

Question Number 001  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 203000A308

Question

The Reactor Mode Switch was in the RUN position with station power supplied from the 2R Transformer when Drywell pressure exceeded 2 psig.

What sequence of initiation should the BOP operator expect for the RHR pumps?

11 and 12 pumps start...

- a. immediately, 13 and 14 pumps start after 5 seconds.
- b. after 5 seconds, 13 and 14 pumps start after 10 seconds.
- c. after 10 seconds, 13 and 14 pumps start after 15 seconds.
- d. after 15 seconds, 13 and 14 pumps start after 20 seconds.

Answer

b.

Reference

Reference: B.03.04

MEMORY

NEW

Ability to monitor automatic operations of the RHR/LPCI including: System initiation sequence.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as no pump starts immediately.

Distractor B is correct as if normal aux. electrical power is available, then if D/W pressure is >2psig, RHR pumps 11 and 12 start after 5 seconds and 13 and 14 pumps start after 10 seconds. The starting of the RHR pumps is delayed to limit the maximum motor starting load.

Distractor C is incorrect as 13 and 14 pumps start after 10 seconds.

Distractor D is incorrect as these pump pairings are on the same bus and the delay times assume normal electrical power is not available.

Question Number 002  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 205000A301

Question

The reactor was shutdown with the 'A' loop of RHR in Shutdown Cooling (SDC). RPV water level is now 4 inches and continuing to lower.

Which of the following is correct regarding SDC?

- a. SDC isolation valves (MO-2029 and MO-2030) closed. The LPCI inboard injection valve (MO-2014) closed and will re-open at -47 inches.
- b. At -47 inches the SDC isolation valves (MO-2029 and MO2030) AND the LPCI inboard injection valve (MO-2014) close and will remain closed.
- c. SDC isolation valves (MO-2029 and MO-2030) AND the LPCI inboard injection valve (MO-2014) closed and will remain closed.
- d. At -47 inches only the SDC isolation valves (MO-2029 and MO-2030) close.

Answer

c.

Reference

Reference: B.03.04

HIGHER

NEW

Ability to monitor automatic operations of the Shutdown Cooling System including: Valve operation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the LPCI injection valves will not automatically open and the isolation must be reset.

Distractor B is incorrect as the LPCI inboard isolation valve closes.

Distractor C is correct as MO-2029 and MO-2030 close. These valves close on a group 2 isolation (high drywell pressure or low RPV water level). The LPCI inboard injection valve also receives a closed signal. Both isolations are seal in and require a reset of the group 2 isolation for the valves to be re-opened.

Distractor D is incorrect as the isolation will occur at either 9 inches OR 2 psig.

Question Number 003  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 206000K413

Question

During an automatic start of the HPCI turbine, what prevents the HPCI TURBINE BRG OIL LO PRESS annunciator from alarming?

This annunciator is bypassed...

- a. anytime the Aux. Oil pump is running.
- b. until turbine speed exceeds 2150 rpm.
- c. for approximately 15 seconds after HPCI initiation.
- d. anytime MO-2036 (HPCI STEAM SUPPLY VALVE) is open.

Answer

c.

Reference

Reference: C.6-003-B-09

MEMORY

NEW

Knowledge of HPCI design feature(s) and/or interlocks which provide for the following: Turbine and pump lubrication.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the aux oil pump does not input to this bypass logic, but only supplies sufficient oil pressure until the shaft driven pump supplies adequate pressure.

Distractor B is incorrect as the logic to bypass this alarm does not depend on turbine speed.

Distractor C is correct as there is a 15 second timer which is initiated from opening of the steam supply valve that prevents the annunciator in order to avoid the lo oil pressure alarm until adequate oil pressure is established.

Distractor D is incorrect as this valve supplies only 1/2 the logic and in this condition would prevent the alarm any time HPCI is running.

Question Number 004  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 209001K302

Question

ADS initiated due to a LOCA. The following conditions were present:

- RPV pressure 300 psig and lowering
- RPV level -30 inches and rising
- Drywell Pressure 10 psig and stable
- 11 Core Spray pump injecting
- All other ECCS low pressure systems shutdown
- All 3 ADS valves open

How will the ADS System respond if the operator secures the 11 Core Spray Pump?

The ADS Valves will...

- a. CLOSE.
- b. remain OPEN.
- c. CLOSE and then immediately RE-OPEN.
- d. CLOSE and then RE-OPEN after a 107 seconds.

Answer

a.

Reference

B.03.03

HIGHER

BANK

Knowledge of the effect that a loss or malfunction of the Low Pressure Core Spray System would have on the following: ADS logic.

Reference provided during exam: None

JUSTIFICATION

- Distractor A is correct as although the lo-lo RPV level initiation signal is sealed in, at least 1 low pressure ECCS system must be discharging at >100 psig to satisfy the ADS logic even after initiation.
- Distractor B is incorrect as the valves will close due to loss of low pressure ECCS
- Distractor C is incorrect as the valves will not reopen unless 1 low pressure ECCS system has a discharge pressure of >100 psig
- Distractor D is incorrect as the timer is downstream of the K12 relay and thus will have not impact on the initiation signal unless 1 low pressure ECCS system has a discharge pressure of >100 psig

Question Number 005  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 211000K401

Question

What design feature of the SBLC system prevents Boron intrusion into the reactor during normal plant operation?

- a. Explosive valves
- b. Double squib actuation
- c. Stop check angle control valve
- d. Primary Containment check valves

Answer

a.

Reference

B.03.05

MEMORY

NEW

Knowledge of SBLC design feature(s) and/or interlocks which provide for the following: Zero leakage to the reactor (squib valves).

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the explosive valves are zero-leakage.

Distractor B is incorrect as this feature of the explosive valves ensures a flowpath to the reactor.

Distractor C is incorrect as this is the test tank return control valve CV-2395.

Distractor D is incorrect as the check valves prevent flow from the reactor back into SBLC.

Question Number 006  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 212000K602

Question

Reactor power is 70%. Recirc flow converter #1 fails downscale. Which of the following correctly describes the effect of this failure?

- a. No effect
- b. Rod Block ONLY
- c. Half Scram ONLY
- d. Half Scram and Rod Block

Answer

d.

Reference

C.1, B.05.06

HIGHER

NEW

Knowledge of the effect that a loss or malfunction of the following will have on the RPS:  
Nuclear instrumentation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as there are both rod block and scram actuations.

Distractor B is incorrect as there are both rod block and scram actuations which may be a common misconception if the comparator is only regarded from a rod block perspective.

Distractor C is incorrect as there is also a rod block function.

Distractor D is correct as the flow converter downscale causes a comparator trip which results in a rod block. Also APRMs 1, 2, and 3 flow biased setpoints are 65.5 for scram and 53.6 for rod block due to the "w" term going to 0.

Question Number 007  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 215003K304

Question

A reactor startup was in progress. All IRMs were reading between 25 – 50 on range 4.

If a high worth control rod were withdrawn coincident with a loss of Uninterruptible Instrument AC Distribution Panel Y-30, what indications would the OATC see as he monitors the IRMs?

- a. IRMs 11, 12, 13, and 14 indication would fail as is
- b. IRMs 15, 16, 17, and 18 indication would fail as is
- c. IRMs 11, 12, 13, and 14 indication would fail downscale
- d. IRMs 15, 16, 17, and 18 indication would trend upscale

Answer

b.

Reference

C.4-B.09.13.E

HIGHER

NEW

Knowledge of the effect that a loss or malfunction of IRMs will have on the following: Reactor power indication.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as these indications would be expected to rise. These recorders are powered from Y-10.

Distractor B is correct as Y30 circuit 3 is the power supply to NR-7-B and D which are the IRM / APRM / RBM recorders on panel C-05. When power is lost to these recorders they fail as is.

Distractor C is incorrect as these indications would be expected to rise. These recorders are powered from Y-10.

Distractor D is incorrect as these indications would fail as is due to the loss of Y-30.

Question Number 008  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 215003A202

Question

Based on the indications provided on the following page, what is the expected plant response AND the appropriate operator action to be taken for this condition to continue the reactor startup?

- a. RMCS rod block ONLY, IRM 14 should be BYPASSED
- b. RPS half scram AND RMCS rod block, IRM 14 should be BYPASSED
- c. RPS half scram ONLY, IRM 14 function switch should be taken to STANDBY
- d. RPS half scram AND RMCS rod block, IRM 14 function switch should be taken to STANDBY

Answer

b.

Reference

C.6-005-A-21, B.05.06

HIGHER

MODIFIED

Ability to predict the impacts of the following on the IRMs; and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: IRM Inop condition.

Reference provided during exam: None (The "following page" is a picture of the C.R. 5-panel.)

JUSTIFICATION

Distractor A is incorrect as an RPS trip would also exist as stated below.

Distractor B is correct as with the mode switch not in run and IRM 14 Inop (as determined by the IRM power level NOT being HI HI). The IRM would generate both an RPS trip on channel A and an RMCS rod block. The ARP directs that the IRM be bypassed.

Distractor C is incorrect as an RMCS rod block would also exist and the function switch should be left in OPERATE.

Distractor D is incorrect as the function switch should be left in OPERATE.

Question Number 009  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 215004K201

Question

Which of the following supplies power to the detector and electronic circuitry to the Source Range Monitoring (SRM) System?

- a. 208 Vac system
- b. RPS power system
- c. 24 Vdc battery system
- d. 125 Vdc battery system

Answer

c.

Reference

B.05.01

MEMORY

BANK

Knowledge of electrical power supplies to the following: SRM channels/detectors.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this is the power supply to the SRM detector drive motors

Distractor B is incorrect as this is the power supply to the LPRMs and APRMs

Distractor C is correct as the SRMs are powered from the 24 Vdc battery system

Distractor D is incorrect as although a DC power, is not a power supply to the SRMs

Question Number 010  
 Exam Date 2005/05/12  
 Docket # 263  
 Reactor Type BWR-GE3  
 License Level R  
 Point Value 1.00  
 K/A 215005A107

Question

The reactor is operating at rated conditions. SPDS indicates the following information:

	1	2	3	4	5	6
APRM READING	103.5	101.4	99.2	102.4	102.0	99.8
APRM GAF	0.967	0.986	1.009	0.987	0.986	1.001

The indication from APRMs \_\_\_(1)\_\_\_ are conservative because thermal power is \_\_\_(2)\_\_\_ indicated power.

- |    | (1)     | (2)          |
|----|---------|--------------|
| a. | 1,2,4,5 | less than    |
| b. | 3,6     | greater than |
| c. | 3,6     | less than    |
| d. | 1,2,4,5 | greater than |

Answer

a.

Reference

C.2

HIGHER

BANK

Ability to predict and/or monitor changes in parameters associated with operating the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM controls including: APRM (gain adjustment factor)

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as APRMs at all times should read no lower than actual core power. If the AGAF is greater than 0.99 then the APRM needs adjustment. Thus any AGAF >0.99 would be non-conservative with respect to power operations because actual thermal power would be greater than indicated power.

Distractors B, C, and D are incorrect as they do not accurately describe the condition as discussed above.

Question Number 011  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 217000K107

Question

Which of the following would result in an automatic Group 5 isolation?

- a. ONE of the TWO high turbine exhaust pressure sensors greater than the setpoint.
- b. ONE of the TWO steam line flow differential pressure indicating switches greater than the setpoint.
- c. ONE of the FOUR groups of high area temperature switches greater than the setpoint.
- d. TWO channel "A" OR TWO channel "B" low steam line pressure below the setpoint.

Answer

b.

Reference

B.02.03

MEMORY

NEW

Knowledge of the physical connections and/or cause-effect relationships between RCIC and the following: Leak Detection.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this would result in a turbine trip, not an isolation.

Distractor B is correct as either of the two flow devices will provide the necessary signal necessary to cause a Group 5 isolation in this one-out-of-two logic scheme.

Distractor C is incorrect as the logic is a one-of-two-twice, and thus at least 2 TS must exceed the setpoint.

Distractor D is incorrect as the logic is a one-of-two-twice, and the "right two" ( 1 from channel A and 1 from channel B) detectors must exceed the setpoint.

Question Number 012  
 Exam Date 2005/05/12  
 Docket # 263  
 Reactor Type BWR-GE3  
 License Level R  
 Point Value 1.00  
 K/A 217000 2.4.2

Question

The reactor was operating at 100% power when the following sequence of events occurred:

- Group 1 Isolation
- All control rods inserted EXCEPT 22-31 which is at position 36
- HPCI initiation and injection
- RCIC initiation and injection
- RHR and Core Spray pumps are NOT running at this time
- RCIC area water level is 1 inch

Assuming no operator action occurred to this point, which EOPs should the crew enter at this time?

	C.5-1100 RPV Control	C.5-1200 Primary Containment Control	C.5-1300 Secondary Containment Control	C.5-2007 Failure to Scram
a.	YES	NO	YES	NO
b.	YES	YES	YES	NO
c.	NO	YES	YES	YES
d.	NO	YES	NO	YES

Answer

a.

Reference

Reference: C.5-1100, C.5-1200, C.5-1300

HIGHER

NEW

Knowledge of system set points/interlocks and automatic actions associated with EOP entry conditions.

Reference provided during exam: None

JUSTIFICATION

- Distractor A is correct as with both HPCI and RCIC injecting, RPV water level fell below -47 inches, thus exceeding the +9 inch EOP-1100 entry condition. Any secondary area water level above 0 inches required entry to EOP-1300.
- Distractor B is incorrect as any secondary area water level above 0 inches required entry to EOP-1300.
- Distractor C is incorrect as with RHR and Core Spray pumps not running at this time with no operator action, D/W pressure remained < 2 psig.
- Distractor D is incorrect as with only 1 control rod not fully inserted, EOP-2007 entry is not performed.

Question Number 013  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 218000K201

Question

Which one of the following supplies back-up power to the "B" Automatic Depressurization System (ADS) Logic?

- a. 125 Vdc Bus "A"
- b. 125 Vdc Bus "B"
- c. 120 Vac from UPS Y-70
- d. 120 Vac from UPS Y-80

Answer

a.

Reference

Reference: B.03.03

MEMORY

BANK

Knowledge of electrical power supplies to the following: ADS Logic.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as if the normal power supply fails to the "B" logic of ADS, the power monitoring relay will de-energize which allows 125 Vdc bus "A" alternate source to energize the "B" logic.

Distractors B, C and D are incorrect as although these sources of power are similar in voltage or type, they do not supply the back-up power to ADS logic "B".

Question Number 014  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 239002K402

Question

Which design function of the Low Low Set (LLS) System assists in preventing excessive hydraulic thrust loading on the Torus during a Group 1 isolation transient with a high decay heat history?

- a. Three SRVs are utilized to spread the loading.
- b. The 80 psig blowdown cycle between openings.
- c. The Scram signal permissive function in the LLS logic.
- d. The 20 second time delay between SRV closure and subsequent re-opening.

Answer

b.

Reference

M8107-025 Obj. 1 and 7, B.03.03

MEMORY

NEW

Knowledge of Relief / Safety Valves design feature(s) and/or interlocks which provide for the following: Minimizes containment fatigue duty cycles resulting from relief valve cycling during decay heat dominant late in an isolation transient (LLS Logic).

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the third valve is a redundant feature.

