# Byron
# June 2000 Examination

## Proposed Written Examinations

# BYRON

## JUNE 2000 Exam

# NRC DRAFT

# RO
# WRITTEN EXAMINATION

## For 5/19 Review

# Bryon RO Written Examination
# Answer Key

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

# Bryon RO Written Examination
# Answer Key

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

Question #1

WHICH of the following conditions does NOT require entry into BOA PRI-2 "Emergency Boration?"

A. Keff > 0.95 during Mode 5

B. Inadequate shutdown margin

C. Uncontrolled cooldown with the reactor shutdown

D. 3 RCCA did not fully insert following a reactor trip

Answer:
A

References:
BOA PRI-2

RO
Tier # __1__ Group #__1__ KA #___000024K3.01___
Importance Rating__4.1__ Level of Difficulty___2___
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #2

The failed fuel monitor 1RT-PR006 uses which ONE of the following types of detectors?

A. Fixed Geiger-Mueller (G-M) tube detector.

B. NaI crystal scintillation detector.

C. Anthracene crystal scintillation detector.

D. Neutron detector.

*ANSWER
B

*REFERENCE
1. System Description Chapter 49:RADIATION MONITORS pgs 49-13 thru 49-20.

RO-only
Tier # __1__Group #__1__ KA #___000076K201___
Importance Rating_____ Level of Difficulty____2____
Bank __X_____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #3

Given the following plant conditions:

Reactor power is 75%
Control rods can not be moved in AUTO or MANUAL due to a failure.

Which function is impaired if control bank D rods were moved using BANK SELECT?

A. The pulse to analog converter display for bank D.

B. Bank overlap function when control rods are inserted.

C. Rod insertion limit alarms when inserting control rods.

D. Control rod stop alarm actuation when reaching C-11.

Answer:
B

References:
Rod Control Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____001K4.02_____
Importance Rating___3.8___ Level of Difficulty___2____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #4

Which ONE of the following is the reason for promptly closing the seal leakoff isolation valve for a RCP with a high number 1 seal leakoff once the RCP has stopped rotating?

A. Protect number 2 seal from possible debris from the number 1 seal.

B. Prevention of damage to the thermal barrier due to high flow.

C. Minimize the amount of RCS water that is routed to containment sump.

D. Assure a minimum back pressure is maintained on the number 3 seal.

ANSWER
A

REFERENCE
RCP Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____003A2.01_____
Importance Rating___3.5___ Level of Difficulty___2____
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #5

While performing an emergency boration in accordance with PRI-2, which of the following is the correct order for boration methods?

A. (1) Emergency Borate Valve 1CV8104 from MCR OR RWST valves 1CV112D, 1CV112E
(2) Normal Borate Valves 1CV110A, 1CV110B
(3) Manually operate Emergency Borate Valve 1CV8104 from 426 VCT valve aisle

B. (1) RWST valves 1CV112D, 1CV112E OR Emergency Borate Valve 1CV8104 from MCR
(2) Normal Borate Valves 1CV110A, 1CV110B
(3) Manually operate Emergency Borate Valve 1CV8104 from 426 VCT valve aisle

C. (1) Normal Borate Valves 1CV110A, 1CV110B OR Emergency Borate Valve 1CV8104 from MCR
(2) RWST valves 1CV112D, 1CV112E
(3) Manually operate Emergency Borate Valve 1CV8104 from 426 VCT valve aisle

D. (1) Manually operate Emergency Borate Valve 1CV8104 from 426 VCT valve aisle OR Normal Borate Valves 1CV110A, 1CV110B
(2) RWST valves 1CV112D, 1CV112E
(3) Emergency Borate Valve 1CV8104 from MCR

Answer:
C

Reference:
PRI-2 Emergency Boration

RO only
Tier # __2__ Group #__1__ KA #_____004K6.17_____
Importance Rating___4.4___ Level of Difficulty___3____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #6

The unit is at 100% equilibrium power (constant Tavg) with all systems in automatic. A transient with the CVCS has caused Pressurizer level to increase to 68% and pressure has increased to 2280 psig.

Which one of the following describes the Pressurizer heaters and spray status for these conditions?

A. Backup heaters on, Variable heaters on, Spray valves closed.

B. Backup heaters off, Variable heaters off, Spray valves closed.

C. Backup heaters off, Variable heaters on, Spray valves throttled open.

D. Backup heaters on, Variable heaters off, Spray valves throttled open.

ANSWER
D

REFERENCE
PZR Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____004K3.07_____
Importance Rating___3.8___ Level of Difficulty___3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #7

RCS pressure has decreased to 1850 psig during a plant cooldown. P-11 bypass permissive is LIT and appropriate actions have been taken as required by 1BGP100-4, "Plant Shutdown." Subsequently a steamline break occurs downstream of the MSIV's.

What is the ESF response to this leak?

A. Dependent upon break size, both a steamline isolation and an SI will occur.

B. A steamline isolation will always occur but an SI will only occur on a large break.

C. Dependent upon break size, a steam line isolation will occur; however an SI will not occur.

D. An SI will always occur, but a steamline isolation will only occur on a large break.

Answer:
C

References:
SSPS Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____013A1.05_____
Importance Rating___3.4___ Level of Difficulty___3____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #8

The plant was operating at 50% power when an inadvertent safety injection occurred. At the time of the safety injection, the turbine driven AFW pump was out of service and the 1A AFW pump would not start. The operators wish to regain control of feedwater valves in order to feed the steam generators using the startup feedwater pump.

Which of the following is the correct order of actions that will be successful in restoring control of feedwater valves:

A. Reset SI, reset FW Isolation, cycle closed reactor trip breakers, reset FW Isolation Aux relays

B. Reset FW Isolation, reset SI, cycle closed reactor trip breakers, reset FW Isolation Aux relays

C. Reset SI, cycle reactor trip breakers, reset FW Isolation Aux relays, reset FW Isolation.

D. Reset SI, cycle reactor trip breakers, reset FW Isolation, reset FW Isolation Aux relays.

ANSWER:
D

REFERENCE:
FW-1 Feed Water

RO-only
Tier # __2__ Group #__1__ KA #_____013A4.02_____
Importance Rating___4.3___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #9

During the performance of an NIS Power Range Heat Balance at 100% power, an operator uses a Feedwater Temperature 30 degrees LOWER than actual.

(1) Would the calculated value of power be HIGHER or LOWER than actual power?

(2) Based on the calculated power would an adjustment of the NIS Power Range Channels be CONSERVATIVE or NON-CONSERVATIVE with respect to protection setpoints?

| | (1) | (2) |
|---|---|---|
| A. | higher | conservative |
| B. | higher | non-conservative |
| C. | lower | conservative |
| D. | lower | non-conservative |

ANSWER:
A

References:
Nuclear Instrumentation Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____015A1.01_____
Importance Rating___3.5___ Level of Difficulty___3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #10

How are the input signals used by the power range nuclear instrumentation Channel Comparator ?

A. Compares normalized signal of detector B (lower) to detector A (upper) and generates alarm when greater than a 4% difference.

B. Compares each lower detector to the average of the lower detectors and each upper detector to the average of the upper detectors and generates an alarm when greater than 4% difference.

C. Compares total power from each channel to average power and generates an alarm when any one channel is greater than 2% of average.

D. Compares total power from each channel to lowest total power value from all channels and generates an alarm at 2% difference.

Answer:
D

References:
Nuclear Instrumentation Lesson Plan

RO-only
Tier # __2__ Group #__1__ KA #_____015A3.04_____
Importance Rating___3.3___ Level of Difficulty___2____
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #11

Unit 1 in MODE 5, "Diesel Driven AFW Pump Monthly Surveillance", is in progress.

The following conditions are noted with respect to the 1B AFW pump:

Suction pressure.....17 psig
Discharge pressure.....1900 psig
Engine Speed.....1910 rpm
Recirc Flowrate.....90 gpm
ALL SG levels slowly INCREASING.

Which ONE of the following describes the operator actions required by these conditions ?

A. Shut 1AF005 E/F/G/H to prevent water addition to the SGs.

B. Verify the SX suction valves 1AF006B and 1AF017B are OPEN.

C. Dispatch an operator to check the position of recirc valves and locally verify recirc flow.

D. Trip the 1B Diesel Driven AFW pump.

ANSWER:
D

REFERENCES:
BOP AF-7
AFW Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____061A1.05_____
Importance Rating___3.6___ Level of Difficulty___3____
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #12

Which ONE of the following describes the relationship between the Auxiliary Feedwater System (AFW) piping connection to the Main Feedwater System piping?

The AFW piping connects downstream of the...

A. MFW bypass valves 6-inch piping and upstream of the FWIV.

B. MFW regulating valves 14-inch piping and upstream of the FWIV.

C. FWIV and upstream of the containment penetration.

D. Containment penetration and upstream of the last feedwater check valve prior to the SG.

ANSWER:
C

REFERENCE:
AFW Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____061K1.02_____
Importance Rating___3.4___ Level of Difficulty___3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #13

The following plant conditions exist for Unit 1:

Reactor Trip and Safety Injection have occurred following a LOCA
MSIVs have just closed due to Containment pressure
RCS subcooling is acceptable per ICONIC display

Which of the following conditions will allow ECCS to be reduced?

1. S/G narrow range levels 12% for all 4 S/G
2. S/G narrow range levels 32% for all 4 S/G

3. RCS pressure is decreasing
4. RCS pressure is stable

5. PZR level is 10%
6. PZR level is 40%

A. 1,3,5

B. 1,4,5

C. 2,3,6

D. 2,4,6

Answer:
D

Reference:
1BEP-1

RO only
Tier # __1__ Group #__2__ KA #____000009K3.24_____
Importance Rating___4.1___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #14

A reactor startup was aborted at 10E-8 amps due to severe weather conditions.

Plant conditions are as follows:

All control banks have been inserted
The reactor trip breakers are closed
Intermediate range channels N35 and N36 read 1E-11 amps
Source range channels N31 and N32 are deenergized

WHICH of the following operator actions are required to energize the source range channels?

A. De-energize two power range channels by pulling the instrument power fuses on two of the power range channel drawers.

B. Place both source range manual block switches to BLOCK.

C. Place both source range manual block switches to RESET.

D. Place both source range "High Flux at Shutdown" switches to the BLOCK position.

Answer:
C

References:
1BGP 100-5

RO only
Tier # __1__ Group #__2__ KA #____000032A1.01____
Importance Rating_3.1_ Level of Difficulty__3__
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #15

Which of the following determines the temperature at which RCS cooldown is terminated following a S/G tube rupture using 1BEP-3, "Steam Generator Tube Rupture"?

A. The ruptured S/G pressure.

B. RCS subcooling of 39F.

C. The lowest intact S/G pressure.

D. Maximum temperature for placing RH in service in the event of a loss of High Head Flow.

Answer:
A

References:
1BEP-3

RO only
Tier # __1_ Group #__2__ KA #____000038K3.06_____
Importance Rating__4.2__ Level of Difficulty___2___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #16

Given the following plant conditions:

Reactor Power is 100%
Reactor trip breaker testing is being performed with Reactor Trip Bypass breaker A (BYA) racked in and closed
Both Reactor Trip Breakers (RTA and RTB) are closed

What would be the result if a failure of a single 15 VDC power supply in the "A" Train SSPS Logic cabinet occurred?

