. DSIL curve.
- B. RPV Saturation Temperature curve.
- C. PCPL curve.
- D. PSP curve.

EXAMINATION

2002 NRC RO Exam

53

ID: Q #53 RO/SRO

Points: 1.00

Increasing Drywell temperature requires starting additional Drywell Coolers to prevent jeopardizing _____ integrity.

- A. Reactor Vessel Head
- B. Recirc Pump Seal
- C. RPV Level Instrument
- D. Primary Containment

54

ID: Q #54 RO/SRO

Points: 1.00

Given the following plant conditions:

- RPV level 10 inches
- Drywell pressure 3 psig
- RPV pressure 1050 psig
- Drywell temperature 170 °F
- Reactor power 2%

WHICH ONE of the following correctly states the QGA procedures that initially should be entered based on the above information ONLY?

- A. QGA 100 and QGA 200.
- B. QGA 100 and QGA 200-5.
- C. QGA 101 and QGA 200.
- D. QGA 101 and QGA 200-5.

EXAMINATION

2002 NRC RO Exam

55

ID: Q #55 RO/SRO

Points: 1.00

Unit 2 had an ADS valve leaking for several days that is still operable. A plant cooldown is in progress on Unit 2, Reactor pressure is currently 700 psig. The RHR system was JUST started in the Torus Cooling Mode and the ANSO reports Torus temperature rapidly rising.

The rapid rise in Torus temperature is due to _____.
If indicated Torus temperature exceeds _____ degrees F, a Reactor scram is required.

- A. initial stratification of water in the Torus; 105
- B. initial stratification of water in the Torus; 110
- C. ADS valve leakage impinging directly on the temperature sensors; 105
- D. ADS valve leakage impinging directly on the temperature sensors; 110

56

ID: Q #56 RO/SRO

Points: 1.00

An ATWS has occurred. Reactor power is 3% and steady. Reactor pressure is 920 psig and being controlled by turbine bypass valves. Reactor water level has been lowered to -145 inches IAW QGA 101, RPV Control (ATWS).

Which one of the following describes the status of core cooling and safety limits?

Adequate core cooling (1) assured and (2) safety limit has been violated.

- A. (1) IS
(2) NO
- B. (1) IS NOT
(2) A
- C. (1) IS
(2) A
- D. (1) IS NOT
(2) NO

EXAMINATION

2002 NRC RO Exam

57

ID: Q #57 RO/SRO

Points: 1.00

Both Units are operating at full power when Unit 1 experiences a scram from full power. Plant conditions on Unit 1 are as follows:

- Half of the control rods are still at positions greater than 04.
- Reactor power indicates approximately 8%.
- Reactor water level is between +8" and +48" and stable.
- RPV pressure is less than 1040# and is being controlled with bypass valves.
- The rods DO NOT move inward when scrammed with reactor pressure.
- The running CRD pump TRIPS and CANNOT be restarted.
- The other CRD pump also TRIPS when it is started and WILL NOT restart.

What is the next action taken to insert control rods?

- A. Open SDV vents to relieve the hydraulic lock.
- B. Open CRD crosstie and use opposite unit pump to insert control rods.
- C. Shut the 1 301-25 CRD Charging Header Isolation and drive Control Rods.
- D. Locally vent the overpiston area of each control rod that IS NOT inserted.

58

ID: Q #58 RO/SRO

Points: 1.00

An uncontrolled fire in the Control Room necessitates evacuation of the Control Room before the safe shutdown equipment can be obtained.

Where can the operators go to acquire the necessary equipment?

To the QCARP locker in the:

- A. Work Execution/Communications Center.
- B. Unit 2 Turbine Building Trackway.
- C. OSC.
- D. Unit 1 Turbine Building Trackway.

EXAMINATION

2002 NRC RO Exam

59

ID: Q #59 RO/SRO

Points: 1.00

The reactor has been scrammed from full power and the Mode Switch taken to S/D in response to an instrument air header rupture that has resulted in a loss of Instrument Air on Unit 2.

Which one of the following describes how the operation of the MSIVs will be affected by this condition?