Distractor B is correct as if an SRV opened during a plant transient event, the 80 psig blowdown will ensure it recloses and the time required to re-pressurize to the mechanical open setpoint will be sufficient to allow elevated water legs to clear from the discharge lines. The function of LLS minimizes the possibility of an SRV reopening while an elevated water leg exists in the discharge line. The resulting water thrust load on the primary containment could exceed the design.

Distractor C is incorrect as this merely acts to initiate the logic.

Distractor D is incorrect as this design feature combines with the correct answer but the time delay is 10 seconds.

Question Number 015  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 259002K409

Question

During a reactor startup the mode switch had just been taken to RUN. Feedwater level control was on the Low Flow Feed Reg. Valve operating in AUTO.

Which one of the following correctly describes the INITIAL response for the Low Flow Feed Reg. Valve if the "A" Feedwater Flow instrument were to fail downscale?

The Low Flow Feed Reg. Valve would...

- a. OPEN because indicated feed flow would be less than steam flow.
- b. OPEN because indicated feed flow would be less than actual feed flow.
- c. NOT MOVE because the loss of the feed flow signal would result in a valve lockup.
- d. NOT MOVE because the feed flow signal would not be an input to the automatic level control logic.

Answer

d.

Reference

M8107L-046 Obj. 1-3, B.05.07

HIGHER

BANK

Knowledge of the Reactor Water Level Control System design features and/or interlocks which provide for the following: Single element control

Reference provided during exam: None

JUSTIFICATION

Distractors A and B are incorrect as no feed flow or steam flow input is received by the low flow valve.

Distractor C is incorrect as this condition will not result in a valve lockup.

Distractor D is correct as in automatic control the only input is from RPV water level for the Low Flow Reg. Valve.

Question Number 016  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 259002K301

Question

The plant was operating at 100% power with both Feed Reg. Valves (FRVs) in automatic control with the Master Controller set at 35 inches.

The feedwater level control system has the following level inputs:

- FW level instrument A reads 35 inches
- FW level instrument B reads 33 inches
- Safeguards instrument A reads 37 inches

If the 'A' feedwater level instrument failed downscale, what will be the effect on the Feed Water Level Control system?

Actual RPV water level will...

- a. remain constant.
- b. continuously rise.
- c. rise 2 inches and then remain constant.
- d. lower 2 inches and then remain constant.

Answer

c.

Reference

M8107L-046 Obj. 8, B.05.07

HIGHER

MODIFIED

Knowledge of the effect that a loss or malfunction of the Reactor Water Level Control System will have on the following: Reactor water level.

Reference provided during exam: None

JUSTIFICATION

Distractor C is correct because the system logic will select a new input signal. This will be the new median signal which would now be 33 inches which is 2 inches below the demanded set point which will cause RPV water level to be raised by 2 inches.

Distractors A, B, and D are all incorrect as they contain plausible misconceptions of how this system functions.

Question Number 017  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 261000A407

Question

With the reactor operating normally at rated conditions, HS-2988A, SBTG UNIT A 1 / 2 (Manual/Auto) is in AUTOMATIC.

Based on the following picture of FIC 2943, SBTG A LOOP FLOW INDICATING CONTROLLER, if a PCIS Partial Group 2 isolation occurred, the "A" SBTG System would...

- a. start, and achieve the required flow rate.
- b. start, but NOT achieve the required flow rate.
- c. NOT start, and NOT achieve the required flow rate.
- d. NOT start, the "B" SBTG System would start due to low flow after a 10 second delay.

Answer

a.

Reference

M8107L-008, B.04.02

HIGHER

NEW

Ability to manually operate and/or monitor in the control room: System flow.

Reference provided during exam: Picture of SBTG controller FIC 2943

JUSTIFICATION

Distractor A is correct as when an initiation signal is received, PCIS group 2 initiated SBTG and isolates Secondary Containment, and the controllers are normally placed in Manual.

Distractor B is incorrect as the controller is aligned in the normal configuration for auto initiation.

Distractors C and D are incorrect as the flow controller does not control the fan start signal, only the flow.

Question Number 018  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 262001K501

Question

The electrical grid and site transformers have been restored following a Loss of Normal Offsite Power. The following electrical configuration exists:

- Bus 15 is powered by 11 EDG
- Bus 16 is powered by 12 EDG
- Bus 14 is powered by 2R Transformer

The Control Room Supervisor directs you to transfer Bus 16 from the 12 EDG to Bus 14. Speed droop has been dialed in on the 12 EDG and 152-408/SS, SYNC 14/16 BUS TIE ACB 152-408 is ON. The synchroscope is rotating slowly in the COUNTER CLOCKWISE direction.

Which of the following correctly describes the operational implications of these synchroscope indications while preparing for breaker closure?

- a. 12 EDG speed must be RAISED to achieve proper synchroscope rotation for breaker closure because it is the RUNNING source.
- b. 12 EDG speed must be LOWERED to reverse the synchroscope rotation for breaker closure because it is the RUNNING source.
- c. No change is required as this is the correct synchroscope rotation to assure that some load remains on 12 EDG upon breaker closure.
- d. The 2R Load Tap Changer must be adjusted to RAISE system voltage because the Offsite source is the INCOMING source.

Answer

c.

Reference

M8107L-106 Obj. 15, E.2-10

MEMORY

BANK

Knowledge of operational implications of the following concepts as they apply to A.C. Electrical Distribution: Principle involved with paralleling 2 A.C. sources.

Reference provided during exam: None

JUSTIFICATION

Distractor C is correct as sync conditions are established by adjusting the 12 EDG speed and/or voltage. A note is included to notify the Operator that when paralleling across 152-408, Bus 16 is designated the RUNNING voltage and Bus 14 is designated the INCOMING voltage. As such, in order to assure that some load remains on 12 EDG upon closure of the breaker, the procedure call for having the sync scope rotating slowly in the SLOW (or counter-clockwise) direction.

Distractors A, B, and D are incorrect as each are a common misconception for this unique situation.

Question Number 019  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 262001 2.4.31

Question

Given the following:

- The reactor was operating at 75% in a normal electric plant line up with the 2R transformer in service
- Annunciator 8-B-9, NO. 2R XFMR LOCKOUT alarmed
- The alarm conditions have been confirmed

Based on the above, the operator should insert a manual scram due to...

- a. RPV low water level because both Feed Pump breakers trip.
- b. RPV high water level because both Recirc Pumps trip.
- c. Drywell high pressure because Drywell Cooling is lost.
- d. Condenser low vacuum because both Circ Water pump breakers trip.

Answer

d.

Reference

C.6-008-B-02, B.09.06

HIGHER

NEW

Knowledge of annunciators alarms and indications / and use of the response instructions.

Reference provided during exam: None

#### JUSTIFICATION

- Distractor A is incorrect as the 11 bus will auto xfer to 1R when the 11 bus residual voltage is below 25% of the normal rated voltage, thus the 11 RFP will restore RPV water level as power will be ~55% with the trip of both RR pumps.
- Distractor B is incorrect as RPV level experiences both the effects of shrink and a momentary loss of both RFPs until 11 RFP injects following the transfer to 1R.
- Distractor C is incorrect as the D/W cooling fans will be restored after power is restored. The increase in D/W pressure associated with the loss of cooling would not be excessive.
- Distractor D is correct as an automatic control scheme open circuit (break before make) transfers station power from the 2R to the 1R Transformer. Actions associated with this event are a loss of both recirc pumps and both circ water pumps. The ARP directs the verification of these auto actions and entry into applicable C.4s.

Question Number 020  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 262002K118

Question

Which ONE of the following will be affected upon a complete loss of Uninterruptible A.C. Distribution Panel Y-70?

- a. Stack "A" WRGM (Wide Range Gas Monitor)
- b. "A" Main Steam Line Radiation Monitor
- c. "B" Off-Gas Pretreatment Radiation Monitor
- d. "A" Control Room Heating and Ventilation and Emergency Filtration Train Radiation Monitor

Answer

a.

Reference

C.4-B.09.13.F, B.05.11

MEMORY

NEW

Knowledge of the physical connections and/or cause-effect relationships between Uninterruptible Power Supply and the following: Process Radiation Monitoring System. Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as it is powered from Y-70 ckt 11  
Distractor B is incorrect as it is powered from Y-50 (RPS)  
Distractor C is incorrect as it is powered from Y-40 (RPS)  
Distractor D is incorrect as it is powered from PNL B-34P

Question Number 021  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 263000K201

Question

During normal 100% power operation, a complete loss of the Division 1 250 Vdc battery occurred.

Which of the following is correct?

- a. RWCU pump trips
- b. Loss of indication and control for all SRVs
- c. Emergency Bearing Oil Pump is NOT available
- d. Main Steam Line Drain Inboard Isolation valve (MO-2373) will NOT close on a group 1 isolation signal

Answer

a.

Reference

C.4-B.09.09.A

HIGHER

NEW

Knowledge of electrical power supplies to the following: Major D.C. loads.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as this valve will loose indication power and result in a RWCU pump trip from the isolation logic.

Distractor B is incorrect as this is only true for SRVs E,F,G, and H.

Distractor C is incorrect as EBOP is powered from #17 250 Vdc battery

Distractor D is incorrect as inboard isolation valves are powered from AC sources (B4333 for this valve.

Question Number 022  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 264000K601

Question

The #11 EDG was in PTL and the air start system was depressurized and tagged out for planned maintenance. An electrical transient occurred which resulted in the following:

- 16 Bus powered by the #12 EDG
- 15 Bus lock out

Subsequently the air start system isolation was cleared and returned to normal, and the #11 EDG was left in PTL.

Which of the following is correct?

- a. One air bank started to recharge when the isolation was cleared and returned to normal.
- b. The Lister diesel must be aligned to the air compressor to recharge the air bank.
- c. The cross-tie from #11 EDG air to #12 EDG air bank must be opened to recharge the air system.
- d. LC-103 must be energized to provide a power supply to #11 EDG air compressors to allow air bank recharging.

Answer

a.

Reference

B.09.08

HIGHER

NEW

Knowledge of the effect that a loss or malfunction of the following will have on the Emergency Generators: Starting air.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the #11 and #12 EDGs each have 2 AC driven air compressors, one of each is powered from the opposite division (LC-103 / 104).

Distractors B, C, and D are incorrect as although they will recharge the air bank, none MUST be done in this situation.

Question Number 023  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 300000K501

Question

The plant experienced a Loss of Normal Off-site power concurrent with a LOCA. Electrical power was restored via the 13 Diesel.

The air system will be restored without operator action if just prior to the transient ...

- a. 11 compressor was in Lead.
- b. 13 compressor was in Standby.
- c. 13 compressor was in Remote Control.
- d. 14 compressor was in Remote Control.

Answer

d.

Reference

Reference: B.08.04

MEMORY

NEW

Knowledge of the operational implications of the following concepts as they apply to the Instrument Air System: Air Compressors.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the 11 compressor would be load shed and need to be manually restarted in this condition.

Distractors B and C are incorrect as there may be a misconception that the 13 compressor is powered from the 13 diesel, the compressor would be load shed and need to be manually restarted in this condition.

Distractor D is correct as an additional feature for the 14 compressor when in remote control is that it will automatically restart upon loss and subsequent restoration of power to the compressor (Panel P-105 via LC-108) if no trip signals are in. Therefore, during a LOCA concurrent with a loss of off-site power, operator action will not be necessary to restore the air system if 14 compressor is running in remote.

Question Number 024  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 209001A401

Question

Given the following conditions:

- A LOCA has occurred
- All ECCS systems injected into the RPV
- RPV water level was restored
- Core Spray and LPCI were secured per C.5-3205 (TERMINATE AND PREVENT)
- Drywell pressure was 3.5 psig and slowly rising
- RPV pressure was 150 psig and lowering

Which of the following describes the operation of the Low Pressure ECCS system(s) if RPV water level subsequently lowered to -50 inches and the system is needed for injection?

- a. RHR pump(s) will require manual restart and the injection valves will require manual re-alignment
- b. Core Spray pump(s) will require manual restart and the injection valves will require manual re-alignment
- c. Core Spray pump(s) will require manual restart, but the system injection valves will automatically align for injection
- d. RHR pump(s) will require manual restart and the system injection valves will automatically align for injection

Answer

b.

Reference

C.5-3205

HIGHER

BANK

Ability to operate and/or monitor in the control room: Core Spray pump.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the pumps are not shutdown per 3205.

Distractor B is correct as with the pumps in PTL, the pumps will not auto start on the RPV lo-lo signal and must be restarted manually and the injection valves must be manually opened.

Distractor C is incorrect as the valves must be manually aligned.

Distractor D is incorrect as the pumps are not shutdown per 3205 and injection valves will not auto realign.

Question Number 025  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 400000A103  
Question

[PICTURE OF RBCCW SYSTEM CONTROLS]

Given the above status of the RBCCW system and all other plant conditions normal for 100% reactor power.

What would be the automatic result if RBCCW header pressure lowered due to a leak in the system?

- a. At 30 psig annunciators 6-B-32, RBCCW LOW DISCH PRESS, AND 6-B-33, RBCCW STANDBY PUMP START would alarm.
- b. At 30 psig annunciator 6-B-32, RBCCW LOW DISCH PRESS, ONLY would alarm.
- c. At 40 psig annunciators 6-B-32, RBCCW LOW DISCH PRESS, AND 6-B-33, RBCCW STANDBY PUMP START would alarm.
- d. At 40 psig annunciator 6-B-32, RBCCW LOW DISCH PRESS, ONLY would alarm.

Answer

b.

Reference

B.02.05, C.6-006-B-32 (33)

HIGHER

NEW

Ability to predict and/or monitor changes in parameters associated with operating the CCWS controls including: CCW pressure.

Reference provided during exam: RBCCW Controls Picture

#### JUSTIFICATION

Distractor A is incorrect as the standby pump will not auto start in this condition.

Distractor B is correct as the low pressure annunciator should alarm at 30 psig and at that pressure the standby pump would start only if it was set up for standby as indicated by the white light. Since this light is NOT lit, the standby function will not occur.

Distractor C is incorrect as this is the wrong pressure and the standby pump will not auto start in this condition.

Distractor D is incorrect as this is the wrong pressure.

Question Number 026  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 223002A211

Question

During an ATWS condition, the CRS directed initiation of SBLC. The OATC successfully started and began injection with SBLC system 1. The operator now observes the following conditions:

- The "A" RWCU pump is running with 80 gpm flow through each demineralizer
- The Recirc Sample Line Isolation Valves are open
- The MSIVs are open
- RPV pressure is 910 psig and lowering
- RCIC is injecting
- RPV water level is -40 inches and lowering

Based on the above conditions which of the following actions are required?

- a. Initiate a RPV cooldown with Turbine Bypass Valves.
- b. RCIC should be secured.
- c. A group 3 isolation should be manually inserted.
- d. A group 1 isolation should be manually inserted.

Answer

c.

Reference

B.03.05, B.05.06

HIGHER

NEW

Ability to predict the impacts of the following on the PCIS and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Standby liquid initiation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is not correct as a cooldown would potentially add positive reactivity in this condition.

Distractor B is incorrect as with RPV level lowering, the use of RCIC is warranted to maintain RPV water level.

Distractor C is correct as the operator is required to verify that the RWCU pumps have tripped and group 3 isolation valves MO-2397, 2398, and 2933 close when SBLC is initiated from the control room.

Distractor D is incorrect as the MSIVs are kept open by bypassing the RPV lo-lo water level isolation.