A. The redundant power supply maintains normal conditions and a Rod Dev Power Rng Tilt alarm is generated.

B. Plant conditions remain stable with a General Warning alarm.

C. The reactor trips when both the UV and Shunt trip coils are actuated for RTA.

D. The reactor trips when the UV trip coils are actuated for both RTA and RTB.

Answer:
B

References:
SSPS Lesson Plan

RO only
Tier # __2___ Group #__2___ KA #_____012A2.04_____
Importance Rating___3.1____ Level of Difficulty____3____
Bank___X___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #17

Given the following plant conditions:

A turbine runback was initiated from 100% power
Tave is 577F and decreasing
Tref is 571F and stable
GPI and II Steam Dump Valves are full open
GPIII and IV Steam Dump Valves are closed
"Steam Dump Actuated" status light is NOT lit

Which of the following explains the status of the Steam Dump system?

Steam Dumps are operating _____

A. incorrectly because the GPII Steam Dumps should be throttled open.

B. incorrectly because the GPIII Steam Dumps should be throttled open.

C. correctly because the HI-1 bistable remains locked in until C-7 is reset.

D. correctly because the operator is required to reset C-7 when Tave stabilizes.

Answer:
A

References:
Steam Dumps Lesson Plan

RO only
Tier # __2__ Group #__2__ KA #_____039A2.04_____
Importance Rating___3.4___ Level of Difficulty___3___
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #18

The plant was at 50% power with a normal electrical lineup. A loss of DC Buss 111 occurs. Assuming no operator action, which ONE of the following will occur?

A. Reactor trip from low-low SG level.

B. Loss of field flashing for 1B diesel generator.

C. Turbine trip due to loss power to the 20-2/AST solenoid.

D. Loss of Power to Bus 159 following Main Generator Trip.

ANSWER:
A

REFERENCE:
DC-1 DC Power

RO only
Tier # __2__ Group #__2__ KA #_____063K3.02_____
Importance Rating___3.5___ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #19

Given the following plant conditions:

An inadvertent reactor trip occurred at 100% power
A loss of offsite power occurred when the Main Generator output breakers tripped
When the D/Gs energized the busses, an inadvertent SI occurred
All S/G NR levels have subsequently decreased to 38%

Which of the following describes operation of the AF Pumps under these conditions?

A. The 2A AF Pump is sequenced on after a time delay of 35 seconds and the 2B AF Pump started on RCP Bus Undervoltage.

B. The 2A AF Pump is sequenced on after a time delay of 35 seconds and the 2B AF Pump started due to low S/G levels.

C. The 2A AF Pump started due to low S/G levels when the D/G output breaker closed and the 2B AF Pump started on the Si signal.

D. The 2A AF Pump started due to low S/G levels when the D/G output breaker closed and the 2B AF Pump started on the loss of offsite power.

Answer:
A

References:
AFW Lesson Plan
EF-1 ESF Setpoints

RO only
Tier # __2__ Group #__2__ KA #_____064K4.11_____
Importance Rating___3.5___ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #20

Given the following conditions on Unit 1:

Unit is in MODE 5 during cooldown per BGP 100-5
RCS has just been filled to solid plant condition
RH pump 1B is operating in Shutdown Cooling mode
RCS temperature is 180F and stable
RCS pressure is 340 psig and stable

A failure of the letdown pressure control valve controller, PK-131, causes RCS pressure to rise to 575 psig, with RH pump 1B delta-p measured at 10 psid.

Which of the following describes ALL the component actions that occur to mitigate the consequences of this pressure rise, assuming no operator action?

A. Both PZR PORV's open.

B. PZR PORV 1RY455A and the RH loop suction relief valve open.

C. RH loop suction relief valve and RH discharge relief valve open.

D. PZR PORV 1RY456, the RH loop suction relief valve and the RH loop discharge relief valve open.

Answer:
B

Reference:
PZR Lesson Plan
BCB-1 Auct. Low RCS Temp vs. Max PORV setpoint

RO only
Tier # _2_ Group #__3__ KA #___005A2.02___
Importance Rating__3.5_____ Level of Difficulty___3___
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #21

Given the following Unit 1 conditions:

Reactor Power is 6%
Startup FW pump is in service
A and B CD/CB pumps are running
Instrument Air pressure is at 70 psig and dropping due to a header leak

Loss of air to which of the following components would result in an automatic reactor trip?

A. Condensate Pump recirculation valve CD152

B. CVCS Charging Flow Control valve CV121

C. RCP #1 Seal Leakoff Isolation valve CV8141A

D. Main FW Reg Bypass valve FW510A

Answer:
D

Reference:
Instrument Air Lesson Plan

RO only
Tier # __2__Group #__3__ KA #___078K3.02____
Importance Rating___3.5 _ Level of Difficulty___3_____
Bank___x____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #22

The following plant condition exists:

- Unit 1 is in HOT SHUTDOWN.

WHICH ONE (1) of the following is the MAXIMUM allowable Unit 1 containment internal pressure reading in accordance with Technical Specifications 3.6.4.1, "Internal Pressure"?

A. -.10 psig

B. -.50 psig

C. +.50 psig

D. +1.0 psig

Answer:
D

Reference:
1. Byron: SDM #40, "Containment", Objective 7, p. 40-1.
2. Byron: Technical Specifications 3.6.1.4, p. 3/4 6-6.
3. KA 103000G005 (3.3/4.1)

RO only
Tier # _2___ Group #___3__ KA #__103000G005 __
Importance Rating__3.4 ___ Level of Difficulty___2_____
Bank ___X____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #23

Which ONE of the following statements explains the BEP-1, "Loss of Reactor or Secondary Coolant," bases for stopping the RCPs as directed by the fold out page following a containment Phase B actuation?

A. Delays the onset of two phase flow.

B. Preempt the RCP's tripping on cavitation because it is assumed that if containment spray actuates, an RCS depressurization is in progress.

C. Reduces the containment high pressure transient by lowering the energy release rate to containment from forced flow.

D. Precludes RCP bearings and seals from overheating on loss of component cooling water.

ANSWER
D.

REFERENCE:
1BEP-1 fold out page

RO only
Tier # __1__ Group #__2__ KA #_000011K2.4.18_
Importance Rating___2.7__ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #24

Which ONE of the following conditions will cause radwaste key locked valves WX-353 and WX-896 to auto-close?

A. High alarm on 0PR10J, Station Blowdown Rad. Monitor.

B. Circulating water blowdown flow of 9.8E03 gpm.

C. Both Inlet and Outlet valves of a release tank inadvertently opened.

D. Conductivity level of 0.22 micro-mhos on the outlet of the radwaste mixed bed demineralizer.

ANSWER:
B.

REFERENCE:
Liquid Rad Waste Lesson Plan

RO only
Tier # __2__ Group #__2__ KA #_____075K1.02_____
Importance Rating___2.9___ Level of Difficulty___2___
Bank___x____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY: What are the formal names for these valves?

Question #25

The function of the Service Air system is to provide the following:

A. Supply Instrument Air

B. Primary emergency breathing air system

C. Supplies air to only essential components

D. Oil filled compressed air for maintenance use

Answer:
A

Reference:
SA/IA-2 Service Air

RO only
Tier # __2__ Group #__2__ KA #____079K2.1.28_____
Importance Rating___3.2___ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #26

The transition is made from EP-0 to ES-0.1. Step 5 in ES-0.1 requires boration for all rods NOT fully inserted. There are 3 rods not fully inserted into the core at this point. What is the MINIMUM gallons that will have to be borated FROM the RWST for the three rods?

A. 1320 gallons

B. 5500 gallons

C. 3960 gallons

D. 16500 gallons

Answer :
D

Reference:
ES-0.1 step 5

Both
Tier # __1__ Group #__1__ KA #___000005K3.01___
Importance Rating__4.0__ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #27

Given the following conditions:

Unit 1 is operating at 100% power
RCP No. 1 SEAL LEAKOFF FLOW HIGH alarm is received
No. 2 seal leakoff high flow alarm has been printed
RCP No. 1 seal leakoff recorder indication is high offscale on the high range

Which one of the following has occurred and what action is required?

A. The No. 1 and No. 2 seals have failed and a controlled reactor shutdown is required.

B. Only the No. 2 seal has failed and continued monitoring of RCP conditions is required.

C. The No. 1 seal has failed and immediate reactor trip is required.

D. The No. 2 and No. 3 seals have failed and continued monitoring of RCP conditions is required.

Answer:
C

References:
1BOA RCP-1

Common
Tier # __1__ Group #__1__ KA #___000015A1.22___
Importance Rating__4.0__ Level of Difficulty___4___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #28

During a small break LOCA on a cold leg, a phase is reached where the vessel level continues to decrease below the hot leg penetrations and boiling in the core is the means of transporting the core heat to the bubble. A fixed differential pressure exists between the core and the break and is maintained by the loop seal.

What is the primary mechanism for heat removal?

A. Condensation of vapor from the bubble at the hot leg side of the SG U-tubes which then drains back to the core via the hot legs.

B. Condensation of vapor in the head, which is cooled by fans in containment, and draining back to the core.

C. Slug flow via the cold legs through the loop seal and flashing across the cold leg break.

D. Partial natural circulation flow characterized by liquid pulses flowing from the cold leg over the U-tubes and into the hot legs.

Answer:
A

References:
LOCA Procedure Lesson Plan

Both
Tier # __1__ Group #__1__ KA #___W/E09K2.02_____
Importance Rating _3.6__ Level of Difficulty___3_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #29

The following plant conditions exist:

The reactor is shutdown
RCS temperature is 290°F and stable
RCS pressure is 320 psig and stable
RH is in shutdown cooling
CC surge tank level is slowly decreasing with the makeup valves to CC surge tank fully open

A leak has occurred in the ?

A. RH Heat Exchanger

B. Seal Water Heat Exchanger

C. Letdown Heat Exchanger

D. Thermal Barrier Heat Exchanger

Answer:
B

References:
BOA PRI-6 Attachment A
CC Lesson plan

Both
Tier # __1__ Group #__1__ KA #___000026A2.01___
Importance Rating__2.9__ Level of Difficulty___4___
Bank __x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #30

Given the following conditions on Unit 1:

Reactor power is steady at 100%
Tave is steady at 582°F
PZR level is 60% and slightly increasing
PZR pressure is 2230 psig and slowly decreasing
ALL systems are aligned normally

Which of the following conditions has occurred?

A. LK-459 PZR level controller has failed high

B. PZR PORV 456 is full open

C. PZR pressure transmitter PT-458 has failed high

D. PZR spray valve RY455B, has failed to 50% open

Answer:
D

References:
BAR 1-12-A1

Both
Tier # __1__ Group #__1__ KA #___000027A1.01_____
Importance Rating _4.0__ Level of Difficulty___3_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #31

The U1 reactor is at 30% power after an auto steamline isolation occurred on a A S/G. During the exact time of the isolation, an operator recorded the following SSPS parameters:

PZR pressure 1750 psig and stable
PZR level 22% and stable
CNMT pressure 7.8 psig (on all instruments)

| | | | | |
|---|---|---|---|---|
| S/G level(NR) | 31% A, | 30% B | 25% C | 34% D |
| S/G pressures | 760 psig 1A | 775 psig 1B | 680 psig 1C | 800 psig 1D |

A steamline isolation occurred due to .....?