- A. The inboard MSIVs would remain open; the outboard MSIVs would close.
- B. All MSIVs would remain open since the MSIV Instrument Air Crosstie will automatically open.
- C. The inboard MSIVs would close when their accumulators discharged; the outboard MSIVs would remain open.
- D. All MSIVs would remain open since the drywell pneumatic system will automatically align to supply the MSIVs.

60

ID: Q #60 RO/SRO

Points: 1.00

Initial conditions are as follows:

- Unit One in mode 4.
- Reactor Water level is 30 inches.
- Shutdown Cooling is in operation.

A spurious High Drywell Pressure signal is received and will NOT reset.
Reactor pressure is slowly increasing.
Reactor Shell and Flange temperatures are also slowly increasing.

The correct operator action is to:

- A. open safety relief valves.
- B. raise reactor water level to between 90 and 100 inches.
- C. monitor running recirc pump parameters.
- D. secure Reactor Water Clean Up reject flow.

EXAMINATION

2002 NRC RO Exam

61

ID: Q #61 RO/SRO

Points: 1.00

During a plant startup RPV pressure is 900 psig.

A sustained loss of CRD flow will have which one of the following immediate effects on control rod motion and scram times?

Normal rod motion is:

- A. lost and scram times will NOT meet acceptable limits.
- B. unaffected and scram times will be within acceptable limits.
- C. lost but scram times will be within acceptable limits.
- D. unaffected but scram times will NOT meet acceptable limits.

62

ID: Q #62 RO/SRO

Points: 1.00

Which of the following indications will positively identify a criticality event in progress while a fuel bundle is being lowered into the core during refueling operations?

- A. A refuel floor radiation monitor increasing and high alarm sounds.
- B. Source range monitor nearest the fuel bundle doubles and stabilizes.
- C. Source range monitor nearest the fuel bundle spiking repeatedly.
- D. A sustained increase on the source range monitor nearest the fuel bundle.

EXAMINATION

2002 NRC RO Exam

63

ID: Q #63 RO/SRO

Points: 1.00

Why is Torus Spray initiated prior to torus pressure reaching 5 psig?

- A. Prevent catastrophic containment failure of the suppression pool.
- B. Reduce containment pressure by steam condensation and convective cooling.
- C. Prevent steam from bypassing the suppression pool.
- D. Allow the nitrogen flow back into the Drywell.

64

ID: Q #64 RO/SRO

Points: 1.00

The following plant conditions exist;

Reactor pressure is 1090 psig.

DW Pressure is 3.7 psig.

CCST level is at 1,200 gallons.

Torus level is 14 feet 3 inches.

You are required to run HPCI in the Pressure Control Mode.

Determine the correct suction and discharge path of the pump to establish pressure control under these conditions?

- | | Suction | Discharge |
|----|---------|-------------------|
| A. | CCST; | Test return line |
| B. | Torus; | Test return line |
| C. | CCST; | Minimum flow line |
| D. | Torus; | Minimum flow line |

EXAMINATION

2002 NRC RO Exam

65

ID: Q #65 RO/SRO

Points: 1.00

A LOCA occurred on Unit 2.

Torus water temperature was 87 degrees F and has now increased to the QGA entry condition.

For these conditions, the SPDS indications for the Torus Water Temperature colored bar graph changed from _____ to _____.

- A. green; yellow
- B. white; yellow
- C. green; red
- D. yellow; red

66

ID: Q #66 RO/SRO

Points: 1.00

QGA 200, PRIMARY CONTAINMENT CONTROL, directs the operator to maintain torus temperature below the Heat Capacity Limit and if you cannot, then reduce reactor pressure to stay inside the Heat Capacity Limit.

Reducing reactor pressure to stay inside the Heat Capacity Limit is to:

- A. allow the operator to depressurize the reactor to a point where Core Spray and RHR can inject prior to the torus temperature exceeding the low pressure ECCS pump NPSH limit.
- B. ensure there is adequate margin to the ECCS suction piping design temperature in the event of a full reactor depressurization.
- C. prevent inadequate steam condensation in the event of a full reactor depressurization, resulting in the torus to drywell vacuum breakers opening.
- D. ensure the torus has enough capacity to accept a full reactor depressurization without exceeding the design temperature of the torus.