Question Number 027  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 201001A212

Question

During a reactor startup the OATC reported that CRD Cooling Water differential pressure was rising and had gone upscale. Control Rod 02-23 was selected.

Predict the impact this could have on the CRD system AND what actions should be taken to mitigate the situation.

- a. Control rods drift IN, insert a manual scram.
- b. Control rods drift OUT, insert a manual scram.
- c. Control Rod 02-23 ONLY will drift, deselect this rod by taking the ROD SELECT POWER SWITCH to OFF.
- d. Annunciator 5-B-41 (CRD HI TEMPERATURE) alarms, open Pressure Control Valve MO-3-22.

Answer

a.

Reference

B.01.03, C.4-B.01.03.C

HIGHER

NEW

Ability to predict the impacts of the following in the CRDH System; and based in those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: High Cooling water flow.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as cooling water flows through the cooling water headers and into the under piston area via a port in the drive flange. As pressure in the cooling header rises, it may result in a CRD insert as the P under piston will be greater than the weight of the control rod. Rod selection will have no effect on this situation. The C-4 requires a manual scram be inserted if more than 1 rod drifts.

Distractor B is incorrect as cooling water is ported to the under piston side.

Distractor C is incorrect as Rod selection will have no effect on this situation.

Distractor D is incorrect as the indications would suggest a high flow condition and thus sufficient cooling water would be available for cooling.

Question Number 028  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 201002A402

Question

Which of the following will stop Control Rod insertion if the OATC selects a rod and turns the ROD OUT NOTCH OVERRIDE switch to the EMERG ROD IN position?

- a. SRM Rod Block
- b. Rod Block Monitor Rod Block
- c. Rod Worth Minimizer Insert Block
- d. Taking the ROD SELECT POWER SWITCH to OFF during rod motion

Answer

c.

Reference

B.05.05

MEMORY

NEW

Ability to manually operate and/or monitor in the control room: Emergency in/notch override switch.

Reference provided during exam: None

JUSTIFICATION

Distractors A and B are incorrect as these are withdraw blocks

Distractor C is correct as all rod movement control interlocks, except the RWM insert block, are bypassed when the EMERG ROD IN position is used.

Distractor D is incorrect as the K-9 relay will not de-energize the select matrix during rod movement.

Question Number 029  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 201003K602

Question

With normal accumulator pressure, what effect would a lowering RPV pressure have on control rod scram times? (assume initial RPV pressure is 1000 psig).

Control rod scram times would...

- a. become longer as RPV pressure lowered.
- b. become shorter as RPV pressure lowered.
- c. initially become longer and then get shorter as RPV pressure lowered.
- d. Initially become shorter and then get longer as RPV pressure lowered.

Answer

c.

Reference

B.01.02

HIGHER

NEW

Knowledge of the effect that a loss or malfunction of the following will have on the CRDM:  
Reactor pressure.

Reference provided during exam: B.01.02.06 figures 9 and 10.

JUSTIFICATION

- Distractor A is incorrect this is not true as this effect is not linear over the entire range of RPV pressure.
- Distractor B is incorrect this is not true as this effect is not linear over the entire range of RPV pressure.
- Distractor C is correct as reactor pressure lowers from 1000 psig to approximately 700 psig scram times get longer (fig. 10) and then from 700 psig to 100 psig, scram times shorten.
- Distractor D is incorrect as the opposite effect takes place.

Question Number 030  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 214000K104

Question

Rod testing was in progress at the end of a refueling outage. A group 2 control rod (1447) was selected with the following system conditions:

- Rod 14-47 is at position 00
- ROD NOTCH OVERRIDE switch is in OFF
- ROD SELECT POWER switch is in ON
- ROD DRIFT ALARM TEST switch is in TEST
- Rod Worth Minimizer mode switch is in BYPASS

Which one of the following statements describes the expected response if the ROD MOVEMENT CONTROL switch is momentarily placed in the ROD OUT NOTCH position?

Rod 14-47...

- a. does NOT move and no alarms are present.
- b. continuously withdraws and annunciator 5-A-3, ROD WITHDRAW BLOCK, alarms.
- c. moves to position 02 and annunciator 5-A-27, ROD DRIFT, alarms.
- d. moves to position 02 and annunciator 5-A-3, ROD WITHDRAW BLOCK, alarms.

Answer

c.

Reference

5-A-27, B.05.05

HIGHER

BANK

Knowledge of the physical connections and/or cause-effect relationships between RPIS and the following: RMCS.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the RWM is bypassed.

Distractor B is incorrect as continuous withdrawal is not an expected response and the rod block should not occur in this case.

Distractor C is correct as the expected response with the ROD DRIFT ALARM TEST switch in TEST is to produce a rod drift when the rod is moved as the test position defeats the selected and not moving part of the RPIS logic tie to RMCS. Continuous rod withdrawal is not designed to occur with the ROD NOTCH OVERRIDE switch in OFF.

Distractor D is incorrect as the rod block should not occur in this case.

Question Number 031  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 216000A301

Question

A reactor startup is about to commence. RPV water level is 35 inches as indicated on the Feedwater level instruments. Moderator temperature is 160°F.

Indicated level is \_\_\_(1)\_\_\_ actual level because the variable leg density is \_\_\_(2)\_\_\_ calibrated conditions for this level instrument.

- |    | (1)         | (2)         |
|----|-------------|-------------|
| a. | higher than | higher than |
| b. | the same as | the same as |
| c. | lower than  | higher than |
| d. | higher than | lower than  |

Answer

a.

Reference

B.01.01

HIGHER

BANK

Ability to monitor automatic operations of the Nuclear Boiler Instrumentation including:

Relationship between meter/recorder readings and actual parameter values.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as indicated level would be higher than actual level due to reference leg density being lower than variable leg density. This instrument is calibrated for rated conditions.

Distractors A, B, and D are all common misunderstandings of this concept.

Question Number 032  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 290002K404

Question

Which of the following describes the design feature of the Steam Dryer Assembly for moisture removal from the steam generated in the reactor?

Steam passes upward...

- a. through rotating vanes that reduce the high quality mixture to 1.0% by weight prior to exiting to the steam lines.
- b. through the steam dryer which provides a water seal to prevent water in the downcomer area from mixing with the steam entering the steam lines.
- c. over vanes which impart a rotational motion, the resultant centrifugal force separates the moisture from the steam.
- d. through an accordion type vertical assembly which removes moisture as the mixture passes over vertically standing vanes to 0.1% by weight.

Answer

d.

Reference

B.01.01

MEMORY

MODIFIED

Knowledge of Reactor Vessel Internals design feature(s) and/or interlocks which provide for the following: Moisture removal from generated steam.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as ~10% moisture steam is reduced to 0.1% by the dryer.

Distractor B is incorrect as the water seal prevents wet steam leaving the steam separators.

Distractor C is incorrect as this describes the design of the steam separator.

Distractor D is correct as the steam dryer are vane type assemblies (like an accordion) standing vertically. The steam dryer is designed to take steam at up to 10% moisture and reduce the moisture content to 0.1% by weight.

Question Number 033  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 233000K506

Question

Given the following information:

- A refueling outage with RPV head removal is in progress
- The last shutdown was 18 months ago
- 141 fuel bundles are planned to be replaced
- The Fuel Pool Cooling (FPC) system is operating in a normal line up

Which operational change(s) are procedurally anticipated for the FPC system to meet the cooling requirements of the Maximum Normal Heat Load?

Place the...

- a. second FPC pump in service.
- b. second FPC heat exchanger in service.
- c. second FPC pump and heat exchanger in service.
- d. RHR system in Fuel Pool assist mode during fuel transfer to the Fuel Pool.

Answer

b.

Reference

B.02.01

HIGHER

NEW

Knowledge of the operational implications of the following concepts as they apply to Fuel Pool Cooling and Cleanup: Maximum normal heat load.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this represents the requirements for an emergency condition.

Distractor B is correct as the maximum normal cooling mode assumes this system configuration to dissipate  $5.6 \times E6$  BTUs/hr for a normally scheduled refueling.

Distractor C is incorrect as this represents the requirements for an emergency condition.

Distractor D is incorrect as this represents the requirements for an emergency cooling full core off-load requirement.

Question Number 034  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 230000K507

Question

During a LOCA condition, the following conditions were present:

- RPV water level was 25 inches and stable
- RPV pressure was 500 psig and lowering
- Drywell pressure was 1.5 psig and lowering at 0.1 psig/min
- Torus pressure was 0 psig and lowering at 0.1 psig/min
- Torus Sprays was in service on RHR Loop 'A'

If the above parameters continued, with no operator action, what automatic action would initiate FIRST to attempt to maintain primary containment integrity?

- a. The Containment Spray Torus Inboard valve, Loop 'A' will close.
- b. The RHR Loop 'A' Discharge to Torus valve will close.
- c. The Torus to Drywell Vacuum Breakers will open.
- d. The Reactor Building to Torus Vacuum Breakers will open.

Answer

d.

Reference

Reference: B.04.01, B03.04, C.5-1200

HIGHER

NEW

Knowledge of the operational implications of the following concepts as they apply to RHR Torus Spray: Vacuum breaker operation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as these valves will close at approximately 0.75 psig in the drywell. (P&ID 143 PS 10-119A-D)

Distractor B is incorrect as this valve does not receive an auto close signal.

Distractor C is incorrect as there is a positive pressure in the D/W relative to the torus.

Distractor D is correct as the primary containment atmospheric control system prevents the primary containment from exceeding the external design pressure of the primary containment. The relief valves are designed to be fully open at 0.5 psid and begin to open at 10 inches of water when in the auto position.

Question Number 035  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 219000K301

Question

A LOCA had occurred. Torus temperature was 125°F and stable with all available Torus cooling in service. Adequate core cooling was being maintained by one Core Spray pump. Subsequently a loss of normal offsite power (LONOP) occurred.

Which combination of pumps should be maintained by the crew if only one EDG started, in order to ensure adequate core cooling and continue to mitigate the Torus temperature rise?

- a. 1 RHR Pump, 1 RHRSW Pump, 1 Core Spray Pump
- b. 2 RHR Pumps, 2 RHRSW Pumps, 1 Core Spray Pump
- c. 2 RHR Pumps, 1 RHRSW Pump, 1 Core Spray Pump
- d. 1 RHR Pump, 2 RHRSW Pumps, No Core Spray Pump

Answer

a.

Reference

Reference: B.03.04

MEMORY

NEW

Knowledge of the effect that a loss or malfunction of the RHR Torus Cooling System will have on the following: Suppression pool temperature control.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as a caution statement in B.03.04-05 Placing RHR in Service During Abnormal and Emergency Conditions With a Loss of Normal Off-site Power states that due to EDG transient loading capability, a single EDG may only provide power to three large motors (RHRSW, Core Spray, or RHR) at one time. Since 1 Core Spray pump was maintaining adequate core cooling, 1 Core spray pump should be in service, that would leave 1 RHR and 1 RHRSW pumps available for Torus cooling.

Distractor B and C are incorrect as this would potentially overload the EDG.

Distractor D is incorrect as this would not continue to maintain adequate core cooling.

Question Number 036  
 Exam Date 2005/05/12  
 Docket # 263  
 Reactor Type BWR-GE3  
 License Level R  
 Point Value 1.00  
 K/A 245000 2.4.50

Question  
 Given the following:

- The reactor was operating at rated conditions
- Main Generator Amps were 18,000
- Stator Cooling flow was 325 gpm.

A problem with the Stator Cooling flow control valve resulted in the following time line for operator actions to this event:

Time	Stator Cooling Flow (gpm)	Main Generator Amps
1500	325	18,000
1501	280	18,000
1502	244	17,000
1503	200	16,500
1504	120	13,500
1505	120	7000
1506	120	3600

Based on the given conditions and time line, which of the following is correct?

- a. At 1502 annunciator 8-A-17 (NO.1 GENERATOR COOLING WATER FAILURE) initially activated.
- b. At 1503 a turbine runback should have initiated and then reset at 1505.
- c. At 1504 a turbine trip should have occurred, a manual trip is required.
- d. At 1505 a turbine trip should have occurred, a manual trip is required.

Answer

c.

Reference

B.06.02.04, 8-A-17, 83-A-1, 83-A-7

HIGHER

NEW

Ability to verify alarm setpoints and operate controls identified in the alarm response manual.

Reference provided during exam: B.06.02.04-06 figure 2 (Current flow comparator)

JUSTIFICATION

Distractor A is incorrect as the alarm would initially come in at 1501

Distractor B is incorrect as the runback would initiate at 1502 and it did not reset

Distractor C is correct as with Stator flow <245 gpm for 2 minutes, an automatic turbine trip should have occurred. Per the ARP, the operator should verify automatic

actions. Verify is defined as observe that they happened or manually initiate them.

Distractor D is incorrect as the turbine trip should have occurred at 1504

Question Number 037  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 259001A103

Question

The reactor was operating at 100%, with electrical loads being supply from the 2R transformer, when 11 Reactor Feed Pump (RFP) tripped. Recirc Pumps ran back and RPV water level is 20 inches and rising.

Which of the following control room indications could be used to ensure RFP amperage is within procedural limits?

The difference between \_\_\_(1)\_\_\_ amperes reading on C08 and \_\_\_(2)\_\_\_ amperes reading on C04.

- |    | (1)                               | (2)                   |
|----|-----------------------------------|-----------------------|
| a. | 2R XFMR SEC to 12 BUS ACB 152-201 | 12 MG SET DRIVE MOTOR |
| b. | 2R XFMR SEC to 14 BUS ACB 152-401 | 12 MG SET DRIVE MOTOR |
| c. | 2R XFMR SEC to 11 BUS ACB 152-101 | 11 MG SET DRIVE MOTOR |
| d. | 1R XFMR SEC to 12 BUS ACB 152-202 | 12 MG SET DRIVE MOTOR |

Answer

a.

Reference

B.06.05

HIGHER

NEW

Ability to predict and/or monitor changes in parameters associated with operating the Reactor Feedwater System controls including: RFP motor amps.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the only loads off the 12 Bus are the 12 RFP and the 12 RRMG set, thus the difference in 2R XFMR secondary windings amps and MG amps would be a very close approximation of 12 RFP amps.

Distractor B is incorrect as the running RFP is powered from the 12 bus.

Distractor C is incorrect as this is the wrong bus for the RFP and MG set.

Distractor D is incorrect as 2R would be the normal supply (1R would read ~0 amps).

Question Number 038  
 Exam Date 2005/05/12  
 Docket # 263  
 Reactor Type BWR-GE3  
 License Level R  
 Point Value 1.00  
 K/A 290003K304

Question

The following conditions exist:

- Control Room Ventilation is in Normal Mode B
- Filter Train Fan V-ERF-12 Selector Switch is in AUTO LEAD

What would be the final condition of the following components/parameters if the Outside Air Intake Rad Monitors RM-9021A and RM-9021B failed upscale?

	Air Conditioner B	Return Air Fan B	12 Filter Train Fan	Control Room Press
	V-EAC-14B	V-ERF-14B	V-ERF-12	to Admin/Rx bldg $\Delta P$
a.	Running	Running	Running	Positive
b.	Running	Running	Off	Negative
c.	Running	Running	Running	Negative
d.	Off	Off	Running	Positive

Answer

a.