A. the rate sensitive S/G pressure circuit.

B. the steamline high pressure rate signal.

C. the containment pressure circuit for steamline.

D. the PZR low pressure SI.

Answer:
A

References:
SSPS lesson plan

Common
Tier # __1__ Group #__1__ KA #___000040K3.02_____
Importance Rating__4.4___ Level of Difficulty___3_____
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #32

The plant has the following conditions:

Reactor Power 52% steady state
Generator load is steady at 600MW with 100 MVAR lagging
Condenser vacuum 2.2in.HgA and steady

A leak developed in one of the water boxes causing pressure to rise at the rate of 0.2 inches HgA/minute. After 2 minutes, the operator began a load decrease at the rate of 10MW/minute in an attempt to offset the pressure rise and reduced load below the P-8 setpoint.

Assuming the load decrease remained constant and the rate of pressure rise remained constant throughout the event, what action is required?

A. The operator would initiate a turbine trip after the load is reduced to less than 30%.

B. No operator action, the turbine will automatically trip at 35% power causing a reactor trip.

C. The operator will initiate a manual reactor trip at 39% power.

D. The operator will initiate a manual reactor trip at 47% power.

Answer:
C

References:
1BOA SEC-3

Common
Tier # __1__ Group #__1__ KA #____000051A2.02____
Importance Rating__3.9__ Level of Difficulty____3____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New__x__
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: Chart in SEC-3 n 1BOA

Question #33

The station blackout occurred at 10:00 am. The 125 VDC batteries are suppling ESF loads and emergency lighting without the battery chargers. Assuming the MAXIMUM length of time that the 125 VDC batteries are designed to supply the above listed loads without the chargers, at what time would the loads no longer be supplied by the batteries?

A. 12:00 pm (noon)

B. 2:00 pm

C. 4:00 pm

D. 6:00 pm

ANSWER:
B

References:
125 vdc Battery Lesson Plan
Byron FSAR
Byron SSD

Common
Tier # __1__ Group #__1__ KA #__000055K1.01__
Importance Rating___3.3___ Level of Difficulty__2__
Bank #_____ Modified Bank #_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: We need reference for battery discharge rates. If these values are not presented in class or if a suitable reference cannot be found, then we may consider changing the focus of the question.

Question #34

An operator noted the following annunciators were in following an event: (Not all alarms are provided)

PWR RNG HIGH STPT RX TRIP ALERT
OPDT HIGH ROD STOP C-4
OTDT HIGH ROD STOP C-3
PZR PRESS CONT DEV LOW HTRS ON
RCP BUS UNDERVOLT RX TRIP ALERT
RCP 1C BRKR OPEN OR FLOW LOW ALERT
TURB STOP VLV CLOSED ALERT

Which bus lost power?

A. Instrument Bus 113

B. Instrument Bus 112

C. DC Bus 113

D. DC Bus 112

Answer :
A

References:
1BOP ELEC-2

Common
Tier # __1__ Group #__1__ KA #__000057K2.4.10__
Importance Rating___3.0___ Level of Difficulty__3__
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: Is it necessary to put in annunciator numbers in the stem or is what provided acceptable?

Question #35

Which ONE of the following describes the effect on containment if the Service Water supply to the Reactor Containment Fan Coolers (RCFC) is secured? (Assume normal 100% power operation.)

Containment temperature would...

A. remain the same since the other containment HVAC equipment would maintain cooling.

B. increase slightly since Chilled Water also supplies RCFC's during normal operation.

C. increase because only service water supplies RCFC's.

D. increase since Component Cooling can only supply RCFC's with a manual lineup.

ANSWER:
B

REFERENCE:
Containment Ventilation and Purge Lesson Plan
Essential Service Water Lesson Plan
1BOA PRI-7

Common
Tier # __1__ Group #__1__ KA #__000062A1.01__
Importance Rating__3.1__ Level of Difficulty__2__
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #36

Which ONE of the following is the correct classification of a fire in the Diesel Generator Fuel Day Tank?

A. Class A

B. Class B

C. Class C

D. Class D

ANSWER:
B

REFERENCE:
Fire Protection Lesson Plan Att c

Common
Tier # __1__Group #__1__ KA #___000067K1.01___
Importance Rating__2.9__ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #37

The Control Room has been evacuated in accordance with BOA PRI-5 and the operators are performing an RCS cooldown.

The plant conditions are as follows:

Reactor coolant temperature is 456 degrees F and stable
Reactor coolant pressure is 449 psig and stable

Which ONE of the following describes the approximate state of the Reactor coolant (per the steam tables) when checking subcooling margin?

It is about .....?

A. 3 degrees superheated

B. at the saturation point

C. 3 degrees subcooled

D. 12 degrees subcooled

ANSWER:
C

Reference
Steam Tables

Common
Tier # __1__ Group #__1__ KA #___000068A2.09___
Importance Rating__4.1_____ Level of Difficulty___3___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: Steam Tables

Question #38

The worst case accident for peak containment pressure would be a double ended guillotine break of the ____(1)____. The resultant peak containment pressure would be at __(2)__ psig.

Which of the following accidents and pressure are correct?

| | (1) | (2) |
|---|---|---|
| A. | Pressurizer relief line | 41.6 psig. |
| B. | RCS at the RCP suction | 43.6 psig. |
| C. | Main steam line in containment | 45.6 psig. |
| D. | RCS in the hot leg prior to S/G | 47.6 psig. |

Answer:
B

Reference:
EF-4 ESF

Common
Tier # __1__ Group #__1__ KA #__000069A1.2__
Importance Rating__3.3__ Level of Difficulty___2___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #39

Which of the following sets of actions states the proper sequence of major actions to be performed in accordance with 1BFR-C.1, "Response to Inadequate Core Cooling", for removing heat from the core?

A. Restoration of ECCS flow
RCP restart
Rapid secondary depressurization

B. Restoration of ECCS flow
Rapid secondary depressurization
RCP restart

C. RCP restart
Restoration of ECCS flow
Rapid secondary depressurization

D. RCP restart
Rapid secondary depressurization
Restoration of ECCS flow

Answer:
B

References:
1BFR-C.1 Procedure Lesson Plan

Common
Tier # __1__ Group #__1__ KA #__000074K1.03__
Importance Rating__4.5__ Level of Difficulty____3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge___x___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #40

A non-licensed individual may move control rods using the IN/HOLD/OUT switch located in the control room under which of the following conditions?

The non-licensed individual is ...

A. a plant operator performing a surveillance test and is directly supervised by the on shift NSO.

B. a qualified nuclear engineer performing a control rod shuffle and is directly supervised by a previously licensed NSO for that unit.

C. a plant operator who is enrolled in the initial license training and is directly supervised by a certified instructor of the class.

D. a maintenance manager who is enrolled in initial license training program and is under the direct supervision of the on shift NSO.

Answer:
D

Reference:
BAP 300-1 Conduct of Operations

Common
Tier # _3__ Group #_____ KA #__2.1.1_____
Importance Rating __3.7___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #41

An NRC-licensed operator works shift Monday morning as an NSO for 8 hours on Unit 1. The same individual is off work on Tuesday. On Wednesday morning the same operator stands the Unit 1 NSO watch for 8 hours. The same individual is off of work on Thursday. On Friday night the same operator is assuming the Unit 1 NSO watch at shift turnover

What is the administrative procedural requirement associated with reviewing the Unit logs?

A. Thursday only.

B. Thursday and Friday only.

C. Wednesday, Thursday, and Friday only.

D. A minimum of the past five days.

Answer:
C

Reference:
OP-AA-101-401 Operating shift Turnover and Relief.

Common
Tier # __3__ Group #_____ KA #___2.1.3_____
Importance Rating __3.0___ Level of Difficulty___2____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__X___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #42

Given the following conditions on Unit 2:

Reactor Power is 100%

A leak rate surveillance indicates the following:
Total RCS leakage rate is 9.0 gpm
Leakage to PRT is 6.0 gpm
Leakage to Reactor Coolant Drain Tank is 2.0 gpm
Leakage into Secondary from Primary as follows:
Unit 2 A S/G .07 GPM
B S/G .08 GPM
C S/G .09 GPM
D S/G .10 GPM

Which of the following statements are correct concerning the above conditions?

A. No leakage limits have been exceeded.

B. Unidentified leakage limit has been exceeded.

C. Total Primary to Secondary leakage limit has been exceeded.

D. Secondary leakage limit through one S/G has been exceeded.

Answer:
A

Reference:
ITS section 3.4.13

Common
Tier # _3___ Group #_____ KA #____2.1.12_____
Importance Rating __2.9____ Level of Difficulty___3_____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #43

Which of the following operations results in the largest reactivity change?

A. Inserting 10 steps with rods initially at 200 steps on CBD at 100% power at 500 MWD/MTU.

B. Inserting 5 steps with rods initially at 110 steps on CBC at 0% power at 15000 MWD/MTU

C. Withdrawing 10 steps with rods initially at 190 steps on CBD at 100% power at 15000 MWD/MTU.

D. Withdrawing 5 steps with rods initially at 115 steps on CBC at 0% power at 500 MWD/MTU.

Answer:
C

Reference:
1BCB-1 Integral and Differential Rod Worth

Common
Tier # __2__ Group #__1__ KA #_____001K5.05_____
Importance Rating___2.8___ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination: Integral and Differential Rod Worth vs. Steps Withdrawn

Question #44

How would the RCP seals be affected if 1CV8142, #1 Seal Bypass Valve, was opened with the associated RCP running at normal operating pressure in RCS?

A. Flow across the #1 seal will fall to 0 psig and the seal will be damaged by overheating.

B. Differential pressure changes across the #1 seal resulting in unbalanced seal motion.

C. Full RCS pressure is applied to the #2 Seal causing it to become the primary seal.

D. Pressure to the seal return line to the VCT is lowered causing flow across #2 seal to drop.

Answer:
B

References:
RCP Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____003A1.09_____
Importance Rating___2.8___ Level of Difficulty___3____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #45

Why is the manual emergency boration valve not used for performing emergency boration?

A. There is no way to monitor flow through the valve when in use so total boration flow could not be determined.

B. The throttling characteristics of the valve are poor, thereby resulting in full flow of 75 gpm or no flow at all.

C. The valve will only allow 10 gpm flow thereby not meeting the criteria for emergency boration.

D. Locally operated valves are not analyzed for safety functions and thereby not considered for performing safety function.

Answer:
C

References:
CVCS Lesson Plan
ITS Boration flow paths
Common
Tier # __2__ Group #__1__ KA #_____004A4.18_____
Importance Rating___4.3___ Level of Difficulty___3____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #46

Given the following plant conditions on Unit 1:

Reactor power was at 100% when a spurious SI signal was generated
Reactor Trip Breaker B failed to open
The SI signal was reset
The RH pumps, SI pumps, and 1A CCP were secured.