EXAMINATION

2002 NRC RO Exam

67

ID: Q #67 RO/SRO

Points: 1.00

Unit 1 scrammed due to a large LOCA.

A Group One isolation has successfully completed.

Drywell Temperature has risen to 350 degrees Fahrenheit.

What are the immediate concerns?

- A. The ADS valves are no longer reliable.
- B. Core flow instrumentation is no longer reliable.
- C. The Inboard MSIV's are no longer reliable.
- D. Drywell temperature instrumentation is no longer reliable.

68

ID: Q #68 RO/SRO

Points: 1.00

QGA 500-2, "Steam Cooling" specifies actions that use the steam cooling method of heat transfer to _____ that the reactor core remains adequately cooled under conditions when _____ source of injection into the RPV is available.

- A. maximize the time; a single
- B. indefinitely ensure; a single
- C. maximize the time; no
- D. indefinitely ensure; no

EXAMINATION

2002 NRC RO Exam

69

ID: Q #69 RO/SRO

Points: 1.00

Unit 2 is operating at 100% power and just experienced an invalid FULL Group 2 isolation. All systems responded as expected. Which of the following is most likely to cause entry into QGA 300?

- A. HPCI Room Area Radiation.
- B. Reactor Building Low Differential Pressure.
- C. Reactor Building Ventilation Radiation.
- D. MSIV Room High Temperature.

70

ID: Q #70 RO/SRO

Points: 1.00

Both Units Reactor Building Ventilation supply and exhaust fans have tripped and the isolation dampers have automatically closed. NO ECCS systems have initiated on either unit.

This was caused by a 25 GPM leak from the:

- A. Fuel Pool filter demineralizer.
- B. RBCCW pump discharge header.
- C. RWCU filter demineralizer.
- D. Reactor Feed pump casing.

EXAMINATION

2002 NRC RO Exam

71

ID: Q #71 RO/SRO

Points: 1.00

An ATWS is in progress on Unit 2 with the following parameters.

- Reactor water level -30 inches
- Drywell pressure 8 psig

Plans are to inject boron using the RWCU system.
Simultaneously, reactor water level is being lowered to control reactor power.

Jumpers must be installed to allow opening RWCU :

- A. isolation valves when Drywell pressure is 8 psig.
- B. isolation valves when reactor water level is -30 inches.
- C. filter demineralizer isolation valve when reactor water level is -30 inches.
- D. filter demineralizer isolation valve when filter demineralizer differential pressure is 35 psid.

72

ID: Q #72 RO/SRO

Points: 1.00

Alarms 912-1 E-9 and F-9, RAD MON SYS A & B HIGH SCALE are alarming.

The Radwaste Effluent CAN be monitored in the ___1___:

The Service Water Effluent CAN be monitored in the ___2___:

- A. 1. Radwaste Control Room AND Main Control Room
 2. Main Control Room
- B. 1. Radwaste Control Room AND Main Control Room
 2. "B" CR HVAC Room
- C. 1. Radwaste Control Room ONLY
 2. "B" CR HVAC Room
- D. 1. Radwaste Control Room ONLY
 2. Main Control Room

EXAMINATION

2002 NRC RO Exam

73

ID: Q #73 RO/SRO

Points: 1.00

The 1A instrument air compressor is running when the unloader valve fails in the OPEN position.

What effect would this have on compressor / plant operation and what operator action is required?

- A. The compressor would NOT develop any discharge pressure possibly resulting in low system pressure.
Start a standby Instrument Air Compressor.
- B. High system air flow could result in compressor damage.
Start a standby Instrument Air Compressor.
- C. The compressor would NOT develop any discharge pressure possibly resulting in low system pressure.
Open the manual dryer bypass valve.
- D. High system air flow could result in compressor damage.
Open the manual dryer bypass valve.

74

ID: Q #74 RO/SRO

Points: 1.00

Unit 1 has experienced a total loss of TBCCW.