Reference

M-8107L-049, Obj 7, B.08.13

Higher

MODIFIED

Knowledge of the effect that a loss or malfunction of the Control Room HVAC will have on the following: Control room pressure.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as Rad monitors RM-9021A and RM-9021B initiate the High Radiation Mode of CRV/EFT at greater than or equal to 1 mr/hr. The High Radiation mode would start the EFT fan that was in Lead and the CRV Normal Mode B fans/air conditioners would remain running. The supply of outside air should pressurize the Control Room with respect to all adjacent areas.

Distractors B and C are incorrect as the control room pressure is designed to remain positive in this condition.

Distractor D is incorrect as ALL three fans would be running in this mode.

Question Number 039  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295004A202

Question

250V DC battery #16 is out of service for maintenance. Several annunciators alarm, including 8-C-24 (NO. 104 TRANS 4.16 BKR TRIP) and 20-B-09 (DIVISION II – 125 & 250V DC TROUBLE).

What effect will this have on plant systems?

- a. No D.C. loads are lost
- b. The Emergency Seal Oil Pump is unavailable
- c. HPCI would be unavailable to inject
- d. RCIC would be unavailable to inject

Answer

c.

Reference

B.9.9, C.4-B.9.09.A, C.6-008-C-24, C.6-020-B-09

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER: Extent of partial or complete loss of D.C. power.

Reference provided during exam: None

JUSTIFICATION

Distractor A is not correct as it is powered from Div I 250V DC

Distractor D is not correct as it is powered from Div I 250V DC

Distractor C With the 16 battery initially OOS, the alarms indicate that power has been lost to Div II 250V DC (loss of 480V AC MCC 104 which feeds the battery chargers and the alarm to indicate low voltage on the Div II 250V DC bus). The HPCI Aux. Oil Pump is powered from this source and without the Aux Oil Pump, HPCI will not start.

is not correct as it is powered from Non-essential 250V DC

Question Number 040  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295005K205

Question

Which of the following describes the expected position of the Spill Valves and Non-Return Check Valves upon a Main Turbine trip?

	Spill Valves	Non-Return Check Valves
a.	OPEN	CLOSED
b.	CLOSED	OPEN
c.	OPEN	OPEN
d.	CLOSED	CLOSED

Answer

a.

Reference

B.6.1, B.6.5

MEMORY

BANK

Knowledge of the interrelations between MAIN TURBINE GENERATOR TRIP and the following: extraction steam system

Reference provided during exam: None

JUSTIFICATION

Distractor A The Spill Valves are interlocked to OPEN upon a turbine trip. The Non-Return Check Valves are swing check to prevent backflow and are expected to close upon a turbine trip.

Distractor B is not correct as this is opposite of design

Distractor C is not correct as the Non-return valves are expected to close

Distractor D is not correct as the Spill Valves are expected to open

Question Number 041  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295006 2.4.11

Question

Which of the following abnormal procedures require that all immediate operator actions be performed AND executed in the order specified in the procedure?

- a. C.4-A, REACTOR SCRAM
- b. C.4-B.01.03.C, CONTROL ROD DRIFTING
- c. C.4-C, SHUTDOWN OUTSIDE CONTROL ROOM
- d. C.4-B.05.01.02.A, CONTROL OF NEUTRON FLUX OSCILLATIONS

Answer

a.

Reference

Reference: C.4. , C.4-A

MEMORY

NEW

Knowledge of abnormal condition procedures.

Reference provided during exam: None

JUSTIFICATION

Distractor A The general instructions for Abnormal Procedures require immediate actions to be committed to memory, and with the exception of C.4-A, may be performed in any order. Therefore the immediate actions for C.4-A must be performed in the prescribed order which is as stated in the answer.

Distractors B, C, and D are incorrect because they are not required to be performed at all times or be executed in the specific order prescribed by the procedure.

Question Number 042  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295016K303

Question

C.4-C, SHUTDOWN OUTSIDE THE CONTROL ROOM contains the following CAUTION Statement:

“Do not operate any transfer switches on Panel C-292 before verifying the switch lineup per Table 1 as appropriate.”

What is the basis for this Caution?

- a. To minimize any electrical transient in the control power circuits resulting from transferring control.
- b. To ensure automatic system features will be initiated to allow safe shutdown of the reactor.
- c. To minimize the potential of a postulated hot short from repositioning equipment listed on Table 1.
- d. To prevent inadvertent system initiation which would occur if the switches were not in the correct lineup.

Answer

d.

Reference

C.4-C

MEMORY

NEW

Knowledge of the reasons for the following responses as they apply to CONTROL ROOM ABANDONMENT: Disabling control room controls.

Reference provided during exam: C.4.C Table 1

JUSTIFICATION

Distractor A is not correct because control power is not transferred

Distractor B is not correct because the 12 EDG should be held off as long as possible since this will result in a Bus 16 load shed.

Distractor C is not correct because this is the reason that the Rod Insertion Switch is placed in the INSERT position

Distractor D Is correct because Table 1 establishes the required control switch lineup for switches which do not have a spring return to normal position function or switches which have indicating flags. This lineup is established prior to the system being transferred to the ASDS Panel. The initial control switch lineup in Table 1 prevents inadvertent system initiation which would occur if the switches were not in the correct position.

Question Number 043  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295003 2.1.11

Question

The Reactor Mode Switch is in RUN. The 12 EDG is tagged out for scheduled maintenance. The following conditions are reported to the Control Room:

- 11 EDG Bank 1 starting air system receiver pressure is 120 psig
- 11 EDG Bank 2 starting air system receiver pressure is 117 psig

Which of the following is the correct Technical Specifications action to perform?

- a. Declare 11 EDG Inoperable within 1 hour
- b. Take action to place the plant in Cold Shutdown
- c. Restore both starting air receiver bank pressure to >165 psig within 48 hours
- d. Restore one starting air receiver bank pressure to >165 psig within 7 days

Answer

b.

Reference

Tech Spec 3.9.B.3.c.3

MEMORY

MODIFIED

Knowledge of less than one-hour technical specification action statements for systems.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this action would be required immediately.

Distractor B is correct as T.S. states "With the Reactor Mode Switch in Run...with both diesel generator starting air receivers pressure <125 psig, immediately declare the associated EDG inoperable". Since the 12 EDG was already inoperable, the plant shall be placed in the cold shutdown condition.

Distractor C is incorrect as this would only apply if at least one of the receivers pressure was >125 psig.

Distractor D is incorrect as this would apply only if one receiver pressure was >165 psig.

Question Number 044  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295018K201

Question

The reactor was operating at 100% power. Control Room annunciator 6-B-32 (RBCCW LOW DISCH PRESS) alarms. Low RBCCW system pressure is verified and the standby pump will NOT start.

Which one of the following will AUTOMATICALLY occur if this condition continues?

- a. Both Reactor Recirc pumps will trip.
- b. The FPCC demineralizer will isolate.
- c. The running CRD pump will trip.
- d. The RWCU pump will trip.

Answer

d.

Reference

C.4-B.2.5.A

MEMORY

BANK

Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER and the following: System loads.

Reference provided during exam: None

JUSTIFICATION

Distractors A, B, and C are incorrect because there are no automatic functions associated with the loss of RBCCW with these systems even though equipment damage may be a consequence of prolonged operation without cooling water.

Distractor D The RWCU system will isolate at 140°F downstream of the RWCU pumps.

Question Number 045  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295018K301

Question

Given the following conditions:

- The reactor was operating at rated conditions.
- A leak has occurred into the RBCCW system from the #11 Recirc Pump upper seal

C.4-B.2.5.B (LEAK INTO RBCCW) requires the operator to shutdown and isolate the #11 Recirc Pump instead of isolating RBCCW to the Drywell to prevent which of the following?

- a. Loss of the Drywell Coolers
- b. Loss of both Recirc Pumps
- c. Over pressurization of the RBCCW piping in the Drywell
- d. Recirc pump seal leakage becoming greater than that designed to be limited by the breakdown bushing

Answer

c.

Reference

C.4-B.2.5.B

MEMORY

NEW

Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER: Isolation of non-essential heat loads: Plant-Specific

Reference provided during exam: None

JUSTIFICATION

Distractor C The procedure requires the shutdown and isolation of the recirc pump based on IEIN 89-54. If there was a large seal HX leak the capacity of the RBCCW piping relief valves may be exceeded.

Distractors A, B, and D are not discussed as the basis of this action in the procedure, but are plausible rationale.

Question Number 046  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295019A201

Question

Given the following:

- The reactor was at rated conditions
- Instrument Air header pressure is lowering due to a leak
- Actions per C.4-F (RAPID POWER REDUCTION) to lower power are in progress
- An automatic scram occurs
- Instrument Air pressure was 69 psig and lowering at the time of the scram

The resulting scram was due to which of the following?

- a. High RPV water level due to FW Low Flow valve failed open at 80 psig
- b. High RPV water level due to FW Regulating valves lock at 75 psig
- c. Low RPV water level due to FW Regulating valves failed close at 80 psig
- d. Low RPV water level due to FW Low Flow valve lock at 75 psig

Answer

b.

Reference

C.4-B.8.4.1.A

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR: Instrument air system pressure.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect, as the low flow valve does not open fail open until 75 psig

Distractor B When Inst. Air pressure drops to 75 psig, the main feedwater reg. valves will lock up. If an attempt is made to reduce recirc flow with the feed reg. valves locked in position, RPV level will increase as steam flow decreases. This could result in a Turbine trip and resultant reactor scram.

Distractor C is incorrect, as the main FW reg. valves do not fail in the closed direction

Distractor D is incorrect as the low flow valve does not fail locked in the condition

Question Number 047  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295021A201

Question

During a cooldown for an upcoming RFO, Shutdown Cooling was terminated due to an equipment malfunction. Reactor pressure was 20 psig at the time of the event and 15 minutes later it has risen to 40 psig.

Which of the following best describes the HOURLY heat-up rate ( $^{\circ}\text{F/hr}$ ) using the past 15 minutes data?

- a.  $29^{\circ}\text{F/hr}$
- b.  $116^{\circ}\text{F/hr}$
- c.  $156^{\circ}\text{F/hr}$
- d.  $308^{\circ}\text{F/hr}$

Answer

b.

Reference

C.4-B.3.4.A, Steam Table

HIGHER

MODIFIED

Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING: Reactor water heatup/cooldown rate

Reference provided during exam: Steam Table

JUSTIFICATION

Distractor A is incorrect, as this number would have to be multiplied times 4 to obtain the hourly rate.

Distractor B 20 psig is  $\sim 35$  psia which would be  $\sim 258^{\circ}\text{F}$ , 40 psig is  $\sim 55$  psia which would be  $\sim 287^{\circ}\text{F}$ .  $(287 - 258) = 29$ .  $29 \times 4 = 116$ .

Distractor C is incorrect as it is obtained by using the psig figures vice converting the pressures to psia

Distractor D is incorrect as it is obtained by subtracting  $\sim 15$  psi from the psig figures to obtain the psia conversions

Question Number 048  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295024A120

Question

The reactor was operating at 100% power with both SBGT Trains in Auto/Standby lineup per B.04.02-05 (SECONDARY CONTAINMENT/STANDBY GAS TREATMENT) when the following sequence occurs:

- Drywell pressure is 2 psig and rising
- SBGT Train "A" starts
- After 5 minutes Annunciator 24-A-2A (LOW FLOW 3000 CFM) alarms
- SBGT Train "A" air flow is 2500 CFM

Which one of the following describes the expected automatic response for SBGT Train "B" from the time the initiation signal was received?

Started when...

- a. the Low Flow annunciator came in.
- b. the 30 sec low flow time delay relay timed out.
- c. the Group 2 signal was received, and continued to run.
- d. the Group 2 signal was received, shut down, and then restarted when the annunciator came in.

Answer

a.

Reference

Reference: C.6-024-A-02A, B.04.02

MEMORY

MODIFIED

Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE:

Standby gas treatment/FRVS: Plant-Specific.

Reference provided during exam: None

JUSTIFICATION

Distractor A In Auto/Standby with D/W pressure > 2 psig, SBGT Train "A" starts. SBGT Train "B" remains in STBY until a low flow condition of <2800 CFM for is present. At that time SBGT "B" will auto start.

Distractor C and D are incorrect as the "B" train does not initially start in auto.

Distractor B is incorrect as the 30 second time delay prevents the low flow annunciator on initial actuation and in this case the A train has been running for 5 minutes.

Question Number 049  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295026A202

Question

An ATWS has occurred and SRVs are being used to control RPV pressure.

Which one of the following conditions would require an Emergency Depressurization?

	<u>Torus Temp</u>	<u>RPV Pressure</u>	<u>Torus Water Level</u>
a.	160°F and rising	500 psig and lowering	+1 foot and stable
b.	180°F and stable	400 psig and lowering	-2 feet and lowering
c.	180°F and lowering	800 psig and rising	+2 inches and rising
d.	200°F and rising	700 psig and rising	0 inches and stable

Answer

d.

Reference

C.5.1-1000

HIGH

BANK

Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: Suppression pool level.

Reference provided during exam: HCTL Graph (EOPs)

JUSTIFICATION

Distractors A, B, and C all result in conditions where the limit is being less challenged.

Distractor D For a stable torus level, this combination of torus temp / RPV pressure is above the HCTL curve.

Question Number 050  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295028K305

Question

The requirement to scram the reactor when Drywell Temperature cannot be maintained below 281°F is based on which one of the following?

- a. RPV level instrument inaccuracies.
- b. To allow Drywell Sprays to be initiated.
- c. To reduce the rate of energy production to the Drywell prior to a blowdown.
- d. To allow the inboard MSIVs to be CLOSED before exceeding their qualification temperature.

Answer

c.

Reference

C.5.1-1200

MEMORY

BANK

Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE: Reactor SCRAM.

Reference provided during exam: None

JUSTIFICATION

Distractors A, and D are incorrect as although these may occur; they are not the basis of the action.

Distractor B is incorrect as there is no EOP requirement that the reactor be scrammed prior to the initiation of D/W sprays. To meet the DSIL curve requirements, D/W pressure must be greater than 2 psig which would provide the automatic scram.

Distractor C The scram reduces the rate of energy production and thus the heat input to the Drywell.

Question Number 051  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295030K102

Question

Which of the following curves provides guidance to prevent system damage due to air entrainment during transient conditions?

- a. RHR NPSH Limit
- b. Heat Capacity Limit
- c. ECCS Vortex Limit
- d. Pressure Suppression Pressure

Answer

c.

Reference

C.5.1-1000

MEMORY

BANK

Knowledge of the operational implications of the following concepts as they apply to LOW SUPPRESSION POOL WATER LEVEL: Pump NPSH

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this limit precludes pump damage due to low NPSH

Distractor B is incorrect as this limit precludes Torus temperature and/or pressure from exceeding design limits.

Distractor C The Vortex limit is the lowest torus water level at which air entrainment is not expected to occur.

Distractor D is incorrect as it ensures the pressure suppression function of the containment is maintained

Question Number 052  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295031K101

Question

Given the following conditions:

- 3 ADS valves are open per C.5-2002 (EMERGENCY DEPRESSURIZATION)

Place the following in the order of preference (most desirable to least desirable) that assures adequate core cooling.

1. RPV water level –120 inches with injection from CRD
2. RPV water level –155 inches with injection from LPCI
3. RPV water level –165 inches with injection from Core Spray

- a. 1, 2, 3
- b. 2, 1, 3
- c. 3, 2, 1
- d. 1, 3, 2

Answer

d.