After the ECCS pumps were secured, a small break LOCA occurred.

Which of the following occurs when containment pressure rises to 10 psig? (Assuming no operator actions are taken)

A. Only the MSIV and MSIV bypass valves close.

B. 1B and 1C MSIV's close but the 1A and 1D MSIV's remain open.

C. The 1A RH, 1A SI, and 1A CV Pumps start; the MSIV and MSIV bypass valves close.

D. The 1B RH and 1B SI Pumps start; the MSIV and MSIV bypass valves close.

Answer:
D

References:
EF-2 ESF setpoints

Common
Tier # __2__ Group #__1__ KA #_____013A3.02_____
Importance Rating___4.1___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination: _____

Question #47

Given the following plant conditions on Unit 1:

Reactor Power is 100%
Power Range Nuclear Instrument channel N41 failed
Actions are complete in accordance with BOA INST-1

How is the Quadrant Power Tilt Ratio (QPTR) determined?

A. Incore detectors must be used.

B. The 3 operable power range NIS channels are used.

C. The 3 operable power range NIS channel are used in conjunction with flux map of the quadrant with the failed power range NIS.

D. 4 power range NIS channel values are used with the average values for the 2 adjacent power range NIS channels used for the failed channel.

Answer:
A

References:
ITS QPTR 3.2.4
Nuclear Instrument Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____015A1.04_____
Importance Rating___3.5___ Level of Difficulty___2____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #48

A LOCA has occurred. Core exit thermocouple temperatures are indicating 690 °F and increasing rapidly.

The Incore Thermocouples will provide satisfactory indication and become __(1)__ accurate above __(2)__. (Assume NO core cooling is present)

| | (1) | (2) |
|---|---|---|
| A. | less | 700 °F |
| B. | more | 1800 °F |
| C. | more | 700 °F |
| D. | less | 1800 °F |

ANSWER:
D

REFERENCE:
Incore Instrumentation Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____017K6.01_____
Importance Rating___2.7___ Level of Difficulty___2____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #49

How is the containment average temperature determined?

It is the calculated arithmetical average of the RCFC Dry Bulb and the _____.

A. inlet temperature of those RCFC's that are running.

B. outlet temperature of all RCFC's regardless of operating status.

C. inlet temperature of all RCFC's regardless of operating status.

D. outlet temperature of those RCFC's that are running.

Answer:
A

References:
ITS 3.6.5 Containment Air Temperature

Common
Tier # __2__ Group #__1__ KA #_____022K2.1.32_____
Importance Rating___3.4___ Level of Difficulty___2____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #50

Given the following plant conditions on Unit 1:

Reactor power is 100%
3 CD/CB pumps are running
CD/CB Pump Selector Position is selected to the standby CB/CD Pump
1B and 1C Feedwater pumps are running

Which of the following occurs if the shaft shears between the reduction gear and the condensate pump casing for a running CD Pump?

A. 1CD152, CD pump recirc valve opens

B. 1CD157, GS condenser bypass valves A & B opens

C. 1HD046A & B HDP discharge valves closes

D. Both main feedwater pumps speeds decrease

Answer:
B

References:
Main Feedwater Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____056A2.04_____
Importance Rating___2.6___ Level of Difficulty___4____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #51

Given the following plant conditions:

Reactor power is 25%
A turbine trip and Feedwater isolation (FWI) occurred due to P-14
The startup feedwater pump was started

What actions MUST be performed in order to realign valves to establish main feedwater flow to the S/G's?

The P-14 signal must be _____

A. blocked and the main and aux FWI relays reset.

B. blocked and the reactor trip breakers need to be cycled open.

C. cleared and the FWI aux relays reset.

D. cleared, the reactor trip breakers cycled open, and the aux and main FWI relays reset.

Answer:
C

References:
Main Feedwater Lesson plans

Common
Tier # __2__ Group #__1__ KA #_____056K4.19_____
Importance Rating___3.2___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #52

The diesel AFW pump has 2 battery packs each going to both starting motors with a selector switch determining which bank will power the starting motors. Each battery is designed to perform __(1)__ cranking cycles of __(2)__ secs each.

| | (1) | (2) |
|---|---|---|
| A. | 2 | 3 |
| B. | 3 | 4 |
| C. | 4 | 5 |
| D. | 5 | 6 |

Answer:
C

Reference:
AF-1 AFW System

Common
Tier # __2__ Group #__1__ KA #_____061K2.03_____
Importance Rating___4.0___ Level of Difficulty___2____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #53

When 0PR-016 has a high radiation condition, the inlet valve to the Blowdown Monitor tank __(1)__ and the isolation valve to main condenser or CST __(2)__. The system is returned to normal __(3)__ after the radiation condition has cleared.

| | (1) | (2) | (3) |
|---|---|---|---|
| A. | closes | opens | automatically |
| B. | opens | closes | manually |
| C. | closes | opens | manually |
| D. | opens | closes | automatically |

Answer:
B

References:
Liquid Rad Waste Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____068K4.01_____
Importance Rating___3.4___ Level of Difficulty___2____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #54

Waste gas decay tanks are designed to isolate at __(1)__ with a back up relief at __(2)__ .

| | (1) | (2) |
|---|---|---|
| A. | 80# | 180# |
| B. | 85# | 170# |
| C. | 90# | 160# |
| D. | 95# | 150# |

Answer:
D

Reference:
RW-1, Gaseous Radwaste

Common
Tier # __2__ Group #__1__ KA #_____071K4.01_____
Importance Rating___2.6___ Level of Difficulty___2____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #55

Given the following plant conditions:

Unit 1 is in MODE 5
Unit 2 is in MODE 6
Main Control Room Ventilation radiation monitoring is provided by train A
Gas Monitor 0RE-PR032B fails low

Which of the following is required to be performed?

A. Immediately, suspend all core alterations on Unit 2.

B. Within 1 hour initiate continuous monitoring using a portable monitor having the same alarm setpoint.

C. Within 1 hour, place the redundant Control Room Ventilation Filtration System in the normal mode.

D. Within 1 hour, start the Control Room Makeup System.

Answer:
C

References:
Control Room HVAC Lesson Plan
ITS 3.3.6

Common
Tier # __2__ Group #__1__ KA #_____072K2.1.14_____
Importance Rating___2.5___ Level of Difficulty___2____
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam_____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #56

Maintenance must be performed on a system that will require a CLEAN and a POTENTIALLY CONTAMINATED system to be aligned together through a temporary modification.

Which of the following is required to address the cross-contamination potential?

A. A manual isolation valve is required to be installed with a person stationed at the valve when it is open controlling flow.

B. The temporary modification crosstie shall have a caution card attached identifying the crosstie and potential of cross-contamination.

C. A check valve shall be installed in the temporary modification to prevent backflow between the two systems.

D. The temporary modification will have a relief valve installed in it to acuate at the clean systems operating pressure thereby preventing cross-contamination.

Answer:
C

Reference:
CC-AA-112 Temporary Modifications

Common
Tier # __3___ Group #_____ KA #____2.2.11_____
Importance Rating ___2.5___ Level of Difficulty___2_____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #57

Unit 2 is currently in MODE 4. At 0900 today, it is discovered that a 24-hour surveillance involving Shutdown Margin was last performed at 0600 on the previous day.

What is the required action in response to the failure to perform the surveillance?

A. The Technical Specification LCO 3.0.3 is applied.

B. The ACTION statement (LOCAR) is immediately initiated.

C. The surveillance may be delayed for up to 24 hours from the discovery per Technical Specification 4.0.3.

D. The surveillance requirements are satisfied if the surveillance is completed by 1200.

ANSWER:
D

REFERENCE
ITS SR 3.0.2.

Common
Tier # __3___ Group #_____ KA #____2.2.12_____
Importance Rating __3.0_____ Level of Difficulty__2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #58

The reactor was operating at 85% power with Control Bank D at 190 steps. Subsequently, a continuous rod withdrawal occurred followed by a turbine runback.

Which of the following is also expected for this condition?

A. AFD becomes more negative

B. DEHC MW IN Feedback light will be lit

C. TAVE CONT DEV HIGH will alarm

D. ROD BANK LOW INSERTION LIMIT alarm will be in

Answer:
C

References:
1BOA ROD-1

Common
Tier # __1__ Group #__2__ KA #_____000001A2.05_____
Importance Rating___4.4____ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: Is it necessary to spell out acronyms for alarms?

Question #59

The following conditions exist on Unit 1:

Reactor power 80%
Rod Deviation alarm lit
Rod Bottom alarm lit
Power Range Channel Deviation alarm lit
2 Rod Bottom LEDs lit on DRPI

WHICH ONE of the following items describes the operator response to this event?

A. Check Axial Flux Difference and Quadrant Power Tilt Ratio

B. Trip the reactor and perform 1BEP-0, "Reactor Trip or Safety Injection"

C. Restore rods per ROD-3, "Dropped or Misaligned Rod" then contact Nuclear Engineering to verify operability

D. Restore rods per ROD-3, "Dropped or Misaligned Rod" then verify operability by performing 1BOS 1.3.1.2-1, Movable Control Assemblies Quarterly Surveillance

ANSWER:
B

REFERENCE
1BOA ROD-3

Common
Tier # __1___ Group #__2___ KA #_000003K2.4.4___
Importance Rating___4.0___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #60

The Unit is operating at 18% thermal power. Which ONE of the following describes the status of the Reactor Coolant Pump breakers and Reactor Trip breaker if the bus frequency for all RCP's is 55 Hz for 1 second?

| | RCP Breaker | Reactor Trip Breakers |
|---|---|---|
| A. | Open | Shut |
| B. | Shut | Open |
| C. | Open | Open |
| D. | Shut | Shut |

ANSWER:
C

Reference
BAR 1-11-B5

Common
Tier # __1___ Group #__2___ KA #___000007K2.02_____
Importance Rating__2.6____ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #61

WHICH ONE of the following is the cause for a rapid increase in Pressurizer level following a LOCA event with a loss of subcooling margin?

A. A PZR vapor space leak.

B. Voiding in the reactor vessel head.

C. SI flow refilling the PZR.

D. PZR reference leg temperature decreased.

ANSWER:
A

REFERENCE:
PZR Lesson Plan

Common
Tier # __1___ Group #__2___ KA #__000008A2.12_____
Importance Rating___3.4___ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___X___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #62

A small break LOCA has occurred outside containment.

Actions of BCA-1.2 "LOCA Outside Containment", have been completed and RCS pressure continued to decrease. A transition was made to BCA-1.1, "Loss of Emergency Coolant Recirculation"

Which of the following is the reason a transition was made to BCA-1.1?

A. To recover after the break was isolated

B. To terminate offsite release

C. To reverify that all automatic actions have been completed

D. To take compensatory actions for lack of inventory in the containment sump

Answer:
D

References:
1BCA-1.1

Common
Tier # __1__ Group #__2__ KA #_W/E04K1.02____
Importance Rating___3.5__ Level of Difficulty___2_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #63

Which of the following describes the methods for depressurizing the RCS in preparation for Refill in the order of preference used in 1BEP ES-1.2, "Post LOCA Cooldown and Depressurization"?