The Instrument Air compressors are protected against this failure by a trip on:

- A. cooling water LOW pressure.
- B. cooling water HIGH temperature.
- C. high pressure outlet HIGH air temperature.
- D. cooling water LOW flow.

EXAMINATION

2002 NRC RO Exam

75

ID: Q #75 RO/SRO

Points: 1.00

QGA 200-5, "HYDROGEN CONTROL," primary containment pressure control path, directs the primary containment to be vented.

The procedure directs the operator to vent via the torus as the preferred method vice via the drywell.

Venting the primary containment via the torus will:

- A. Allow a more rapid reduction in primary containment pressure than venting from the drywell
- B. Reduce the levels of radioactivity released as it passes through the water in the torus.
- C. Allow better control of the release rate due to the sizing of the path's piping and valves.
- D. Minimize chugging due to loss of non-condensibles from the drywell atmosphere.

76

ID: Q #76 RO

Points: 1.00

Given the following plant conditions:

- The reactor has just scrammed from 100% power caused by a loss of off-site power and a Loss of Coolant Accident.
- Both Emergency Diesel Generators started but did NOT close on to their respective busses.
- Reactor pressure is being controlled automatically by relief valves.
- Reactor power is 0%.
- Reactor water level is -49 inches and decreasing at 10 inches per minute.
- RCIC is injecting at 400 gpm.
- HPCI started and then tripped and is unavailable.
- Drywell pressure is 2.0 psig and slowly increasing at 0.5 psi per minute.

Which one of the following actions describes the Automatic Depressurization System (ADS) response, assuming NO operator action is taken?

- A. Will NOT automatically initiate.
- B. Automatically initiates in 60 seconds.
- C. Automatically initiates in 110 seconds.
- D. Automatically initiates in 570 seconds.

EXAMINATION

2002 NRC RO Exam

77

ID: Q #77 RO

Points: 1.00

Operation of HPCI below 2200 rpm should be minimized because:

- A. the introduction of water into the turbine is very likely at low speed.
- B. the min. flow valve will NOT receive an open signal with the turbine below 2200 rpm.
- C. the pump will be in Run Out flow conditions.
- D. it may result in unstable system operation.

78

ID: Q #78 RO

Points: 1.00

A LOCA on unit 2 resulted in the following:

Drywell pressure	8.0 psig and steady
Reactor water level	-120 inches and lowering
Reactor pressure	400 psig and lowering

The "A" Loop of Core Spray is NOT running.

Concerning the "A" Loop of Core Spray, the ANSO should:

- A. place the 1A Core Spray pump in pull to lock.
- B. wait for reactor pressure to drop below 325 psig and verify Core Spray auto initiates and manually open the MO 1-1401-25A valve.
- C. manually start the "A" Core Spray pump immediately and open the MO 1-1401-25A valve when reactor pressure reaches 325 psig.
- D. wait for reactor pressure to drop below 325 psig and verify Core Spray auto initiates and injects.

EXAMINATION

2002 NRC RO Exam

79

ID: Q #79 RO

Points: 1.00

Unit 2 has experienced an ATWS.

Reactor power is ~ 20%.

The Unit Supervisor has directed SBLC injection into the RPV.

2A SBLC pump is electrically OOS.

The NSO has positioned the SBLC initiation switch to the SYS 1 & 2 position.

What is the expected response and what should be done per the Hard Card if the expected response does NOT occur?

- A. Both squib valves should fire;
Place the initiation switch to the SYS 2 position.
- B. One squib valve should fire;
Place the initiation switch to the SYS 2 & 1 position.
- C. Both squib valves should fire;
Place the initiation switch to the SYS 2 & 1 position.
- D. One squib valve should fire;
Place the initiation switch to the SYS 1 position.

80

ID: Q #80 RO

Points: 1.00

A fire has occurred on Bus 23. The NSO de-energized the bus and dispatched the fire brigade.

The 1/2 EDG did NOT autostart and has NOT been given a manual start signal.

The NSO manually scrammed the reactor but no rod movement resulted.

No other operator action has been taken.

The US has ordered SBLC injection.

After the NSO positions the keylock switch A AND B SELECT to SYS 1 & 2, the Pump A light will be _(1)_ and the Pump B light will be _(2)_ .