Reference

C.5.1-1000

HIGHER

MODIFIED

Knowledge of the operational implications of the following concepts as they apply to REACTOR

LOW WATER LEVEL: Adequate core cooling.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect, as 2/3 core height with Core Spray is preferred over steam cooling with injection.

Distractors B and C are incorrect because they do not begin with core submergence

Distractor D Submergence is the preferred method for cooling the core. The core is adequately cooled by submergence if RPV water level is above the top of the active fuel. The order of preference is core submergence, 2/3 height, steam cooling with injection.

Question Number 053  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295037 2.4.6

Question

Which of the following is the most effective method of preventing or suppressing core instabilities during a high power ATWS condition (no control rod movement) initiated by a Group 1 isolation?

- a. Runback the Recirc Pumps
- b. Prompt RPV level reduction
- c. Prevent Core Spray injection
- d. Stabilize RPV pressure below 1056 psig

Answer

b.

Reference

C.5.1-2007

MEMORY

NEW

Knowledge of event based EOP mitigation strategies.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect, as this required action reduces core flow and makes oscillations more likely.

Distractor B Core instabilities may occur in a BWR under high power, low flow conditions. These conditions will be present in this condition. For large power oscillations, local fuel damage cannot be precluded. Prompt level reduction is the most effective method of preventing or suppressing power oscillations.

Distractor C is incorrect, as this action has no significant effect on the problem

Distractor D is incorrect as this action prevents an overall power excursion due to the addition of cold water.

Question Number 054  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295038K302

Question

Given the following:

- The reactor is operating at rated conditions
- Off-gas Storage is bypassed due to high main condenser in leakage
- Annunciator 259-A-5, STACK EFFLUENT HIGH RADIATION, is in alarm
- Annunciator 259-A-1, STACK EFFLUENT HI-HI RADIATION, is in alarm
- Annunciator 259-A-9, STACK EFFLUENT MONITOR INOP, is in alarm
- Stack WRGM Channel 'A' indicates upscale
- Stack WRGM Channel 'B' has an INOP trip

Which of the following actions should occur for the above stated conditions?

- a. Off-gas Recombiner Isolation Valves AO-1085A/B close immediately.
- b. Off-gas Recombiner Isolation Valves AO-1085A/B close after a time delay.
- c. Off-gas Line Isolation Valve AO-1928, Off-gas Line Drain Isolation Valve AO2353, and Compressed Gas Storage to Stack Isolation Valve AO-7677 close immediately.
- d. Off-gas Line Isolation Valve AO-1928, Off-gas Line Drain Isolation Valve AO2353, Compressed Gas Storage to Stack Isolation Valve AO-7677, and Offgas Storage Bypass Valve HCV-7583 close immediately.

Answer

c.

Reference

B.05.11, C.4-B.02.04.A, B.04.02

HIGHER

NEW

Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following:

Offgas system

Reference provided during exam: None

JUSTIFICATION

Distractors A and B are incorrect as they represent actions associated with the Off-gas Pre-treatment process radiation monitors.

Distractor C The trips of the Stack Gas Radiation Monitors are arranged such that two HI-HI alarms, two INOP alarms, or a HI-HI alarm combined with an INOP in the opposite channel will, when the recombiners are operating, secure the following flow paths to the stack: Off-gas line, Off-gas line drain, and compress gas storage to stack.

Distractor D is incorrect because the Off-gas storage bypass valve does not receive a close signal (the path is isolated by the stack isolation valve).

Question Number 055  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 600000A105

Question

Heavy toxic smoke is being generated due to a fire in the vicinity of Smoke Detector SD-9070, located in the outside air intake of the Emergency Filtration Treatment System (EFT). Annunciator 242-A-18, CR AIR INTAKE SMOKE/DET TRBL is in alarm.

Which of the following actions are required?

- a. Manually place the EFT in the Recirculation Mode
- b. Manually place the EFT in the High Radiation Mode
- c. Verify the EFT has automatically shifted to the Recirculation Mode
- d. Verify the EFT has automatically shifted to the High Radiation Mode

Answer

a.

Reference

C.6-020-22, C.4-J, and B.08.13

MEMORY

NEW

Ability to operate and/or monitor the following as they apply to PLANT FIRE ON SITE: Plant and control room ventilation systems.

Reference provided during exam: None

JUSTIFICATION

Distractor A The operator is required to manually place the CRV EFT in the recirculation mode. There is no automatic alignment for this condition.

Distractors B and D are incorrect as this mode is not required for this condition.

Distractor C is incorrect as there is no automatic alignment for this condition.

Question Number 056  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295001A107

Question

A reactor startup was in progress per C.1 Startup Procedures. The 12 Reactor Recirc pump tripped and the following conditions existed 2 minutes later:

- 11 recirc jet pump flow is 26Mlb/hr
- 12 recirc jet pump flow is 3Mlb/hr
- SPDS indicates 29Mlbm/hr
- Reactor Power is 65%

Which region of the Power – Flow Operating Map would the OATC determine the plant to be in?

- a. unrestricted
- b. buffer
- c. exclusion
- d. operation NOT allowed

Answer

d.

Reference

C.4-B.05.01.A

HIGHER

NEW

Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION: Nuclear boiler instrumentation system.

Reference provided during exam: Power - Flow Operating Map (C.4-B.05.01.02.A)

JUSTIFICATION

Distractor A is incorrect as this adds the idle loop flow and total core flow.

Distractor B is incorrect as this adds the idle loop flow.

Distractor C is incorrect, as this does not subtract the idle loop flow.

Distractor D To determine total core flow, the idle jet pump flow must be subtracted from the running jet pump flow due to reverse flow in the idle loop because the total core flow indication goes through a summer logic.

Question Number 057  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295023K304

Question

Which one of the following is performed to initiate a reactor scram in time to prevent fuel damage due to errors occurring during refueling?

The removal of shorting links to allow \_\_\_\_\_ RPS trip(s) to be non-coincident.

- a. ONLY the SRM
- b. ONLY the APRM
- c. ONLY the SRM AND IRM
- d. ALL neutron monitoring instrumentation

Answer

a.

Reference

USAR section 14, 9007

MEMORY

NEW

Knowledge of the reasons for the following responses as they apply to REFUELING ACCIDENTS: Non-coincident SCRAM function.

Reference provided during exam: None

JUSTIFICATION

Distractor A Procedure 9007, PROCEDURE FOR MOVING FUEL INTO, OUT OF, AND WITHIN THE CORE, requires the removal of RPS shorting links, which insert the SRM HI-HI trip and make that trip non-coincident. Prior to 1989 MNGP enabled both the SRM and IRM trips to be non-coincident, but LERs 89-024 lead to the current procedure requirement.

Distractors B, C, and D are not performed at MNGP to support this to mitigate a refueling accident.

Question Number 058  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295025A202

Question

The Reactor is operating at 75% power. Which of the following would result in a lower reactor power?

- a. Inadvertent injection to the RPV with HPCI.
- b. One Turbine Control Valve closing.
- c. Condenser vacuum changing from 2.3 to 1.7 psia.
- d. Main Steam Pressure Regulator setpoint lowering.

Answer

d.

Reference

C.4-B.05.09.B

HIGHER

MODIFIED

Ability to determine and/or interpret the following as they apply to HIGH REACTOR

PRESSURE: Reactor power.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect, as this would cause a power increase due to lowering inlet subcooling

Distractor B is incorrect as the other TCVs and TBPVs would control RPV pressure to mitigate a scram condition on APRMs or RPV pressure

Distractor C is incorrect, as an improving condenser vacuum would improve MWe, but not reactor power

Distractor D A decrease in reactor pressure results from the TCVs and TBPVs opening as the setpoint for the regulator decreases. The increased steam demand causes RPV pressure to decrease. If the failure is not corrected within 15 seconds, RPV pressure could continue to decrease until the MSIVs isolate at 840 psig with the reactor mode switch in run.

Question Number 059  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295002A201

Question

The Reactor was operating at 100% power. Annunciator 5-B-46 (CONDENSER LOW VACUUM) alarmed and reactor power was lowered to 75%. Condenser vacuum readings indicated on SPDS are as follows:

- 11 LP TURB EXH 7.6 In. Hga
- 12 LP TURB EXH 6.8 In. Hga.

Which one of the following actions should now be performed?

- a. Insert a manual scram
- b. Continue to lower reactor power
- c. Insert a manual scram only when both LP Turbine exhaust reaches 7.5 In. Hga
- d. Insert a manual scram if the Alert Range is NOT exited within 20 minutes

Answer

a.

Reference

C.4-B.06.03.A

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to LOSS OF MAIN CONDENSER VACUUM: Condenser vacuum/absolute pressure.

Reference provided during exam: Turbine Exhaust Pressure Limits Curve

JUSTIFICATION

Distractor A is correct because if either LP turbine exhaust pressure enters the SCRAM REQUIRED region. a manual scram is required.

Distractor B is incorrect as this would only be correct if neither LP turb exh pressure exceeded the SCRAM REQUIRED region.

Distractor C is incorrect as the scram is required if either LP turb exhaust pressure exceeds the SCRAM REQUIRED region.

Distractor D is incorrect as only if both LP turb exhaust pressures are in the ALERT range.

Question Number 060  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295010K204

Question

The reactor was operating at 100% power when the following occurred:

- PCV-3332 (CTMT N2 MAKEUP PRESS CONTROL) fails, resulting in excess supply of nitrogen to the Drywell
- Annunciator 20-A-48 (NITROGEN MAKEUP HIGH PRESSURE) is in alarm

This condition will be automatically stopped FIRST by which one of the following actuations?

- a. CV-3267 (TORUS N2 MAKEUP ISOLATION) will close when Drywell Pressure reaches 1.5 psig
- b. PCV-3281 (N2 PURGE PCV) will close when pressure upstream of PCV-3332 reaches 1.5 psig
- c. CV-3269 (DW / TORUS N2 VENT SUPPLY) will close when pressure downstream of PCV-3332 reaches 1.75 psig
- d. When the PCIS Group 2 initiation occurs due to high Drywell pressure

Answer

c.

Reference

B.04.01

HIGHER

BANK

Knowledge of the interrelations between HIGH DRYWELL PRESSURE AND THE FOLLOWING: Nitrogen makeup system: Plant-Specific

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as it is a group 2 isolation valve

Distractor B is incorrect as it closes on 1.75 psig on its supply, not PCV-3332 upstream pressure

Distractor C is correct as this valve closes when pressure downstream of PCV-3332 reaches 1.75 psig

Distractor D is incorrect, as this will not happen FIRST.

Question Number 061  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295015A102

Question

Following a reactor scram with a failure of all control rods to fully insert, the OATC was directed to manually initiate the ATWS System. The operator rotated the sub-channel arming collars on pushbuttons ATWS B MAN and ATWS D MAN and then depressed ONLY pushbutton ATWS B MAN.

Which one of the following statements correctly describes the expected system response?

- a. NO ATWS Channel will trip and NO ARI valve actuates.
- b. ATWS Channel B ONLY will trip and ONLY the B ARI valve actuates.
- c. ATWS Channel B AND D will trip and ONLY the B ARI valve actuates.
- d. ATWS Channels A AND B will trip and BOTH A AND B ARI valves actuate.

Answer

a.

Reference

B.05.06, C.6-005-A-39

MEMORY

BANK

Ability to operate and/or monitor the following as they apply to INCOMPLETE SCRAM: RPS

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct, as it requires arming and depressing both A & C or B & D pushbuttons to trip 1 channel.

Distractor B is incorrect, as only the B subchannel would be activated and no ARI valve will actuate.

Distractor C is incorrect, as only the B subchannel would be actuated and no ARI valve will actuate.

Distractor D is incorrect, as only the B subchannel would be actuated and no ARI valve will actuate.

Question Number 062  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295017K305

Question

A steam leak occurred that resulted in annunciator 4-A-21 (TURBINE BUILDING HIGH RADIATION) to alarm. ARM B-2, TG FRONT STD is in alarm on panel C-11 and indicates 150 mrem/hour. Radiation levels in the control room indicate <1 mr/hr.

What is the bases for placing the EFT in the High Radiation Mode for these conditions?

- a. The EFT should have automatically aligned to the High Radiation Mode under these conditions.
- b. The Control Room Air Intake Radiation Monitors may not detect all possible radiation sources, therefore a manual initiation is performed.
- c. Since the Normal Mode of Control Room Ventilation maintains a positive pressure, the High Radiation Mode is initiated to minimize operator dose.
- d. To ensure no air in leakage through dampers VD-9216A (outside air damper to V-EAC-14A) and VD-9216B (outside air supply to V-EAC-14B).

Answer

b.

Reference

B.08.13

MEMORY

NEW

Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE

RELEASE RATE: Control room ventilation: Plant-Specific

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect, as the automatic initiation level has not been reached

Distractor B The Control Room Air Intake Radiation Monitors may not detect all possible sources of radiation to the Control Room (i.e., inleakage from the Turbine Building or other adjacent spaces). Therefore, when radiation is detected in adjacent spaces or within the Control Room by ARMs, or when radioactive releases which may affect the Control Room are expected, the EFT system may be manually placed in High Radiation Mode to eliminate inleakage and reduce operator dose.

Distractor C is incorrect as the normal mode maintains a negative pressure

Distractor D is incorrect as HI RAD mode does not prevent air inleakage, installed blanking plates do.

Question Number 063  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295032K204

Question

The reactor was operating at 100%. EOPs 1100 (RPV CONTROL), 1200 (PRIMARY CONTAINMENT CONTROL), and 1300 (SECONDARY CONTAINMENT CONTROL) were entered due to a LOCA. Feedwater and HPCI are NOT available.

The following conditions are now present:

- RPV water level is –100 inches and slowly lowering
- RPV Pressure is 600 psig and slowly lowering
- RCIC Equipment Area Temperature is 190°F and slowly lowering

Which one of the actions below should the crew take to insure core cooling?

- a. Anticipate Emergency Depressurization by opening 3 SRVs
- b. Rapidly depressurize the RPV using the Turbine Bypass Valves
- c. Bypass the RCIC High Temperature Isolation signal and inject with RCIC
- d. Line up and inject with Core Spray

Answer

c.

Reference

C.5.1-1100

HIGHER

NEW

Knowledge of the interrelations between HIGH SECONDARY CONTAINMENT AREA TEMPERATURE and the following: PCIS/NSSS

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as anticipated emergency depressurization is only performed with the TBVs.

Distractor B is incorrect as the TBVs would be unavailable due to a Group I isolation at –47 inches.

Distractor C is correct as high temperatures in the RCIC and HPCI rooms could be caused by a loss of ventilation or steam leaks. The authorizations for bypassing the high temperature isolations permit continued RCIC and HPCI operations despite these conditions if either system is needed for core cooling.

Distractor D is incorrect as no direction is given to bypass this interlock and Core Spray injection will not occur at this RPV pressure.

Question Number 064  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295033A203

Question

Following an inadvertent instrument actuation a reactor scram occurred and plant conditions were stabilized. The OATC took actions to reset the scram per C.4-A and due to these actions, the following annunciator conditions are present:

- 5-B-6 (DISCH VOLUME HI WATER LEVEL BYPASS) IN ALARM
- 5-B-21 (DISCH VOLUME WATER LEVEL SCRAM TRIP) RESET
- 4-A-11 (REACTOR BUILDING HI RADIATION) IN ALARM

Based on the above information, which of the below is the source of the Reactor Building radiation condition?