A. One Pzr PORV
Normal Spray
Aux Spray

B. Normal Spray
One Pzr PORV
Aux Spray

C. Normal Spray
Aux Spray
Two Pzr PORVS

D. Two Pzr PORVS
Normal Spray
Aux Spray

Answer:
B

Reference:
1BEP ES-1.2

Common
Tier # __1__ Group #__2__ KA #_W/E03K3.03_____
Importance Rating___3.9__ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #64

Which of the following will satisfy conditions necessary to manually open Containment Recirculation Valve SI8811A?

1. SI8812A - open
2. SI8812A - closed

3. SI8812B - open
4. SI8812B - closed

5. CS001A - open
6. CS001A - closed
7. CS001B - open
8. CS001B - closed

9. RH8701A - open
10. RH8701B - closed

A. 1, 3, 5, 7, 9

B. 2, 4, 6, 8, 9

C. 1, 3, 5, 7, 10

D. 2, 4, 6, 8, 10

Answer:
D

Reference
ECCS Lesson Plan
ECCS-3 ECCS

Common
Tier #__1__ Group #__2__ KA #__W/E11K2.1__
Importance Rating__3.6__ Level of Difficulty___2___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #65

A plant heatup was in progress in accordance with BOP 100-1, when a leak was detected by the actuation of alarm "CNMT DRAIN LEAK DETECT FLOW HIGH."

Following stabilization of the leak rate, the following plant conditions exist:

PZR level 42% and stable
PZR pressure 1600 psig and stable
Charging flow is 98 gpm as read on FI-121
Total letdown flow is 75 gpm
Total seal injection flow is 27 gpm
RCP seal parameters are normal

Which of the following actions will identify the correct leak location?

A. Closing the RCS loop drain valves will isolate a tube leak in the excess letdown heat exchanger.

B. Closing the orifice isolation valves and the letdown line isolation valves will isolate the leak downstream of 1CV131 letdown line pressure control valve.

C. Closing the individual seal injection isolation MOVs will isolate the leak at the seal injection line flange to the RCPs seal package.

D. Closing the charging line CNMT isolation valves will isolate the leak at the discharge line from the in service regenerative heat exchanger.

Answer:
D

References:
1BOA PRI-1

Common
Tier # __1_ Group #__2__ KA #____000022A2.02_____
Importance Rating___3.2_ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #66

Given the following plant conditions:

Plant in Mode 5
RCS temperature is 195 °F and stable
RCS pressure is 325 psig and stable
Train "A" RH is in service, Train "B" RH is inoperable (OOS for repairs)
RCS is intact
All systems aligned in normal configuration for present conditions

A loss of RH shutdown cooling occurs with the temperature rising, which of the following is the preferred method for heat removal in accordance with 1BOA PRI-10?

A. RWST fill to RCS, spill through the PZR PORVS

B. SI Pump Hot Leg Injection with spill through the 2-inch vent.

C. Natural or forced RCS flow while steaming intact S/Gs.

D. Reflux cooling to any S/G with level equal to or greater the 27% NR level.

Answer:
C

Reference:
1BOA PRI-10

Common
Tier # __1__ Group #__2__ KA #____000025K3.01____
Importance Rating_3.1_ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #67

The following plant conditions exist on Unit 2:

A load reduction from 32% power was initiated 5 minutes ago
Current reactor power is 28%
PZR pressure 2235 psig and stable
PZR level 30% and stable
S/G levels (NR) 37%A, 39%B, 37%C, 38%D and stable

If the 2D S/G level were to drop to 29% and then rise to 35% 20 seconds later, what would be the response of the ATWS Mitigating System (AMS)?

A. AMS actuation signal is generated; the reactor trips and the motor driven AF pump start.

B. AMS actuation signal is generated; the main turbine would trip and both AF pumps start.

C. AMS actuation signal is not generated because turbine power is below C-20 setpoint.

D. AMS actuation signal is not generated because of a time delay in the S/G level circuit.

Answer:
D

References:
AMS Lesson Plan

Common
Tier # __1__ Group #__2__ KA #____000029A1.15____
Importance Rating_4.1_ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #68

Unit 1 is at 100% power with the following plant conditions:

All PZR heaters are energized
Letdown flow is 75 gpm
Charging flow is 105 gpm
S/G levels are constant
Tavg/Tref are matched

Which of the following events is in progress?

A. The PZR level control channel has failed high.

B. An atmospheric steam dump valve has opened.

C. A S/G tube leak has occurred.

D. PZR spray bypass flow has increased.

Answer:
C

Reference:
1BOA SEC-8

Common
Tier # __1_ Group #__2__ KA #____000037A2.01_____
Importance Rating__3.0__ Level of Difficulty___4___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #69

Given the following:

Reactor power is 100%.
RCS Tavg is stable at 582°F on all 4 loops.
RCS pressure is stable at 2235 psig.
Containment Humidity is INCREASING.
Containment Pressure is INCREASING.
Steam Flow on each SG is STABLE
1A SG Feed Flow is pegged HIGH
1A SG Main FW Reg Valve is full OPEN
1A SG pressure is STABLE
1A SG level is DECREASING

Which ONE of the following events is in progress?

A. Feed Line Break INSIDE Containment.

B. Steam Line Break INSIDE Containment.

C. Main FW Reg Valve failed OPEN.

D. Feed Flow Indicator pegged HIGH.

ANSWER:
A

REFERENCE:
1BEP-2
WOG HP BACKGROUND EP-2

**B. Wrong due to Tave stable**
**C. Wrong due to S/G level decreasing, CNMT Humidity increasing**
**D. Wrong due to feed reg valve full open, CNMT Humidity increasing**

Common
Tier # __1__ Group #__2__ KA #___000054K1.01___
Importance Rating___4.1___ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #70

Given the following plant conditions:

The plant has experienced an unisolable main steam line break inside containment. The operators are implementing actions of 1BCA-2.1 "Uncontrolled Depressurization of all S/G's". Feed flow was reduced to 25 gpm to each S/G by operator action.

Based on the above conditions, which of the following describes when/(or if) a transition to 1FRH-1, "Loss of Secondary Heat Sink" is made?

The transition to 1FRH-1 is ___?

A. Required immediately.

B. Required when 10% NR level cannot be restored to ONE steam generator.

C. Required when 10% NR level cannot be restored to ALL steam generators.

D. Not required.

Answer:
D

References:
1BFR-H.

Common
Tier # __1___ Group #__2__ KA #_____W/E05A2.01_____
Importance Rating___3.4___ Level of Difficulty____2____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #71

Which of the following would be an EXCEPTIONAL Out-Of-Service if single valve isolation is used?

The system has a temperature of _(1)_ and a pressure of _(2)_.

| | (1) | (2) |
|---|---|---|
| A. | 150 °F | 250 psig. |
| B. | 170 °F | 350 psig. |
| C. | 190 °F | 450 psig. |
| D. | 210 °F | 550 psig. |

Answer:
D

Reference:
BAP 330-1 Station Equipment Out Of Service Procedure

Common
Tier # __3___ Group #_____ KA #___2.2.13_____
Importance Rating __3.6____ Level of Difficulty___2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___X___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #72

The following stable conditions are encountered when surveying a room located in the auxiliary building RPA:

| | |
|---|---|
| General Area Radiation level in room | 60 mrem/hr |
| Radiation level at 30 cm from pipe | 375 mrem/hr |
| Radiation level on contact with pipe elbow | 400 mrem/hr |
| Contamination levels | 850 dpm/cm2 beta-gamma |
| | 0 dpm/cm2 alpha |
| Airborne radiation level | 0.6 DAC |

What are the correct radiological postings or labels required to reflect the current radiological conditions for this room?

A. "DANGER, HIGH RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".

B "CAUTION, RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".

C. "DANGER, HIGH RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".

D. "CAUTION, RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".

ANSWER:
C

REFERENCE:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # __3__ Group #_____ KA #___2.3.1_____
Importance Rating __2.6____ Level of Difficulty___3_____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #73

An operator received radiation exposure at both Braidwood and Byron Stations during the year.

The exposure record until the last day of the year is:

| | Braidwood | Byron |
|---|---|---|
| Deep Dose Equivalent (DDE) | 275 mrem | 75 mrem |
| Lens Dose Equivalent (LDE) | 15 mrem | 10 mrem |
| Committed Effective Dose Equivalent (CEDE) | 120 mrem | 25 mrem |
| Shallow dose Equivalent (SDE) | 25 mrem | 15 mrem |
| Committed Dose Equivalent (CDE) | 25 mrem | 5 mrem |

On the last day of the year the individual, at Byron Station, was requested to work in an area where the known radiation rate is 280 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has been collecting and it has been determined to be totally gamma radiation.

If the worker takes 15 minutes to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

A. 450 mrem

B. 565 mrem

C. 595 mrem

D. 660 mrem

ANSWER:
B

REFERENCE:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # __3___ Group #_____ KA #___2.3.4_____
Importance Rating __2.5____ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #74

Unit 1 was operating at 28% power when the Loop B Reactor Coolant Pump (RCP) tripped on overcurrent.

Which ONE of the following describes the unit's initial response? (Assume no operator action.)

A. A reactor trip occurs and unaffected loop Tavg increases.

B. A reactor trip occurs and unaffected loop Tavg decreases.

C. A reactor trip will NOT occur and unaffected loop Tavg decreases.

D. A reactor trip will NOT occur and unaffected loop Tavg increases.

ANSWER:
C.

Reference:
ESF Setpoints EF-1

Common
Tier # __2___ Group #__2___ KA #____002K6.02_____
Importance Rating___3.6____ Level of Difficulty____2____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #75

Given the following plant conditions:

A LOCA has occurred on Unit 1
Power has been lost to BUS 142
The crew is initiating 1BEP ES-1.3 "Transfer to Cold Leg Recirculation Alignment"

Which of the following describes the affect of the loss of this bus on the Cold Leg Recirculation Alignment?

The SI pump's suction is supplied by .....

A. both "A" train RH and "B" train RH from redundant paths.

B. "A" train RH only via crosstie to the CV Pumps suction valve 1CV8804A.

C. "B" train RH only via 1B RH discharge supply.

D. "A" train RH only via crosstie to the SI pumps suction valve 1SI8804B.

Answer:
B

Reference:
ECCS Lesson Plan

Common
Tier # __2___ Group #__2___ KA #____006K2.04_____
Importance Rating___3.6____ Level of Difficulty____3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #76

Given the following plant conditions:

Unit 1 Reactor power was 85% with all control systems in automatic
1A MFP tripped .
The operator initiated a turbine runback

What was the initial response of the PZR pressure control system during this event?

A. The PORVs were blocked from opening to maintain pressure above the low reactor trip setpoint.

B. The variable heaters and the backup heaters turn full on to raise pressure to normal.

C. PZR Spray valves will throttle open to reduce pressure to normal.

D. Both PZR PORVs open to maintain pressure below the high reactor trip setpoint.

Answer:
C

Reference:
PZR Lesson Plan

Common
Tier # __2___ Group #__2___ KA #____010A3.02_____
Importance Rating___3.6____ Level of Difficulty____3____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #77

WHICH of the following describes (1) how, and (2) why Pressurizer Level is programmed?