- A. (1) ON
(2) ON
- B. (1) OFF
(2) OFF
- C. (1) ON
(2) OFF
- D. (1) OFF
(2) ON

EXAMINATION

2002 NRC RO Exam

81

ID: Q #81 RO

Points: 1.00

Which statement below best describes the reason the drywell grating is removed and the carousel locked in place prior to withdrawing the SRM's and IRM's?

- A. To keep the drive mechanisms from impinging on the grating/carousel.
- B. An interlock prevents SRM/IRM withdrawal with the grating in place.
- C. To allow access for maintenance to work on the drives if necessary.
- D. To prevent access in case the detectors overtravel out.

82

ID: Q #82 RO

Points: 1.00

Unit 2 is starting up with IRM's on range 4 and IRM 17 bypassed.
You receive a half scram on RPS A and the IRM High alarm (902-5 A5) comes in.
On the apron section for 902-5 the IRM 13 High and HIGH HIGH lights are lit.
The indication on the Recorder and on the drawer around back are pegged high for IRM 13.

Based on this information, you should:

- A. bypass IRM 13, reset the 1/2 scram and continue the startup.
- B. discontinue the startup because there are NOT enough IRM inputs.
- C. reset the 1/2 scram and continue the startup.
- D. bypass IRM 13, but leave "A" RPS 1/2 scram inserted.

EXAMINATION

2002 NRC RO Exam

83

ID: Q #83 RO

Points: 1.00

Which of the following is the reason to minimize the time the RCIC system is operating with pump flowrates of less than 400 gpm?

Flows less than 400 gpm may:

- A. result in inadequate pump seal cooling water flow causing pump seal damage.
- B. cause cycling of the turbine exhaust check valve, possibly causing damage to the exhaust piping.
- C. cause high turbine temperatures due to lack of flow for steam cooling of turbine components.
- D. cause cycling of the minimum flow valve, routing water into the torus.

84

ID: Q #84 RO

Points: 1.00

The plant is operating at 100% power, steady state conditions, with all systems operable when the following alarms are received at the 901-3 panel:

E-14 ACOUSTIC MON SAFETY-RELIEF VALVES OPEN.
E-16 VALVE LEAK DET SYS TEMP.

Based on the information available, what should be the operators next response per QCOA 0203-01, FAILURE OF A RELIEF VALVE TO CLOSE OR RESEAT PROPERLY?

- A. Scram the reactor per QCGP 2-3.
- B. Cycle the affected valve key switch between MANUAL and AUTO.
- C. Place the affected valve key switch to the OFF position.
- D. Initiate suppression pool cooling.

EXAMINATION

2002 NRC RO Exam

85

ID: Q #85 RO

Points: 1.00

Given the following plant conditions:

- Reactor vessel water level has just decreased to -59 inches.
- Reactor water level is continuing to decrease.
- Drywell pressure is 2.2 psig and steady.
- All systems are assumed to operate as expected.

Assuming no operator actions taken, how soon would the Automatic Depressurization System begin to depressurize the reactor?

- A. Immediately
- B. In 110 seconds
- C. In 510 seconds
- D. In 720 seconds

86

ID: Q #86 RO

Points: 1.00

Given:

- Rx Power: 100%
- Rx water level: +32" and rising slowly
- Rx Pressure: 815 psig and decreasing
- No operator actions have been taken.

MSIVs should indicate _____ and the Primary Containment O2 Analyzer valves should indicate _____.

- A. closed; open
- B. closed; closed
- C. open; open
- D. open; closed

EXAMINATION

2002 NRC RO Exam

87

ID: Q #87 RO

Points: 1.00

You have the following plant conditions:

- Drywell pressure 2.0 psig
- Drywell temperature 170 degrees F
- Torus pressure 1.8 psig
- Torus temperature 96 degrees F
- Reactor water level +30 inches
- Reactor pressure 300 psig

The plant has scrammed and QCGP 2-3 is being carried out.
The RHR system was in a normal lineup at the beginning of the transient.

The Unit Supervisor orders Torus Cooling started on the "A" RHR Loop.