- a. Reactor Building Drain Tank
- b. Waste Collector Tank
- c. Reactor Building Floor Drain Sump
- d. Reactor Building Equipment Drain Sump

Answer

a.

Reference

C.4-A

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: Cause of high area radiation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the annunciator status demonstrate that the SDV level has lowered due to the actions to reset the scram, personnel are evacuated per C.4-A from the 896' Floor and Equipment Drain Tank Room because the SDV is drained to these tanks. This may cause area radiation levels and area airborne activity to increase.

Distractor B is incorrect as the High Radiation annunciator came in due to the actions of the OATC, if not, the alarm would have already been in if these valves fail to close upon the scram.

Distractor C and D are incorrect as although they are in the same location, this is not where the SDV dumps water.

Question Number 065  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 295036K201

Question

Level instrumentation indicates that the Reactor Building Equipment Drain Tank is overflowing.

Which one of the following would be the FIRST to see the overflow?

- a. Floor Drain Collector Tank
- b. Reactor Building Floor Drain Tank
- c. Reactor Building Floor Drain Sump
- d. Reactor Building Equipment Drain Sump

Answer

c.

Reference

B.07.01, 84A-A-4

MEMORY

BANK

Knowledge of the interrelations between SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL and the following: Secondary containment equipment and floor drain system.

Reference provided during exam: None

JUSTIFICATION

Distractors A, B, and D are not in the direct flow path.

Distractor C is correct as this tank overflows into the RB floor drain sump

Question Number 066  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.1.28

Question

In automatic control, both HPCI and RCIC maintain a constant \_\_\_(1)\_\_\_ by controlling \_\_\_(2)\_\_\_ over the range of system operating pressures.

- |    | (1)                     | (2)                     |
|----|-------------------------|-------------------------|
| a. | turbine speed           | system flow             |
| b. | system flow             | turbine speed           |
| c. | system flow             | pump discharge pressure |
| d. | pump discharge pressure | turbine speed           |

Answer

b.

Reference

B.03.02, B.02.03

MEMORY

NEW

Knowledge of the purpose and function of major system components and controls.

Reference provided during exam: None

JUSTIFICATION

- Distractor A is incorrect as this is a common misconception and opposite of the actual function.
- Distractor B is correct as both controllers adjust pump speed via the steam throttle valve to maintain the pump flow constant at the prescribed setpoint.
- Distractor C is incorrect as pump discharge pressure is not an input to the controller and will vary as RPV pressure changes.
- Distractor D is incorrect as pump discharge pressure is maintained constant and will vary as RPV pressure changes.

Question Number 067  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.1.12

Question

Analyze the following for acceptance per Test 0133.

Panel	Item Description	Value	Unit
CRT	RPV501, Core Thermal Power	80	%
C-04	SI-2-184-16A, Recirc Pump 11 % Speed	65	%
C-04	SI-2-184-16B, Recirc Pump 12 % Speed	64	%
C-04	FI-2-159A, Recirc Loop 11 Flow	23X1000	gpm
C-04	FI-2-159B, Recirc Loop 12 Flow	23X1000	gpm

For the given data, which pump(s), if any, fall in the ACCEPTABLE range?

- a. BOTH pumps 11 AND 12
- b. NEITHER pump 11 AND 12
- c. Pump 11, BUT NOT pump 12
- d. Pump 12, BUT NOT pump 11

Answer

b.

Reference

M-8107L-029 Obj. 8; B.01.04.06 Operations Daily Log Test 0133

HIGHER

BANK

Ability to apply technical specifications for a system.

Reference provided during exam: Surveillance 0133

JUSTIFICATION

Distractors A, C, and D are incorrect as they represent various incorrect analysis of the data provided.

Distractor B is correct as the data given is NOT acceptable per Test 0133 for pump 11 and 12 per Figure 17.

Question Number 068  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.2.13

Question

Which of the following represents the preferred tagging sequence for the isolation of a centrifugal or positive displacement pump per 4 AWI-04.04.09 (EQUIPMENT CONTROL)?

- a. Control Switch, Breaker, Suction Valve, Discharge Valve
- b. Suction Valve, Discharge Valve, Control Switch, Breaker
- c. Discharge Valve, Suction Valve, Breaker, Control Switch
- d. Control Switch, Breaker, Discharge Valve, Suction Valve

Answer

d.

Reference

4.AWI-04.04.09

MEMORY

NEW

Knowledge of tagging and clearance procedures.

Reference provided during exam: None

Distractors A, B, and C, are plausible misunderstandings for this preferred order.

Distractor D is correct as this is the prescribed order as specified in procedure 4.AWI-04.04.09 (Equipment Control) to ensure equipment and personnel safety.

Question Number 069  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.2.27

Question

The unloading of a core cell of all fuel was required to support an inspection during a refueling outage.

Which of the following describes the correct sequence of events to be performed for this refueling process?

- a. Install the blade guide, install jumper on Probe Buffer Card to allow bridge movement over the core, remove all fuel assemblies, withdraw the control rod.
- b. Remove all fuel assemblies, install the blade guide, withdraw the control rod, install jumper on Probe Buffer Card to allow bridge movement over the core.
- c. Unload two diagonal fuel assemblies, insert a blade guide, remove the remaining fuel assemblies, withdraw the control rod, install jumper on Probe Buffer Card to allow bridge movement over the core.
- d. Unload two diagonal fuel assemblies, insert a blade guide, withdraw the control rod, remove the remaining fuel assemblies, install jumper on Probe Buffer Card to allow bridge movement over the core.

Answer

c.

Reference

D.02-05

MEMORY

NEW

Knowledge of the refueling process.

Reference provided during exam: None

JUSTIFICATION

Distractors A, B, and D are reasonable misconceptions about this process which do not adequately support either reactivity or physical support the core cell components.

Distractor C is correct as this method is supports the sequence prescribed in the procedure, which ensures adequate reactivity control of the fuel and physical support of the control rod during this operation.

Question Number 070  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.3.10

Question

What method is used to check the current dose rate and the alarm setpoint function on your Electronic Dosimeter while you are working in a Radiological Control Area?

Dose Rate is checked by\_\_\_(1)\_\_\_ and the Alarm Setpoint is checked by\_\_\_(2)\_\_\_.

- | (1)                             | (2)                          |
|---------------------------------|------------------------------|
| a. pressing the button once     | pressing the button twice    |
| b. pressing the button twice    | using a Change-RWP reader    |
| c. observing the normal display | pressing the button twice    |
| d. using a Change-RWP reader    | observing the normal display |

Answer

a.

Reference

4 AWI-08.04.02

MEMORY

NEW

Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Reference provided during exam: None

JUSTIFICATION

- Distractor A is correct as the dose rate function is checked by pressing the pushbutton once and the alarm setpoint function is checked by pressing the button twice.
- Distractor B is incorrect as pressing the button twice checks the alarm setpoint. The Change-RWP reader can be used.
- Distractor C is incorrect as the total dose is the normal display.
- Distractor D is incorrect as the total dose is the normal display.

Question Number 071  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.3.11

Question

Given the following plant conditions:

- The reactor was at 100% power
- Annunciator 4-A-12, OFF GAS HI RADIATION, had been in alarm for 5 minutes
- Main Steam Line Radiation Monitors indicated rising radiation levels

What action would be required to minimize the potential for radiation release?

- a. Reduce reactor power
- b. Verify Off Gas isolation
- c. Manually initiate SBGT
- d. Immediately trip the Off Gas Recombiners

Answer

a.

Reference

C.6-004-A-12

HIGHER

NEW

Ability to control radiation releases.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as if the high rad condition is confirmed (as noted by the MSL rad monitors trending up), then reduce reactor power per C.4.F

Distractor B is incorrect as this action will not automatically occur for another 25 minutes.

Distractor C is incorrect as this would have no effect on radiation release.

Distractor D is incorrect as this action is not a timely response to this condition.

Question Number 072  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.4.35

Question

Due to an ATWS condition with a failure of SBLC to inject, the OATC had directed the Reactor Building Operator to inject boron into the RPV per procedure C.5-3102. RPV pressure was 800 psig. A few minutes later, the Reactor Building Operator calls you and asks for the physical location of valve CRD-30, OUTBOARD ISOLATION STOP.

You tell him the valve is located on \_\_\_(1)\_\_\_ and he informs you that performing this procedure will result in the inability to \_\_\_(2)\_\_\_.

- |    | (1)   | (2)                 |
|----|---|---------------------|
| a. | R.B. 935 West, by C-216 (CRD Flow Control Inst. Rack) | drive rods          |
| b. | R.B. 935 West, by C-216 (CRD Flow Control Inst. Rack) | scram rods          |
| c. | R.B. 923 West, by the CRD pumps                       | drive rods          |
| d. | R.B. 923 West, by the CRD pumps                       | charge accumulators |

Answer

a.

Reference

C.5-3102

HIGHER

MODIFIED

Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the valve is located at R.B. 935 West, by C-216 (CRD Flow Control Inst. Rack), and the precaution in C.5-3102 states that CRD injection to RPV will result in a loss of charging water pressure and inability to drive control rods.

Distractor B is incorrect as the location is incorrect and the scram function will still be able to function with RPV pressure of 800 psig.

Distractor C is incorrect as this is the wrong location.

Distractor D is incorrect as this is the wrong location.

Question Number 073  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.4.9

Question

A LOCA with an ATWS occurred. One hour later the CRS determined that an Emergency Depressurization is now required.

Which action(s) must now be performed to prevent a power excursion large enough to damage the core and the RPV?

- a. Inhibit ADS
- b. Wait until RPV pressure is below the value in Table L
- c. Prevent Condensate / Feedwater, HPCI and LPCI
- d. Prevent Core Spray and LPCI not needed for adequate core cooling

Answer

c.

Reference

C.5.1-2002

HIGHER

NEW

Knowledge of low power / shutdown implications in accident (e.g. LOCA or loss of RHR) mitigation strategies.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this action would have been initiated very early into the ATWS event.

Distractor B is incorrect as this action ensures adequate core cooling, not power excursions.

Distractor C is correct as in an ATWS condition when a blowdown is determined to be required, injection into the RPV must be terminated and prevented before the blowdown is performed by preventing Core Spray, Condensate / Feedwater, HPCI and LPCI.

Distractor D is incorrect as these systems are prevented for a non-ATWS blowdown.

Question Number 074  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.4.21

Question

From the above Critical Plant Variable Display, and given that the RPV level bar graph color is cyan, what would the RPV water level box color be?

- a. Green
- b. Yellow
- c. Red
- d. Blue

Answer

b.

Reference

SPDS Users Manual

HIGHER

NEW

Knowledge of the parameters and logic used to access the status of safety functions including: Reactivity control, Core cooling and heat removal, Reactor coolant system integrity, Containment conditions, Radioactivity release control.

Reference provided during exam: SPDS printout of Critical Plant Parameters

JUSTIFICATION

- Distractor A is correct as the cyan graph bar would indicate a validated data parameter and the thick yellow border is consistent with a safe or normal value.
- Distractor B is correct as the cyan graph bar would indicate a validated data parameter and the thick yellow border is consistent with an indication that a potentially unsafe condition exists.
- Distractor C is correct as the cyan graph bar would indicate a validated data parameter and the thick yellow border is consistent with an indication that a potentially unsafe condition exists.
- Distractor D is correct as the cyan graph bar would indicate a validated data parameter and the thick yellow border is consistent with an indication of an inactive status.

Question Number 075  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level R  
Point Value 1.00  
K/A 2.4.25

Question

For a fire OUTSIDE the protected area, with one Fire Brigade on site, the Fire Brigade SHALL:

- a. Attempt to contain / extinguish the fire.
- b. Request assistance from the Monticello Fire Department ONLY.
- c. Immediately evacuate all injured victims from the general area.
- d. Request assistance from the Monticello Fire Department and provide isolation and direction.

Answer

d.

Reference

A.3-002.A.1

MEMORY

BANK

Knowledge of the fire protection procedures.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this action is not taken unless 2 or more brigades are on-site.  
Distractor B is incorrect as providing isolation and direction is also required.  
Distractor C is incorrect as victims should only be moved if other hazards necessitate a move.  
Distractor D is correct as if assistance is required by the fire brigade, it shall be requested from the Monticello fire department. In the case of a fire outside the protected area, when only one fire brigade is available, that brigade shall provide isolation and direction for the Monticello fire department and its surrounding departments. If a fire occurs outside the protected area and two or more fire brigades are on-site, at least one brigade shall attempt to extinguish / contain the fire until the Monticello fire department arrives.

Question Number 076  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 206000A202

Question

The HPCI Comprehensive Pump and Valve Test (0255-06-III-1) was in progress. The BOP operator informed the CRS that valve MO-2063, CST Suction, had an initial closing time of 48 seconds.

What immediate action(s) should the CRS take in addition to completing FORM 3107 (INSERVICE TEST DEVIATION FROM CRITERIA CONTROL ROOM SUPERVISOR'S IMMEDIATE ACTION) based on the above information?

- a. Retest the valve
- b. Declare the valve inoperable
- c. Declare the valve inoperable OR retest the valve
- d. Declare the valve inoperable AND immediately retest the valve

Answer

b.

Reference

HCI Comprehensive Pump and Valve Tests

MEMORY

NEW

Ability to predict the impacts on the HPCI system; and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Valve closures

Reference provided during exam: HPCI Comprehensive Pump and Valve Tests Page 8 (first page of valve stroking).

JUSTIFICATION

Distractors A and C are incorrect as this assumes IST acceptance criteria is exceeded but does not exceed the LST criteria. Valves with measured stroke times in their safety related direction which fall outside of the IST acceptance band but do not exceed the LST SHALL be immediately retested or declared inoperable.

Distractor B is correct as the stroke time exceeds the LST time and must be declared inoperable.

Distractor D is incorrect as the valve cannot be immediately retested.

Question Number 077  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 215005 2.1.12

Question

Given the following conditions:

- The reactor was operating at rated conditions with APRMs 1 and 5 in BYPASS.
- The maintenance performed on APRM 1 was completed and it indicated 100.5% reactor power (which was consistent with the other APRMs)
- Post Maintenance Testing was not completed
- The OATC, believing the LCO exited, returned the APRMs to a normal condition with numbers 2 and 5 BYPASSED.

Given the above facts, what is the required Tech Spec action(s)?

- a. Bypass APRM 1 within 24 hours.
- b. Reduce reactor power to <25% within 12 hours.
- c. Place the inoperable channel(s) or trip system in the tripped condition within 12 hours.
- d. Immediately place the reactor mode switch in startup, refuel, or shutdown.

Answer

c.

Reference

Tech Specs, Monticello Site Event Free Clock Reset

HIGHER

NEW

Ability to apply technical specifications for a system.

Reference provided during exam: Tech Specs

JUSTIFICATION

Distractor A is incorrect as this reflects Tech Spec 3.1.B.1 LCO. The action to bypass #1 APRM is correct, but the call of the question asked for the LCO based on the given information.

Distractor B is incorrect as this condition would preclude thermal limit monitoring requirements, but does not reflect the LCO condition for RPS.

Distractor C is correct as 1 required APRM on channel "A" is inoperable. Per Tech Spec 3.1.B.1 place the inoperable channel(s) or trip system in the tripped condition within 12 hours.

Distractor D is incorrect as it represents a combination of Tech Spec 3.1.B.1 and T.S.3.1.B.2(3) and table 3.1.1 note actions.