A. (1) From auctioneered-high Tave
(2) Pressurizer volume is insufficient to accommodate reactor coolant system water volume changes while limiting pressure transients.

B. (1) From auctioneered-high Tave
(2) Pressurizer volume is sufficient to accommodate reactor coolant system water volume changes while limiting pressure transients.

C. (1) From auctioneered-high Tc
(2) Pressurizer volume is sufficient to accommodate reactor coolant system water volume changes while limiting pressure transients.

D. (1) From auctioneered-high Tc
(2) Pressurizer volume is insufficient to accommodate reactor coolant system water volume changes while limiting pressure transients.

ANSWER:
A

REFERENCE:
PZR Lesson Plan

Common
Tier # __2___ Group #__2___ KA #_____011K5.12_____
Importance Rating___3.2____ Level of Difficulty____2____
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #78

The following rod position indications exist:

The B DATA is bad
Coil A3 is the highest coil penetrated
LED for 24 steps is lit

What will be the range of the rod, using the normal and maximum indication accuracies due to coil placement and thermal expansion?

A. 20-32

B. 18-30

C. 16-30

D. 14-28

Answer:
D

Reference:
Rod Position Lesson Plan
Tech spec bases

Common
Tier # __2__ Group #__2__ KA #_____014K5.01_____
Importance Rating___2.7___ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #79

Following a Large Break Loss of Coolant Accident the Reactor Vessel Level Instrument System (RVLIS) is being used to monitor level. No RCPs are running. The RCS is saturated.

What is the expected response for RVLIS indication when the 1A RCP is started?

A. Only RVLIS Head Level will read lower.

B. Only RVLIS Plenum level will read lower.

C. RVLIS Head and Plenum levels will read higher.

D. RVLIS Head and Plenum levels will read accurately.

Answer:
B

References:
RVLIS Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____016K1.01_____
Importance Rating___3.4___ Level of Difficulty___3___
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #80

The following plant conditions exist:

LOCA is in progress
Containment Spray actuated due to high containment pressure
Containment Spray signal has been reset
Actions of ES-1.3 "Transfer to Cold Leg Recirculation" have been completed
Containment pressure is now 17 psig

Offsite power is then lost and the D/G output breakers have just closed onto the ESF buses

How are the Containment Spray Pumps restarted?

A. The pumps will auto start 15 seconds following closure of the D/G output breakers.

B. The pumps will auto start 40 seconds following closure of the D/G output breakers.

C. The operator immediately places the CS & PHASE B ISOL switches for both trains to ACTUATE, the pumps will auto start 15 seconds following closure of the D/G output breakers.

D. The operator immediately places the CS & PHASE B ISOL switches for both trains to ACTUATE, the pumps will auto start 40 seconds following closure of the D/G output breakers.

Answer:
C

References:
CS Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____026A4.01_____
Importance Rating___4.5___ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #81

The normal containment purge system is capable of performing the following functions:

A. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

B. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6

C. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6

D. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

Answer:
D

Reference:
VP-2 Containment Purge

Common
Tier # __2__ Group #__2__ KA #_____029K2.1.27_____
Importance Rating___2.8___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #82

If all fuel racks in the Spent Fuel Pool are filled with radiated fuel assemblies, what is the MINIMUM boron concentration required to maintain a safe reactivity condition of less than 0.95 Keff?

A. 0 ppm

B. 1250 ppm

C. 2000 ppm

D. 2400 ppm

ANSWER;
C

REFERENCE:
ITS Tech Spec 3.7.15

Common
Tier # __2__ Group #__2__ KA #_____033A4.05_____
Importance Rating___3.1___ Level of Difficulty___2___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #83

What is the mechanism that MINIMIZES the effect of shrink on indicated narrow range level for the D-5 S/G's when load is reduced from 80% to approximately 60% on the loss of a feed pump?

A. The circulatory velocity in the downcomer increases causing a pressure decrease.

B. Constant tempering flow reduces the preheat requirements for the incoming feedwater.

C. The level program maintains mass constant in the S/G.

D. The location of the lower level tap experiences a rise in static pressure that tends to offset the drop in the steaming rate.

Answer:
D

References:
S/G Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____035A1.01_____
Importance Rating___3.6___ Level of Difficulty___3___
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #84

A loss of the condenser air removal system is in progress. Which of the following is the expected sequence of alarms?

A. Condenser vacuum low, turbine trip, C-9 lost

B. C-9 lost, condenser vacuum low, turbine trip

C. Condenser vacuum low, C-9 lost, turbine trip

D. Turbine trip, C-9 lost, condenser vacuum low

Answer:
C

Reference:
Sec-3 Condenser Vacuum

Common
Tier # __2__ Group #__2__ KA #_____055K3.01_____
Importance Rating___2.5___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #85

Which of the following conditions are required to manually close the SAT feed on a 6.9KV breaker?

A. No lockouts on SAT or UAT feed

B. All SAT trips are in

C. UAT Feed Brkr C/S in A/C

D. UAT Feed Brkr open

Answer:
A

Reference:
AC-6 AC Power

Common
Tier # __2__ Group #__2__ KA #_____062K2.01_____
Importance Rating___3.3___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #86

Which of the following identifies all the Fire Protection Pumps that will be running if system water pressure falls to 128 psig?

A. Diesel Engine Fire Pump, Electric Motor Driven Fire Pump, and both Jockey Pumps (OA and OB).

B. Electric Motor Driven Fire Pump and the OB Jockey Pump.

C. Diesel Engine Fire Pump and the OA Jockey Pump.

D. Electric Motor Driven Fire Pump and both Jockey Pumps (OA and OB).

Answer:
D

References:
Fire Protection Lesson Plan

Common
Tier # __2__ Group #__2__ KA #____086A2.02_____
Importance Rating___3.0___ Level of Difficulty___2___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #87

The following plant conditions exist on Unit 2:

The "0" CC HX is in service with the 2A CC Pump running
CC Surge Tank level was at 55% and is now at 60%
"0" CC HX Radiation Monitor RE-PR009 HIGH radiation level alarm is in
2A Letdown Heat Exchanger has ruptured a tube

Which of the following describes the response of the CC system for these conditions?

A. No automatic actions occur.

B. The CC Surge Tank Vent Valve 2CC017 will automatically close and 1CC017 remains open.

C. The CC Surge Tank will be automatically isolate from letdown, prior to the CC Surge Tank completely filling and pressurizing.

D. The CC Surge Tank Vent Valves 1/2CC017 on both Units will automatically close.

Answer:
D

References:
Component Cooling Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____073K1.01_____
Importance Rating___3.6___ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New__x__
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #88

The following conditions exist for a job to be performed on a system.

The general area radiation levels are 10 mrem/hr in the room.
The hot spot in the room is a pipe elbow that has radiation levels of 100 mrem/hr.
The job will be performed by the hot spot area.

(Assumptions all 4 cases below have the same transition time to and from destinations. All shielding placement and removal is at 100 mrem/hr)

Choose the method that best reduces personnel exposure.

A. Two Radiation Control personnel hang and remove 1 tenth thickness of lead shielding on the hot spot in 1.5 hours for the job. The job is performed after the lead shielding is in place by using 2 operators for 3 hrs each on the job.

B. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.

C. The job is performed by 2 operators for 2 hrs each on the job at the hot spot and a third operator reading instructions in the general room area for 2 hrs.

D. The job is performed by using 2 operators for 3 hrs each on the job at the hot spot.

Answer:
B

Reference:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # _3____ Group #_____ KA #____2.3.10_____
Importance Rating _2.9_____ Level of Difficulty___3___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #89

Given the following conditions on Unit 1:

A LOCA has occurred.
The crew is in EP-0 at step 15 with the following plant conditions:

CETCs are reading 1190 °F
RCS pressure is 1950 psig
Containment pressure 6 psig and increasing
S/G pressures are 1180 psig
AFW maximum flow capability 400 gpm
S/G levels (NR): 1A S/G 25%, 1B S/G 24%, 1C S/G 26%, 1D S/G 30%

Based on the above conditions, what is the proper procedure to be in?

A. FR-C.1, "Response to Inadequate Core Cooling"

B. FR-H.1, "Response to a Loss of Secondary Heat Sink"

C. FR-Z.1, "Response to High Containment Pressure"

D. Stay in EP-1, "Loss of Reactor or Secondary Coolant"

Answer:
B

Reference:
1BFR-H.1 LOSS OF SECONDARY HEAT SINK

Common
Tier # ___3__ Group #_____ KA #___2.4.1_____
Importance Rating___4.3___ Level of Difficulty__2__
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #90

Unit 1 is at 100% power. WHICH of the following describes the plant response if the controlling pressurizer level channel fails HIGH with NO operator action taken?

A. The PZR heaters trip and letdown isolates on low level. The reactor eventually trips on actual high PZR level.

B. PZR level decreases until the reactor trips on low pressure. Letdown then isolates when level drops to 17%.

C. PZR level decreases initially, but stabilizes below the programmed setpoint. The controller will then restore level to program with an appropriate time constant.

D. The PZR heaters trip and letdown isolates on low level. The PZR will then gradually fill until a high pressure reactor trip occurs.

ANSWER:
A

Reference:
PZR lesson plan

Common
Tier # __1___ Group #_3____ KA #___000028K2.03___
Importance Rating __2.6__ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #91

The plant was operating at 10% Reactor Power when a loss of offsite power caused the RCPs to trip. Identify ALL of the indications that verify natural circulation is occurring.

1 - Core exit thermocouples --- decreasing
2 - Core exit thermocouples --- stable or increasing

3 - RCS hot leg temperature --- stable or decreasing
4 - RCS hot leg temperature --- increasing

5 - RCS subcooling --- decreasing
6 - RCS subcooling --- increasing

7 - RCS cold leg temperature --- at saturation for SG pressure
8 - RCS hot leg temperature --- at saturation for SG pressure

A. 1, 4, 5, 7

B. 2, 4, 6, 8

C. 1, 3, 6, 7

D. 2, 3, 5, 8

ANSWER:
C

REFERENCE:
1BCA-0.1

Common
Tier # _1____ Group #___3__ KA #__000056K1.01___
Importance Rating _3.7___ Level of Difficulty___2____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge___x___Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #92

Unit 1 instrument air pressure decreased below 85 psig and isolated. What operator actions are required to prevent inadvertent operation of affected components during restoration?

A. PZR Spray Valve Controllers are taken to MANUAL and placed at 0% demand.

B. Charging Flow Controller, 1CV121, is taken to MANUAL and placed at 0% demand.

C. RH Heat Exchanger Bypass Flow Control Valves are taken to MANUAL and placed at 0% demand.

D. 1CC130A, 1A Letdown Heat Exchanger Outlet Temperature Controller, is taken to MANUAL and placed at 60% demand.

ANSWER:
A

REFERENCE:
1BOA SEC-4

Common
Tier # _1____ Group #___3__ KA #__000065A1.03__
Importance Rating___2.9___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___X___ Comprehension or Analysis _____
Proposed references to be provided to applicants during examination:_____

Question #93

Which of the following list all administrative requirements and interlocks associated with opening cold leg recirculation valves SI8811A and SI8811B.