The RHR Loop "A" RHR SW START PERMISSIVE SWITCH 19 cannot physically be moved to the MANUAL OVERRIDE position.

Containment temperatures will:

- A. increase unless the "B" loop of Torus Cooling is started.
- B. increase unless the "B" RHR SW Pump is started.
- C. decrease unless RPV Water Level reaches -191 inches.
- D. decrease unless RPV Water Level reaches -59 inches.

88

ID: Q #88 RO

Points: 1.00

The Unit One refueling platform is traveling in the reverse direction over the reactor core with the main hoist loaded.

What will happen if the REFUELING INTERLOCK CHECK pushbutton on the 901-28 panel fails in the depressed position?

- A. Bridge will continue to travel towards the core.
- B. Bridge trolley motion will be prohibited.
- C. Bridge reverse motion will stop.
- D. Bridge will NOT be able to move either forward or reverse.

EXAMINATION

2002 NRC RO Exam

89

ID: Q #89 RO

Points: 1.00

How many independent 345 KV lines must be available for Unit One in Mode 3?

- A. One
- B. Two
- C. Three
- D. Four

90

ID: Q #90 RO

Points: 1.00

Unit One 125 VDC Battery Voltage is indicated _____. It is measured _____.

- A. in the Battery Room;
at the charger output.
- B. in the Battery Room;
directly from the battery.
- C. on the 901-8 panel;
at the charger output.
- D. on the 901-8 panel;
directly from the battery

EXAMINATION

2002 NRC RO Exam

91

ID: Q #91 RO

Points: 1.00

Unit One is operating at 100% power.
The "A" SJAE Radiation Monitor fails DOWNSCALE.

In addition to the above, what redundant protection signal is required to auto close the offgas holdup valve?

- A. None, the offgas holdup valve will close immediately.
- B. None, the offgas holdup valve will close in 15 minutes.
- C. EITHER a downscale OR upscale signal from "B" SJAE Radiation Monitor.
- D. An upscale signal from "B" SJAE Radiation Monitor.

92

ID: Q #92 RO

Points: 1.00

One of the Unit 2 Refuel Floor Radiation Monitors indicates 150 mr/hr.

What is the expected plant response due to this and what action would be required?
(Assume all automatic actions happen.)

A Reactor Building Vent isolation would occur on:

- A. Unit 2 ONLY.
Manually start the 1/2A SBTG Train.
- B. Both Units.
Manually start the 1/2A SBTG Train.
- C. Both Units.
Verify Rx Bldg Vents isolated and investigate the cause of the High Radiation.
- D. Unit 2 ONLY.
Verify Rx Bldg Vents isolated and investigate the cause of the High Radiation.

EXAMINATION

2002 NRC RO Exam

93

ID: Q #93 RO

Points: 1.00

The ANSO takes 1B Core Spray to pull-to lock as directed by a surveillance procedure.

The 1B Core Spray Pump is Operable:

- A. ONLY after a satisfactory operational test on 1B Core Spray.
- B. since it was placed in pull-to-lock as directed by a procedure.
- C. as soon as it is taken out of pull-to-lock.
- D. as long as an operator is IMMEDIATELY available to return the switch to normal if needed.

94

ID: Q #94 RO

Points: 1.00

Who has the specific responsibilities for approving the performance of each step during core alterations in accordance with the Nuclear Component Transfer List?

- A. Nuclear Station Operator
- B. Nuclear Engineer
- C. Shift Manager
- D. Unit Supervisor

EXAMINATION

2002 NRC RO Exam

95

ID: Q #95 RO

Points: 1.00

The plant has experienced a transient.
Emergency exposure limits have been authorized.
Estimated dose will be 7 Rem TEDE.

Can an individual perform work to protect the main turbine from damage? If the individual can perform this work, what will be their emergency exposure TEDE limit?

- A. No, limit is 5 Rem for repair work.
- B. Yes, 10 Rem
- C. Yes, 25 Rem
- D. Yes, 50 Rem

96

ID: Q #96 RO

Points: 1.00

Unit 2 was operating at 100% core thermal power when the NSO reports a loss of annunciator power.
Reactor power is lowering.
Further observation reveals that the indicating lights have been lost for the 1C & 1D and 2A & 2B RHR pumps as well as Buses 21, 23, 23-1, 25, and 28.