Question Number 078  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 259002A206

Question

Reactor power was 7% with a startup in progress.

Predict the impact if there was a loss of controller signal to the in service Level Control Valve, and what action should be directed to mitigate this abnormal condition.

RPV water level would \_\_\_(1)\_\_\_ and the CRS should direct the crew to \_\_\_(2)\_\_\_.

- |    | (1)                        | (2)                                    |
|----|----------------------------|--|
| a. | remain relatively constant | adjust RWCU dump flow as required      |
| b. | rise                       | raise reactor power                    |
| c. | lower                      | lower reactor power                    |
| d. | lower                      | take local manual control of the valve |

Answer

d.

Reference

B.05.07, C.1.

HIGHER

NEW

Ability to predict the impacts of the following on the Reactor Water Level Control System and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Loss of controller signal output.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this could be a misconception as the valve locks up as is upon a loss of air signal and adjusting the dump valve is prescribed .

Distractor B is incorrect as the valve fails closed vice open. The use of recirc to control level with power may be done at higher powers, but at 7%, recirc should not be used as it is at minimum speed..

Distractor C is incorrect as although level would decrease, at 7% power recirc pump speed is at minimum.

Distractor D is correct as at 7% power the low flow feed reg. Valve would be in service. This valve fails closed upon a loss of electrical control signal causing RPV water level to decrease. B.05.07 describes taking local manual control.

Question Number 079  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 217000 2.1.26

Question

A non-emergency repair on the RCIC steam line is being planned to repair a steam leak at the upstream flange weld to leak test valve RCIC-1.

Which of the following correctly describes plant conditions and isolations required to safely perform this work?

This work should be performed...

- a. at full reactor power by closing MO-2075 (RCIC INBOARD STEAM ISOLATION VALVE) and MO-2076 (RCIC OUTBOARD STEAM ISOLATION VALVE).
- b. if the reactor is shutdown and RPV pressure is maintained between 100 and 150 psig and closing MO-2075 (RCIC INBOARD STEAM ISOLATION VALVE).
- c. if the reactor is shutdown and RPV pressure is maintained between 100 and 150 psig and closing MO-2076 (RCIC OUTBOARD STEAM ISOLATION VALVE).
- d. if the reactor is shutdown and RPV pressure is maintained less than 15 psig and closing MO-2075 (RCIC INBOARD STEAM ISOLATION VALVE).

Answer

d.

Reference

4 AWI-04.04.09, MNGP Safety Manual SM-24.01

HIGHER

NEW

Knowledge of non-nuclear safety procedures (e.g. rotating equipment, electrical, high temperature, caustic, chlorine, oxygen and hydrogen).

Reference provided during exam: RCIC P&ID NH-36251

JUSTIFICATION

Distractors A, B, and C represent reasonable variations.

Distractor D is correct as these are the requirements of the MNGP safety manual, SM-24.01.

Question Number 080  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 263000A201

Question

Station Electricians have determined through ground isolation processes that a ground exists somewhere in 250 VDC MCC-D311. The following plant conditions exist:

- A reactor startup is in progress
- RPV pressure is 125 psig and slowly rising

What action, if any, must the CRS direct before allowing the Electricians to open any enclosures on the MCC and why?

- a. Either MO-2034 (HPCI STEAM ISOLATION INBOARD) or MO-2035 (HPCI STEAM ISOLATION OUTBOARD) must be closed to mitigate HELB concerns.
- b. Either MO-2075 (RCIC STEAM ISOLATION INBOARD) or MO-2076 (RCIC STEAM ISOLATION OUTBOARD) must be closed to mitigate HELB concerns.
- c. No action is necessary as RCIC is not required to be operable under these conditions.
- d. No action is necessary as HPCI is not required to be operable under these conditions.

Answer

b.

Reference

B.09.09-05

MEMORY

NEW

Ability to predict the impacts of the following on the D.C. Electrical Distribution system and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Grounds.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the MCC is in the RCIC room.

Distractor B is correct as MCC-D311 is located in the RCIC room and prior to opening up enclosures on this MCC with RPV water temperature above 212°F, the steam line must be isolated or a 1 hour primary containment LCO must be entered.

Distractors C and D are incorrect as neither HPCI or RCIC operability is the concern, PCIS is the concern.

Question Number 081  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 290002A205

Question

Reactor power was being restored to 100% after surveillance testing when an unexpected complete process computer outage occurs.

- Generator load had been raised with recirc pumps from 580 MWe to 615 MWe over the past 30 minutes just prior to the computer outage.
- The Work Control Center informs the CRS that the process computer is expected to be returned to service within 20 minutes.

Based on the above information, which one of the following sections of C.2 (POWER OPERATIONS) should the CRS use in order to ensure that Thermal Limits are not violated until the process computer is restored?

- a. Part A, maintain reactor power per step 4.
- b. Part B, maintain reactor power constant.
- c. Part B, for up to 1 hour and then enter part C.
- d. Part C, verify reactor power per step 10.

Answer

d.

Reference

C.2

HIGHER

MODIFIED

Ability to predict the impacts of the following on the Reactor Vessel Internals; and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Exceeding thermal limits.

Reference provided during exam: C.2, pages 26-29

JUSTIFICATION

Distractor A is incorrect as the outage was unexpected

Distractor B is incorrect as the reactor was not at steady state conditions

Distractor C is incorrect as the reactor was not at steady state conditions

Distractor D is correct as C.2-05.2 Part C contains the required actions as the computer outage was unplanned and the reactor was not operating at steady state. (Parts A & B must be reviewed to make this determination). Part C then requires maintain or reduce reactor power so all the following are satisfied: 1) Feedwater flow indication is less than  $7.2 \times 10^6$  lbm/hr; 2) turbine first stage pressure indication is less than 710 psig.

Question Number 082  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 201001A210

Question

A reactor startup is in progress with the following conditions present:

- The reactor is critical
- RPV pressure is 850 psig
- Control rod 26-39 is at position 16
- Control rods adjacent to rod 26-39 are also withdrawn
- All control rods and accumulators are operable

If annunciator 5-B-38, CRD ACCUMULATOR LO/PRESS HI/LEVEL, alarms, predict the impact if the alarm is due to control rod 26-39 accumulator pressure being 900 psig, AND based on this prediction, what Technical Specifications action(s) are required due to this condition?

- a. Accumulator 26-39 must be declared inoperable. The startup may continue since all other accumulators are operable.
- b. Accumulator 26-39 OR control rod 26-39 must be declared inoperable. If the control rod is to remain at position 16, the accumulator must be recharged within 48 hours.
- c. Accumulator 26-39 AND control rod 26-39 must be declared inoperable. If the control rod is to remain at position 16, a shutdown margin analysis needs to be performed.
- d. Accumulator 26-39 AND control rod 26-39 must be declared inoperable. The control rod must be fully inserted, AND a shutdown margin analysis needs to be performed.

Answer

c.

Reference

B.01.03, Tech Spec. 3.3

HIGHER

BANK

Ability to predict the impacts of the following on the Control Rod Drive Hydraulic System and based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Low HCU accumulator pressure/high level.

Reference provided during exam: Technical Specifications 3.3

JUSTIFICATION

Distractor A is incorrect as the control rod is also inoperable.

Distractor B is incorrect as with adjacent rods also withdrawn, Tech Spec. 3.3.G requires a shutdown within 24 hours if an inop accumulator exists due to Tech Spec 3.3.D.

Distractor C is correct as per procedure the accumulator is inop due to low pressure and the rod is inop due to the accumulator being inop with RPV pressure < 950 psig. To satisfy this condition either a shutdown margin analysis must be performed OR the rod must be fully inserted.

Distractor D is incorrect as if the rod is fully inserted, a shutdown margin analysis is not required.

Question Number 083  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 245000 2.2.11

Question

As the CRS, you had initiated a Volume F memorandum to Operations procedure B.06.02.02-5 (GENERATOR HYDROGEN COOLING SYSTEM) that was subsequently approved. Later that day, using the procedure, the BOP informed you that the approved Volume F contained a transposition of numbers for acceptance criteria.

Which of the below options is available to remedy this situation?

- a. Initiate a revision to the Volume F change.
- b. Delete and re-issue a new Volume F change.
- c. Initiate a "pen and ink" change and have the SM approve it.
- d. Delete the Volume F change and make a temporary change per 4 AWI02.02.05, TEMPORARY CHANGE PROCESS.

Answer

b.

Reference

4.AWI-02.02.06, 4 AWI-02.02.05

MEMORY

NEW

Knowledge of the process for controlling temporary changes.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as Volume F memos cannot be revised.

Distractor B is correct as revisions to Volume F memos SHALL NOT be processed. If a Volume F memo is not correct, it SHALL be deleted and a new Volume F memo issued.

Distractor C is incorrect as "pen and ink" changes are not allowed by the procedure.

Distractor D is incorrect this procedure SHALL NOT apply to Ops Man Procedures.

Question Number 084  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295016A206

Question

The Control Room was abandoned due to a fire and actions have been taken per procedure C.4-C, SHUTDOWN OUTSIDE CONTROL ROOM. The following conditions now exist:

- A cooldown is in progress with SRVs
- Time from initiation of cooldown is 15 minutes
- Torus level is -1 inch
- Torus temperature is 180°F
- RPV pressure is 750 psig
- RPV water level is -80 inches and lowering

Based on this information you should direct the crew to...

- a. continue the cooldown.
- b. stop the cooldown for a minimum of 15 minutes.
- c. open 3 SRVs to initiate RPV depressurization.
- d. open 3 SRVs until RPV pressure is below the Heat Capacity Limit.

Answer

b.

Reference

C.4-C

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to Control Room Abandonment:  
Cool Down Rate.

Reference provided during exam: C.4-C figures 1 and 2

JUSTIFICATION

Distractor A is incorrect as this cooldown rate is beyond that allowable in figure 2.

Distractor B is correct as a cooldown must be stopped as it has exceeded the rate prescribed in figure 2.

Distractor C is incorrect as a depressurization is not required as no requirements of step 18 are met.

Distractor D is incorrect as there is no direction to close the 3 SRVs, once opened, and then continue a normal cooldown (a previous revision did required this action).

Question Number 085  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295003A202

Question

The reactor was at 100% power when a station blackout occurred.

What strategy should the CRS follow to manage RPV pressure?

- a. Control pressure above 500 psig.
- b. Anticipate Emergency Depressurization.
- c. Control pressure between 900 – 1050 psig.
- d. A cooldown should be initiated at  $< 97^{\circ}\text{F} / \text{hr}$ .

Answer

c.

Reference

C.4-B.09.02.A

MEMORY

NEW

Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of A.C. Power: Reactor power / pressure / level.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this lowers pressure.

Distractor B is incorrect as this lowers pressure and this path is unavailable in this situation.

Distractor C is correct as during a station blackout, the low pressure injection systems will not be available until power restoration is complete. Early depressurization of the reactor will preclude the use of HPCI and RCIC as injection sources and should be delayed as long as possible. Reactor pressure should be maintained as high as possible, but less than 1056 psig by allowing automatic initiation of LLS or manual actuation of SRVs using the preferred sequence with a pressure band of 900 – 1050 psig.

Distractor D is incorrect as this lowers pressure, and is prescribed in the EOPs as a later action, with the initial action to stabilize RPV pressure.

Question Number 086  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295019A202

Question

A plant transient exists with the following conditions present:

- Loss of instrument air
- Drywell temperature is 140°F and rising
- Drywell pressure is 0.75 psig and rising
- 896 ft. Rx BLDG Drain Tank Room (A-15) ARM is in alarm

Which of the following is correct action(s) for the CRS to direct to the BOP?

- a. Isolate N2 makeup prior to 2.0 psig in the Drywell.
- b. Maintain Drywell pressure below 2.0 psig using SBGT.
- c. When Drywell pressure exceeds 2.0 psig, verify SBGT starts and secondary containment isolates.
- d. When Drywell pressure exceeds 2.0 psig, restart secondary containment HVAC because SBGT is unavailable.

Answer

c.

Reference

Reference: C.4-08.04.01.A, EOP-1100, 1200, 1300

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to Partial or Complete Loss of Instrument Air: Status of safety related instrument air system loads.

Reference provided during exam: EOP Flow Charts

JUSTIFICATION

Distractor A is incorrect as this valve fails closed on loss of air.

Distractor B is incorrect as CV-2385 (D/W vent to SBGT) and AO-2387 (D/W outboard vent) fail closed on loss of air. (EOP 1200)

Distractor C is correct as all valves on the SBGT system fail so as to permit system operation. SBGT inlet, outlet, and flow control valves fail open. EOP-1100 requires the CRS to verify that automatic actions and isolations occurred.

Distractor D is incorrect as SBGT is available. The ARM alarm satisfies the entry into EOP 1300.

Question Number 087  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295024 2.1.32

Question

An ATWS with fuel damage has occurred resulting in the following conditions:

- Drywell pressure is 43 psig and rising
- Torus water level is 16 ft. and steady
- Drywell temperature is 320°F and rising
- Drywell radiation is 100 R/hr and rising

Using the above conditions, which of the following is correct in regards to Primary Containment Limits?

- a. The ADS valves may fail as the drywell temperature EQ limit has been exceeded.
- b. Venting the primary containment through the hard pipe vent is available.
- c. Venting the primary containment with SBGT via the 18 inch torus vent is available.
- d. During primary containment venting the volume released should be limited to that required to maintain pressure below the drywell pressure limit.

Answer

d.

Reference

C.5.1-1200

HIGHER

NEW

Ability to explain and apply system limits and precautions.

Reference provided during exam: EOP Flow Charts

JUSTIFICATION

Distractor A, is incorrect as the EQ limit is 335°F

Distractor B, is incorrect as this path is covered when torus level is above 15 ft.

Distractor C, is incorrect as this path is covered when torus level is above 11.3 ft.

Distractor D is correct as the primary containment is contaminated due to the fuel damage and LOCA. Venting should be limited to that which maintains D/W pressure less than figure D (D/W pressure limit) and minimizes radioactive release.

Question Number 088  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295025A201

Question

Given the following conditions:

- A Loss of Normal Off-Site Power has occurred
- All control rods have NOT fully inserted
- All APRMs indicate 0% power
- SRV 'H' indicates open
- SRV 'G' is cycling open and closed
- RPV water level is -10 inches and lowering

What actions are directed by the CRS?

- a. Restore and maintain RPV water level to +9 to +48 inches
- b. Prevent Condensate and Feedwater, HPCI, and LPCI
- c. Insert control rods using C.4-A (REACTOR SCRAM)
- d. Stabilize RPV pressure below 1056 psig using TBPVs

Answer

b.

Reference

C.5-2007

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to High Reactor Pressure:  
Reactor Pressure.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this action assumes a non-ATWS condition.

Distractor B is correct as RPV pressure is high due to an ATWS condition present. With the SRV conditions present, reactor power can be determined to be >3%. APRMs will indicate 0% as they lose power (RPS) due to the loss of normal off-site power.

Distractor C is incorrect as an ATWS condition exists and C.5-3101 should be used

Distractor D is incorrect as the bypass valves would not be available in this condition.

Question Number 089  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295030A201

Question

A plant transient occurred with the following conditions now present:

- HPCI and RCIC are the only available injection systems
- RPV water level is –130 inches and slowly rising
- Torus water level is –3.8 feet and slowly lowering
- RPV pressure is 800 psig and lowering

What action should the CRS direct next?