A. No SI signal present
RWST level 45%
4 sump lights lit for RHR Pump NPSH.

B. SI signal present
RWST level 45%
2 sump lights lit for RHR Pump NPSH.

C. No SI signal present
RWST level 46%
2 sump lights lit for RHR Pump NPSH.

D. SI signal present
RWST level 46%
4 sump lights lit for RHR Pump NPSH.

Answer:
D

Reference:
1BEP ES1.3 Sump Recirculation
ESF LESSON PLAN

Common
Tier # _3____ Group #_____ KA #____2.4.2_____
Importance Rating __3.9_ Level of Difficulty__2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__X____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #94

If the Reactor Coolant Subcooling Margin Monitor is not working properly, how will the subcooling margin be calculated?

A. Use 5 highest CETC average and RCS wide range pressure to determine subcooling margin.

B. Use 5 lowest CETC average and RCS wide range pressure to determine subcooling margin.

C. Use 10 highest CETC average and RCS wide range pressure to determine subcooling margin.

D. Use 10 lowest CETC average and RCS wide range pressure to determine subcooling margin.

Answer:
C

Reference:
ITS table 3.3.i note c

Common
Tier # __3___ Group #_____ KA #___2.4.3_____
Importance Rating ___3.5___ Level of Difficulty__4__
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #95

WHICH ONE of the following is a positive indication that the PRT has ruptured following a pressurizer PORV failing full OPEN?

A. PRT temperature is decreasing.

B. PORV relief line temperature is increasing.

C. PRT level decreases to its normal value of 70%.

D. Pressurizer level is decreasing.

ANSWER:
A

REFERENCE:
1BEP-0

Common
Tier # __2__ Group #__3__ KA #___007A2.01_____
Importance Rating___3.9___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #96

Both units are at 100% power. The Component Cooling (CC) system is in its alignment for normal operations with ALL equipment operable.

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

Alarm window for CC SURGE TANK LEVEL HIGH LOW actuates.
CC Surge Tank level is 33% and slowly falling
Demin Water and Primary Water makeup valves indicate OPEN
RCS temperature (average Tave) is 584F and stable
PZR level is 60% and stable
VCT level is 42% and stable
Charging and letdown flows are balanced and normal Spent Fuel Pool level is stable

Where is the location of the CC System leak?

A. The seal water heat exchanger

B. The 2A RH pump seal cooler

C. The 2B letdown heat exchanger

D. The 2B excess letdown heat exchanger

Answer:
B

Reference:
1BOA PRI-6 Attachment A

Common
Tier # __2__Group #__3__ KA #____008K3.01_____
Importance Rating __3.4__ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #97

Which ONE of the following is an indication that recombination is occurring after having placed the Hydrogen Recombiners in service?

A. Hydrogen Recombiner power increases to 20 KW.

B. Containment dewpoint decreases after Hydrogen Recombiners are placed in service.

C. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.

D. Containment pressure deceases after Hydrogen Recombiners are placed in service.

ANSWER:
C

REFERENCE:
OBOSR 6.8.1-1

Common
Tier # _2__ Group #__3___ KA #__028A4.01__
Importance Rating __4.0____ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #98

While transferring a fuel assembly to containment, the gearbox for the Transfer Cart freezes up while the cart is in the Transfer Tube. How can the Transfer Cart be removed from the Transfer Tube?

A. Use a speedwrench on the gear box.

B. Use a crane to pull on the emergency pull-out cable.

C. Cut one drive chain and restart the drive motor.

D. Use the containment side drive motor to pull the cart.

ANSWER:
B

REFERENCE:
Fuel Handling Lesson Plan

Common
Tier # __2__ Group #__3___ KA #____034K4.02____
Importance Rating _2.5__ Level of Difficulty___3_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #99

During a cooldown on Unit 1 the following conditions exist:

RCS loop Tave (4 loops) 550F(1), 548F(2), 551F(3), 548F(4) and all decreasing
Steam header pressure- 1030 psig and decreasing
Steam Dump Mode Selector switch-STM PRESS MODE
Steam Dump Controller-MAN set at 30% demand

The operator momentarily places the Train A and Train B Steam Dump Bypass Interlock switches to Bypass and then releases them.

What is the status of the Steam Dump valves following the operator's actions?

A. All valves are fully closed

B. Three valves in group 1 are partially open

C. Three valves in group 1 are fully open and valves in group 2 are fully shut.

D. Three valves in group 1 are fully open and three valves in group 2 are partially open.

Answer:
C

Reference:
Steam Dump Lesson Plan

Common
Tier # __2__ Group #__3___ KA #____041K4.09____
Importance Rating __3.0___ Level of Difficulty___3_____
Bank___x____ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #100

The basis for depressurizing all intact steam generators to atmospheric pressure in FR-C.1, "RESPONSE TO INADEQUATE CORE COOLING," is to:

A. insure core exit thermocouple temperatures are reduced to less than 700 °F.

B. reduce S/G pressure to increase feedwater flow.

C. reduce RCS pressure for establishing low-head safety injection.

D. enhance natural circulation cooling of the reactor core.

ANSWER:
C

REFERENCE:
FR-C1. Procedure Lesson Plan 41

Common
Tier # __3___ Group #_____ KA #___2.4.6_____
Importance Rating __3.1_____ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

# BYRON

## JUNE 2000 Exam

# NRC DRAFT

# SRO
# WRITTEN EXAMINATION

## For 6/2 Review

Question #1

Given the following plant conditions on Unit 1:

Reactor Power is 100%
Power Range Nuclear Instrument channel N41 failed
Actions are complete in accordance with BOA INST-1

How is the Quadrant Power Tilt Ratio (QPTR) determined?

A. Incore detectors must be used.

B. The 3 operable power range NIS channels are used.

C. The 3 operable power range NIS channel are used in conjunction with flux map of the quadrant with the failed power range NIS.

D. 4 power range NIS channel values are used with the average values for the 2 adjacent power range NIS channels used for the failed channel.

Answer:
A

References:
ITS QPTR 3.2.4
Nuclear Instrument Lesson Plan
10 CFR 55.43 (b)(2)

SRO
Tier # __2__ Group #__1__ KA #_____015A1.04_____
Importance Rating___3.7___ Level of Difficulty___2____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #2

While transferring a fuel assembly from the spent fuel pool to containment, the gearbox for the Transfer Cart failed while the cart is in the Transfer Tube. How can the Transfer Cart be removed from the Transfer Tube?

A. Use a speedwrench on the gear box.

B. Use a crane to pull on the emergency pull-out cable.

C. Cut one drive chain and restart the drive motor.

D. Use the containment side drive motor to pull the cart.

ANSWER:
B

REFERENCE:
Fuel Handling Lesson Plan
10 CFR 55.43(b)(7)

SRO
Tier # __2__ Group #__2___ KA #____034K4.02____
Importance Rating _3.3__ Level of Difficulty___3_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #3

A caution statement in 1BFR-C.2, "Response to Degraded Core Cooling," states that an SI accumulator injection may cause a red path condition in INTEGRITY. The caution statement applies during depressurization, prior to transitioning to 1BFR-P.1, "Response to Imminent Pressurized Thermal Shock Condition."

WHICH ONE of the choices below correctly describes the reason for this caution statement?

A. Responding to the INTEGRITY Red path at this time could result in a CORE COOLING Red path.

B. The INTEGRITY Red path is a higher priority than the one being pursued in 1BFRC-2.

C. Responding to the INTEGRITY Red path at this time could result in an INVENTORY Red path.

D. The INTEGRITY Red path will be corrected by continuing the actions of 1BFRC-2.

ANSWER:
A

REFERENCE
1BFR-C2
FRC Lesson Plan
10 CFR 55.43(b)(5)

SRO-only
Tier # __1__Group #__1__ KA #___W/EO8K1.2___
Importance Rating__4.0__ Level of Difficulty____2____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #4

The Reactor was tripped 2 hours ago due to a RCP problem. A large LOCA occurred 1 hour ago. A subsequent loss of Emergency Coolant Recirculation occurred. 1BCA-1.1 is the procedure in effect with a RWST level of 60% (assuming 100% accuracy of level instrumentation).

Given the minimum ECCS flow required (from figure 1BCA 1.1-1), when must all pumps be stopped due to RWST level? (Assume no RWST make up will exist)

A. 9 hours, 10 minutes

B. 10 hours, 40 minutes

C. 13 hours, 40 minutes

D. 15 hours, 10 minutes

Answer:
C

Reference:
1BCA-1.1
ECCS Lesson Plan
10 CFR 55.43(b)(5)
290 gpm at 238500 gallons

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__W/E01K2.2__
Importance Rating__3.9__ Level of Difficulty___3___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: Figure 1BCA 1.1-1

Question #5

Given the following plant conditions:

Unit 1 reactor tripped 30 minutes ago due to a partially stuck open S/G safety valve
2 RCCA from Shutdown Group B stuck in the mid-out position (SDM addressed)

A loss of offsite power occurred concurrently with the reactor trip.
1B D/G is OOS
1A D/G is operating as expected.

Present RCS temperature at 538°F
A continuous cooldown rate of 15°F/HR

Which one of the following is the correct operator actions?

A. Emergency borate using the 1B charging pump from RWST and maximize charging flow due to the 2 RCCA's not fully inserting.

B. Emergency Borate using the Boric Acid transfer pump due to the cooldown and 2 stuck out RCCA's.

C. Determine the Shutdown Margin within the next 30 minutes to be within the COLR limits due to the cooldown and the 2 stuck out RCCA's..

D. Emergency borate using the 1A charging pump from RWST and maximize charging flow due to the cooldown.

Answer:
D

Reference:
1BOA PRI-2 Lesson Plan
Reactor Makeup Control Lesson Plan
1BOA PRI-2
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__000024K3.01__
Importance Rating__4.4__ Level of Difficulty___3___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: _____

Question #6

Given the following plant conditions:

Unit 1 was operating at 100% power for 30 days.
Unit 1 tripped due to a loss of off-site power.
CST level is at 200,000 gallons.
CST is the ONLY source of S/G feedwater.
Both AFW pumps are running.
Steam generator atmospheric relief valves are being used to dump steam.

If the unit remains in Hot Standby, which ONE of the following is the minimum time it will take to deplete the CST contents for these conditions based on the minimum required CST level?

A. 10 hours

B. 9 hours

C. 8 hours

D. 7 hours

ANSWER
B

REFERENCE
Technical Specifications: Bases 3/4.7.6
Objective 11 of Lesson Plan Chp. 26, Auxiliary Feedwater.
10 CFR 55.43(b)(5)

SRO
Tier # __2__ Group #___1__ KA #___061000A104_____
Importance Rating __3.9__ Level of Difficulty_____
Bank __X_____ Modified Bank _____ (Note changes or attach parent) New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis_X___
Proposed references to be provided to applicants during examination:_____

Question #7

Given the following Unit 1 plant conditions:
A loss of all AC power has occurred
MSIVs indicate shut
Pressurizer PORVs indicate shut and letdown has isolated
No RMS high alarms are in
BCA-0.0, "Loss of all AC power Unit 1" is in effect.