Why is Unit 2 Reactor Power lowering?

- A. The 2A recirc pump breaker is tripped due to loss of control power.
- B. The 2A Recirc Pump is coasting to a stop due to loss of MG Set oil pumps.
- C. The 2B recirc pump breaker is tripped due to loss of control power.
- D. The 2B recirc pump is coasting to a stop due to loss of MG Set oil pumps.

EXAMINATION

2002 NRC RO Exam

97

ID: Q #97 RO

Points: 1.00

Unit 1 has experienced a small line break LOCA.
The HPCI system is OUT-OF-SERVICE.
A LOSS of normal feedwater occurs.

The RCIC system auto initiates and INJECTS into the vessel.
RCIC operates for several minutes and then TRIPS.
Several minutes later RCIC restarts and injects into the vessel.

ASSUMING no operator action, what was the cause of the RCIC turbine trip?

- A. High Reactor Water level.
- B. Turbine overspeed.
- C. Low pump suction pressure.
- D. High turbine exhaust pressure.

98

ID: Q #98 RO

Points: 1.00

The Control Room has been evacuated due to a fire per QCOA 0010-05, CONTROL ROOM EVACUATION.

Operators will be dispatched to monitor Reactor Water level from the:

- A. ATWS level indicators in the Aux Electric Room.
- B. 2201(2) - 5 and 2201(2) - 6 Instrument Racks AND the ATWS level indicators in the Aux Electric Room.
- C. Analog trip level indicators in the Cable Spreading Room.
- D. 2201(2) - 5 and 2201(2) - 6 Instrument Racks.

EXAMINATION

2002 NRC RO Exam

99

ID: Q #99 RO

Points: 1.00

Reactor Building Differential Pressure is 0.25" H₂O.

1/2 A SBGTS is operating at 4000 scfm for a monthly surveillance.

Reactor Building Ventilation failed such that all supply fans trip causing Reactor Building Differential Pressure to increase to 0.75" H₂O.

Predict the change in flow through the SBGTS.

- A. Flow would decrease and remain at 3600 scfm due to increased Reactor Building Differential Pressure.
- B. Flow would increase initially then return to 4000 scfm due to action of the Flow Control Valve.
- C. Flow would decrease initially then return to 4000 scfm due to action of the Flow Control Valve.
- D. Flow would increase and remain at 4400 scfm due to the flow restricting orifice.

EXAMINATION

2002 NRC RO Exam

100

ID: Q #100 RO

Points: 1.00

Unit One is operating at full power.
The 1B Service Water Pump is OOS.
Unit Two has just scrammed.
A fire is in progress in Bus 24.
Low service water pressure alarm has annunciated.

The Unit Supervisor has directed that the 1/2 service water pump be started.

Which of the following describes the correct action to take and the potential consequences from that action?

- A. Start the pump from U-1 power supply, potential for a blackout on U-1
- B. Start the pump from U-1 power supply, loss of U-2 emergency diesel generator cooling water supply
- C. Start the pump from U-2 power supply, loss of U-1 emergency diesel generator cooling water supply
- D. Start the pump from U-2 power supply, potential blackout on U-2

#1	B	#22	B
#2	A	#23	C
#3	B	#24	B
#4	A	#25	D
#5	B	#26	B
#6	D	#27	C
#7	B	#28	A
#8	A	#29	D
#9	C	#30	C
#10	C	#31	A
#11	D	#32	B
#12	C	#33	A
#13	D	#34	A
#14	D	#35	A
#15	C	#36	C
#16	C	#37	A
#17	A	#38	B
#18	A	#39	A
#19	C	#40	C
#20	D	#41	D
#21	D	#42	B
		#43	C

EXAMINATION ANSWER KEY

(Answers associated with the actual exam ONLY)

Note: Key is different from Exam with References due to random distribution of question distractors by licensee's exam development program. [2002 NRC RO Exam](#)

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