- a. Trip HPCI ONLY
- b. Trip RCIC ONLY
- c. Trip HPCI AND RCIC
- d. Continue injecting with HPCI and RCIC

Answer

a.

Reference

C.5-1100, C.5-1200

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to Low Suppression Pool Water Level: Suppression pool level.

Reference provided during exam: EOP charts

JUSTIFICATION

Distractor A is correct as a blowdown has been initiated due to not being able to maintain torus level above –3.3 feet. If torus level cannot be maintained above –3.7 feet HPCI should be tripped.

Distractor B is incorrect as RCIC is not tripped due to its relatively low exhaust energy.

Distractor C is incorrect as even though HPCI is tripped, RCIC is not tripped due to its relatively low exhaust energy.

Distractor D is incorrect as HPCI is required to be tripped per C.5-1200. This is plausible if the candidate believes core cooling takes priority over containment integrity.

Question Number 090  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295038A203

Question

Given the following information:

- The reactor has been shutdown for 2 hours
- Drywell pressure is 54 psig and slowly rising
- The BOP operator is assigned to monitor Containment Monitor dose rates

Which of the following would be the minimum dose rate that would require the declaration of a General Emergency to be made?

- a. 20 R/hr
- b. 30 R/hr
- c. 40 R/hr
- d. 60 R/hr

Answer

b.

Reference

A.2-101

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to High Off-Site Release Rate:  
Radiation Levels

Reference provided during exam: A.2-101

JUSTIFICATION

Distractors A, C, and D provide plausible figure 7.3 misinterpretations of the Containment Monitor Response to Contained Source Curve graph.

Distractor B is correct as guideline 28 B. provides guidance to determine that there is a loss of 2 of 3 fission product barriers with a potential loss of the 3rd. The first barrier (clad) would be determined if fuel cladding degradation exceeded the Alert or Site Areas Emergency level per guideline 6. This is accomplished with a shut down of 2 hours when containment radiation monitors reach a level of ~28.5 R/hr. The second barrier (coolant boundary) is established by the high drywell pressure as is the potential for the 3rd barrier loss (containment).

Question Number 091  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295009A202

Question

The reactor was at rated conditions when the 11 Reactor Feed Pump tripped. The following plant conditions are present:

- C.4.F Rapid Power Reduction is in progress
- Control rods are being inserted
- RPV water level is 15 inches and lowering

As the CRS, which of the following conditions would you use to determine that a manual scram should be inserted as reactor power is lowered?

- a. Prior to the transient, an XCEL system condition ORANGE was in place.
- b. Prior to the transient, the 12 Recirc Scoop Tube was locked up due to unstable speed control.
- c. Steam flow indicates 4.1 Mlbm/hr and feed flow indicates 3.7 Mlbm/hr.
- d. Reactor Feed pump suction pressure is 75 psig and slowly rising.

Answer

c.

Reference

Reference: C.4-B.06.05.A, C.4-F

HIGHER

NEW

Ability to determine and/or interpret the following as they apply to Low Reactor Water Level:

Steam flow / feed flow mismatch

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this excel condition did not require a shutdown or reduced reactor power prior to the transient, it is merely a precautionary or informational condition.

Distractor B is incorrect as the scoop tube may be used to lower recirc pump speed in this condition by depressing the scoop tube reset button as the runback logic would then drive the scoop tube due to the feed pump runback condition.

Distractor C is correct as with feedwater flow less than steam flow, a positive indication that reactor water level will not turn is indicated. This steam flow corresponds to approximately 58% reactor power and is in the capacity of 1 RFP.

Distractor D is incorrect as this indication may demonstrate that the feed system is capable of turning RPV water level.

Question Number 092  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295014A205

Question

A reactor startup was in progress with RPV pressure at 780 psig when the following event occurred:

- HPCI inadvertently initiated and injected into the RPV
- Peak reactor thermal power was 26%
- The subsequent operator actions for C.4-G, INADVERTENT ECCS INITIATION, are being performed

As the CRS, you should direct the OATC to...

- a. insert all operable control rods within 4 hours.
- b. immediately return plant conditions to the pre-transient level.
- c. immediately place both channels of RPS in a tripped condition.
- d. complete emergency notifications to the NRC within 15 minutes.

Answer

c.

Reference

T.S.2.1; 3.1

HIGHER

MODIFIED

Ability to determine and/or interpret the following as they apply to Inadvertent Reactivity

Addition: Violation of safety limit

Reference provided during exam: Technical Specifications

JUSTIFICATION

Distractor A is incorrect as the safety limit violation requires all operable control rods be inserted within 2 hours.

Distractor B is incorrect as this would not meet the requirements of the Tech Spec.

Distractor C is correct as both IRMs and APRMs failed to insert a reactor scram which resulted in a violation of a safety limit. AWI-04.01.01 requires that the crew immediately place both channels of RPS in a tripped condition. As the ultimate function of the IRM and APRM systems in this case are to prevent a violation of a safety limit, this action supports the intent of the K/A.

Distractor D is incorrect as this requirement is for state and local organizations (due to the ATWS condition) but the NRC notification is required to be completed within 1 hour.

Question Number 093  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 295020 2.1.22

Question

Given the following information:

- The reactor was operating at rated conditions
- An inadvertent group 1 occurred
- No operator actions have taken place

What is the reactor mode based on the above information?

- a. Run
- b. Shutdown
- c. Hot Standby
- d. Hot Shutdown

Answer

a.

Reference

Tech Specs section 1.0

MEMORY

NEW

Ability to determine mode of operation.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as the reactor mode is that which is established by the mode-selector switch. With no operator action taken, the mode switch would still be in the Run mode.

Distractors B, C, and D are plausible answers but do not reflect the definition of Mode as stated in the tech specs.

Question Number 094  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.1.20

Question

Procedure C.1, STARTUP, contains the following Caution and Note:

“Any time a control rod is withdrawn to position 48, a coupling check should be completed by attempting to continue control rod withdrawal past position 48.”

The CRS observed that the OATC was not performing a coupling check during the initial startup from a refueling outage. The OATC informed the CRS that the caution statement uses the word “should” instead of SHALL. Was the basis for not performing the coupling check by the OATC valid?

- a. No, he did not satisfy the intent of the station procedures.
- b. No, as written authorization is needed to deviate from a management expectation.
- c. Yes, if he had prior verbal approval from the Nuclear Engineer.
- d. Yes, if test 0075, CONTROL ROD DRIVE COUPLING TEST, was performed prior to withdrawing rods for startup.

Answer

a.

Reference

4 AWI-01.01.01

MEMORY

NEW

Ability execute procedure steps.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as deviation from a “should” SHALL NOT require prior approval providing the intent of the recommendation was met. Appropriate supervision SHALL be notified of a deviation from a recommendation. The intent is to insure that the control rod is in fact coupled to prevent a reactivity addition from an uncouple rod and subsequent rod drop.

Distractor B is incorrect as this is required to deviate from a SHALL statement, not a should statement.

Distractor C is incorrect as the Nuclear Engineer cannot give approval to deviate or omit a step during a normal startup condition.

Distractor D is incorrect as this is the normal sequence of events, but the intent of the procedures is to also perform the coupling check each time a control rod is withdrawn to position 48.

Question Number 095  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.1.23

Question

Which one of the following would NOT ALLOW a change in the reactor mode switch position from REFUEL to STARTUP?

- a. 1 AR Transformer is inoperable.
- b. IRMs 11 and 15 in bypass with all other IRMs operable.
- c. RHR Shutdown Cooling in service with reactor coolant temperature 220°F.
- d. Control rod 22-31 cannot be moved with control rod drive or scram pressure with confirmation that a failure of the collet housing has not occurred and is isolated.

Answer

c.

Reference

C.1, Tech Specs

HIGHER

NEW

Ability to perform specific system and integrated plant procedures during different modes of plant operations.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as the 1 AR is not required for startup as long as the other two transformers (1R and 2R) are operable.

Distractor B is incorrect as the minimum required number of IRMs are met and no LCO action is warranted.

Distractor C is correct as reactor mode changes or entry into an operational mode shall not be made if a limiting condition for operation exists with an associated action statement that requires a shutdown if the LCO conditions are not met. RHR shutdown cooling shall be removed from service and returned to LPCI standby readiness prior to exceeding 212°F would require LCO entry with an action statement requiring shutdown.

Distractor D is incorrect as a shutdown LCO is not required if it is confirmed that control rod drive collet housing failure is not the cause of the immovable control rod.

Question Number 096  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.2.24

Question

The reactor is operating at 100% power when the following occurs:

Electrical Maintenance is preparing to clean and inspect the MCC-133A breaker bucket for MO-2010, TORUS SPRAY-INBOARD, for annual preventive maintenance.

Which of the following describes the applicable LCO restraints, if any, and the applicable basis?

- a. Operation may be continued for 7 days, based on the potential for degraded containment cooling function following a LOCA.
- b. Operation may be continued for 7 days, based on the potential for lost containment isolation valve closure function following a LOCA.
- c. Initiate an orderly shutdown to cold conditions within 24 hours, based on the potential for lost containment isolation valve closure function following a LOCA.
- d. Operation may continue, there is no LCO, Torus Spray is NOT considered for containment cooling function.

Answer

d.

Reference

Tech Spec 3.5.A.3; 3.0

HIGHER

BANK

Ability to analyze the affect of maintenance activities on LCO status.

Reference provided during exam: Technical specifications

JUSTIFICATION

Distractors A, B, and C are incorrect as each of these are necessary to support containment spray/cooling operability.

Distractor D is correct as Tech Specs requires the following equipment for a containment spray/cooling subsystem: RHRSW pump, RHRHX, RHR pump, valves and piping necessary for torus cooling and drywell sprays. Torus spray is not considered part of a containment spray/cooling subsystem.

Question Number 097  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.3.2

Question

As the CRS, you had been working with the Reactor Building Operator and the ALARA Coordinator to determine the best way to perform an upcoming evolution in the plant. The following facts are known:

- Past performance of this task has resulted in an average exposure of 400 mrem
- The task historically required 1 hour to complete.
- If shielding is hung it would lower the dose rate by 50%
- The total dose to hang and remove the shielding is estimated to be 100 mrem
- A special tool is available to perform the task that would allow the operator to be in a lower exposure area (325 mrem/hr)
- Use of the special tool is estimated to extend the job time by 35%.

What direction should the CRS provide to the Reactor Building Operator and the ALARA Coordinator to ensure that the task is performed within the principles of ALARA?

- a. Hang the shielding AND use the special tool.
- b. Do NOT hang shielding, but use the special tool.
- c. Hang the shielding, but DO NOT use the special tool.
- d. Do NOT hang the shielding AND DO NOT use the special tool.

Answer

c.

Reference

4 AWI-08.04.08

HIGHER

MODIFIED

Knowledge of facility ALARA program.

Reference provided during exam: None

JUSTIFICATION

Distractor A shielding makes 200 mr field, tool reduces dose by 18.875%, this results in a dose of 162.25, the task now takes 35% times longer giving 219 mr, then the dose for hanging shielding is added (100 mr) for a total of 319.

Distractor B this is 325 times 1.25 which equals 406.25mr

Distractor C is correct as this represents a total dose of 300 mr for the operator plus the dose of hanging the shielding.

Distractor D is 400 mr (400 X 1)

Question Number 098  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.3.9

Question

While performing containment de-inerting during shutdown for a refueling outage, the CRS observes the BOP operator transfer the purge flow line-up to the Torus when Drywell O2 concentration is 20%.

What effect, if any, would the BOP operator have on the plant if he began to open AO-2378, TORUS PURGE Inbd Isol. BEFORE he closed AO-2381, DRYWELL PURGE Inbd Isol.?

- a. Pressure suppression capability of the containment would be degraded.
- b. The Reactor Building to Torus vacuum breakers AO-2379 and AO-2280 would have to be declared inoperable.
- c. No effect, these valves are interlocked such that only one may be opened at a time.
- d. This would line up the 2 inch flow path which is NOT allowed during containment purge for de-inerting at this time.

Answer

a.

Reference

0362 MONITORING FOR CONTAINMENT PURGE

MEMORY

NEW

Knowledge of the process for performing a containment purge.

Reference provided during exam: None

JUSTIFICATION

Distractor A is correct as purge valves AO-2378 and AO-2381 should not be opened simultaneously. With both valves open, a suppression pool bypass path exists which makes the suppression pool inoperable. Containment integrity is an integral part of radiation release control.

Distractor B is incorrect as this would have an effect on the D/W to Torus vacuum breakers, but not a direct effect on the Reactor building to torus vacuum breakers.

Distractor C is incorrect as no interlock exists to prevent this action.

Distractor D is incorrect as the 18 inch lines are used for this operation.

Question Number 099  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.4.32

Question

The reactor is operating steady state at rated conditions when the OATC reports that all control room annunciators have been lost. SPDS displays show no abnormal indications and both 125Vdc batteries are operable.

As the SRO you would...

- a. declare an ALERT.
- b. direct a reactor shutdown.
- c. direct increased monitoring of control room panels.
- d. initiate a 1 hour non-emergency event notification.

Answer

c.

Reference

C.4-B.05.13.A, A.2-101

MEMORY

NEW

Knowledge of operator response to loss of all annunciators.

Reference provided during exam: None

JUSTIFICATION

Distractor A is incorrect as this action would only be required per guideline 14 if there was a concurrent loss of SPDS.

Distractor B is incorrect as there is not requirement to shutdown the reactor in this situation.

Distractor C is correct as during steady state power conditions, the calling in of additional operations personnel to insure adequate monitoring of plant conditions is the prescribed action.

Distractor D is incorrect as the only 1 hour non emergency event notification requirements is to report a tech spec deviation.

Question Number 100  
Exam Date 2005/05/12  
Docket # 263  
Reactor Type BWR-GE3  
License Level S  
Point Value 1.00  
K/A 2.4.14

Question

A Loss of Coolant Accident has occurred and the following conditions are present:

- Drywell pressure is 32 psig and rising
- Drywell Temperature is 282°F and rising
- RPV pressure is 800 psig and lowering
- RPV water level is -50 inches and rising
- Torus water level is 2 feet and rising
- 16 Bus is locked out
- RHR is lined up for LPCI injection
- The Drywell Cooling Fan switches are in OFF
- The Recirc Pumps are tripped

As the CRS, which of the following is the next action to be directed based on the above information?

- a. Lower Torus level
- b. Initiate Drywell Sprays
- c. Initiate a Blowdown due to exceeding 281°F in the Drywell
- d. Initiate a Blowdown due to exceeding Pressure Suppression Pressure

Answer

b.

Reference

C.5.1-1000, C.5.1-1200

HIGHER

NEW

Knowledge of general guidelines for EOP flowchart use.

Reference provided during exam: EOP Flow charts

JUSTIFICATION

Distractor A is incorrect as the flow chart steps must be prioritized and torus level can only be lowered with "B" loop of RHR and the 16 bus lockout will prevent this.

Distractor B is correct as initial operator actions must be taken to place drywell sprays in service, Torus sprays may already be in service, the decision as to whether or not conditions can stay within the PSP or D/W temp can be restored should not be made until drywell sprays are placed in service and an evaluation can be made as to the expected response.

Distractor C is incorrect as the ability to restore and maintain cannot be evaluated prior to initiating sprays

Distractor D is incorrect as the ability to maintain below the limit cannot be evaluated prior to initiating sprays