Per BCA-0.0, certain Engineered Safeguards equipment control switches are placed in the PULL-OUT position. Which ONE of the following events is prevented by this switch alignment?

A. An uncontrolled depressurization of the RCS

B. An uncontrolled start of large loads on safeguards AC buses

C. An uncontrolled cooldown of the RCS and possible reactor restart

D. An uncontrolled use of water that my be needed for long term cooldown

Answer:
B

Reference:
Lesson plan for BCA-0.0, "Loss of all AC power Unit 1"
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__000055K302__
Importance Rating__4.6____ Level of Difficulty_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #8

Given the following plant conditions:

Annunciator 0-37-A4, "Unit 1 Area Fire" is lit.
Review of the fire protection panel showed the following lit:
1PM09J-G9, "DG Cables (1D-64)"
1PM09J-G10, "DG Cables (1D-65)"
An operator has been dispatched and confirmed a fire in the Unit 1 Cable Tunnel.

Which ONE the following defines the equipment which could trip if a line becomes faulted?

A. 1B RH pump breaker

B. 1A RH pump breaker

C. 1A SX and 1A CC pump breakers

D. 1B SX and 1B CC pump breakers

Answer:
A

Reference:
1PM09J-G9, "DG Cables (1D-64)"
1PM09J-G10, "DG Cables (1D-65)"
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__000067AA2.17_
Importance Rating__4.3____ Level of Difficulty___2___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination: _____

Question #9

The crew is performing 1BEP ES-1.2 "Post Loca Cooldown And Depressurization". The only available power source for the ESF busses are the diesel generators. The diesels were started and have been continuously loaded on 6000 KW at 1050 amps for 1 hour. By design, how long could the diesel generators remain running under the present conditions?

A. The diesels must be secured immediately

B. 1 hour

C. 1999 hours

D. Indefinitely

Answer:
B

Reference:
1BEP-1
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__2__ KA #__E/03K2.01__
Importance Rating__4.0__ Level of Difficulty___2___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

FACILITY REVIEWER: Please verify that SRO would not choose C or D to save the plant - otherwise we will change question to what is the design.....

Question #10

During a High Reactor Coolant Activity event, which ONE of the following is the criteria used to determine if the standby mixed bed demineralizer should be placed in service?

A. Dose equivalent I-131 greater than 1 microcurie/gram.

B. Gross radioactivity greater than 100/Ebar.

C. Chloride levels greater than 1.0 ppm.

D. Decontamination factor less than 10.

ANSWER
D

Reference:
1BOA PRI-4
Tech Spec 3.4.16
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__000076A202 __
Importance Rating__3.8__ Level of Difficulty___2___
Bank __X____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination: _____

Question #11

Given the following plant conditions:

Unit 1 is in Mode 6.
Core reload is occurring in the containment
Alarm 1-6-C3, "Refueling Cavity Level High/Low" is lit
Alarm 1-1-C1, "Spent Fuel Pit Level High/Low" is lit

You are the Unit 1 Control Room Supervisor. Which ONE of the following describes your immediate required actions?

A. Notify Radiation Protection to perform BRE-EXP.5, "Fuel Handling Emergency"

B. Check Reactor Cavity Leak Detection Loop, 1LI-RF-010

C. Initiate filling the cavity using BOP-RH-8, "Filling the Reactor Cavity for Refueling"

D. Notify Fuel Handling Foreman to move any fuel assembly in transit into the spent fuel pool or into the reactor

Answer:
D

REFERENCE:
BAR 1-6-C3
10 CFR 55.43(b)(7)

SRO
Tier # __1___ Group #___3___ KA #__000036A202_____
Importance Rating __4.1__ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #12

A feedwater transient caused the average loop temperature for Loop C to decrease to 548°F.

Which ONE of the following correctly completes the statement below?

Loop C average temperature must be restored _____.

A. immediately AND the reactor be in in Mode 3 within 1 hour.

B. within 5 minutes OR be in Mode 3 within the next 7 hours.

C. within 30 minutes OR be in Mode 2 with Keff <1.0.

D. within 2 hours OR be in Mode 2 with Keff <1.0 within 6 hours.

ANSWER:
C

REFERENCE:
TS 3.4.2
10 CFR 55.43(b)(2)

SRO
Tier # __3__ Group #_____ KA #___2.1.11____
Importance Rating __3.8___ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #13

Given the following timeline: (Assume appropriate TS actions have been completed or in progress)

| | | | |
|---|---|---|---|
| 5/22/2000 | Monday | 0600 | ( one qualified circuit for one bus OOS) |
| 5/24/2000 | Wednesday | 1000 | Plant operator discovers large pool of oil on floor in 1B DG room. 1B DG declared inoperable. |
| 5/24/2000 | Wednesday | 2000 | Circuit returned to service |
| 5/27/2000 | Saturday | 0200 | Major thunderstorm in area, knocks out (one qualified circuit). |

If the 1B DG and/or circuit cannot be repaired within the appropriate LCO time period, when is the LATEST time the unit would be required to be in MODE 3?

A. at 1000 on Saturday, 5/27/2000

B. at 1200 on Saturday, 5/27/2000

C. at 1600 on Saturday, 5/27/2000

D. at 2000 on Saturday, 5/27/2000

ANSWER
B

REFERENCE:
TS 3.8.1
10 CFR 55.43(b)(2)

SRO
Tier # __3__ Group #_____ KA #__2.2.23_____
Importance Rating __3.8___ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis_X___
Proposed references to be provided to applicants during examination:_TS 3.8.1___

A. Assumes 72 hours directly
B. 6 day rule (most limiting) + 6 hours
C. 72 hr DG rule + 6 hours
D. 12 hr rule + 6 hours

FACILITY REVIEWER: Need credible event for one qualified circuit for one bus OOS

Question #14

Given the following conditions:

Unit 1 startup is in progress
Reactor Power is at 3% thermal power
IRM "A" failed low

To meet Technical Specification requirements, you:

A. MUST immediately suspend startup and lower power to below P-6.

B. MUST immediately trip the reactor.

C. MAY continue with startup but must ensure reactor power is above P-10 within 2 hours.

D. MAY continue with startup but cannot make the mode change until the IRM is repaired.

ANSWER:
C.

REFERENCE:
TS 3.3.1
10 CFR 55.43(b)(2)

SRO
Tier # __1___ Group #___2___ KA #__000033G2.1.12_____
Importance Rating __4.0_ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis_X___
Proposed references to be provided to applicants during examination:_____

Question #15

An accident is in progress on Unit 1. Operators are taking actions in accordance with 1BEP-0.

The following plant conditions exist:
Containment pressure 3 psig (slowly decreasing)
SG levels (Narrow range) A: 5% B: 7% C: 8% D:5% (All are slowly increasing)
Main steamline 1B radiation alert alarm is lit

In accordance with 1BEP-3, "Steam Generator Tube Rupture," you direct the operators to:

A. immediately manually CLOSE the 1B AF isolation valves, 1AF013 B and F.

B. maintain feed to the 1B S/G until narrow range is 10%, then manually isolate AF.

C. maintain feed until ALL S/G narrow range level is 10%, then manually isolate AF to the 1B S/G.

D. maintain feed to the 1B S/G until narrow range is 31%, then manually isolate AF.

ANSWER:
B

REFERENCE:
1BEP-3, "Steam Generator Tube Rupture,"
10 CFR 55.43(b)(5)

SRO
Tier # __1__ Group #__2__ KA #__000038EA2.01_____
Importance Rating _____ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #16

Given the following plant conditions:

Unit 1 is at 10% power
Preps are in progress to put the turbine online
1A and 1B Circ water pumps are operating
1C circ water pump is OOS for shaft repair

RCS temperature is 559 °F
Steam Dumps are in Steam Pressure Mode

A fault occurs on bus 143. Which ONE of the following describes the effect on the Steam Dump system?

A. Steam dumps are armed but not controlling pressure

B. Steam dumps are armed in the plant trip controller mode

C. Steam dumps are armed and remain in the steam pressure controller mode

D. Steam dumps are armed and in the load reject controller mode

ANSWER:
C

REFERENCE:
Steam Dump Lesson Plan
Circulating Water Lesson Plan
10 CFR 55.43(b)(5)

SRO
Tier # __2___ Group #__2____ KA #___075000A2.03_____
Importance Rating __2.7___ Level of Difficulty_____
Bank _____ Modified Bank ___X___ (Note changes or attach parent) New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #17

While performing 1BEP ES-1.2 a void was drawn in the reactor vessel. The crew then entered 1BFR-I.3 "RESPONSE TO VOIDS IN REACTOR VESSEL" based on a yellow condition in the critical safety function status trees. The crew is venting the reactor vessel to eliminate the voids. Which of the following is **NOT** part of the venting termination criteria?

A. RVLIS indicates 85%.

B. PZR level < 21%.

C. RCS pressure decreases by 200 psi from starting pressure.

D. Venting time is > maximum calculated time.

Answer:
A

Reference:
1BFR-I.3
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1_ Group #__1__ KA #__W/E03K3.3__
Importance Rating__3.9__ Level of Difficulty___3___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #18

The following conditions exist:

Unit 1 Component Cooling Water Heat Exchanger is aligned to Unit 1.
Unit 0 and U-2 Component Cooling Water Heat Exchangers are aligned to Unit 2.
Unit 0 Component Cooling Water Heat Exchanger Outlet Radiation Monitor is in the INTERLOCK condition due to exceeding the ALARM setpoint.

Which ONE of the following automatic actions occur in addition to receiving an audible ALARM on the RM-11?

| | Surge Tank Vent Valve Positions | |
|---|---|---|
| | Unit 1 | Unit 2 |
| A. | remains OPEN | remains OPEN. |
| B. | remains OPEN | CLOSES. |
| C. | CLOSES | remains OPEN. |
| D. | CLOSES | CLOSES |

ANSWER
D.

REFERENCE
BAR RM11-1-0PR09J
10 CFR 55.43(b)(5)

RO_____ SRO___x___
Tier # _1__ Group #__2___ KA #__000060K202_____
Importance Rating__3.2____ Level of Difficulty_____
Bank __X___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___X____
Memory or Fundamental Knowledge_____ Comprehension or Analysis_X___
Proposed references to be provided to applicants during examination:_____

Question #19

1BFR-Z.1, "Response to High Containment Pressure" contains a CAUTION which states to operate containment spray in accordance with 1BCA-1.1, "Loss of Emergency Coolant Recirculation,"(if applicable). 1BCA-1.1 determines the number of operating CS pumps based on which ONE of the following?

A. Containment pressure, containment temperature, and sump level.

B. Containment pressure, operating RCFCs, and RWST level

C. Containment temperature, operating RCFCs, and RWST level

D. Containment pressure, operating RCFCs, and sump levels

ANSWER
B

REFERENCES:
Lesson Plan Z.1-3r01l.doc
10CFR55.43(b)(5)

RO_____ SRO___x___
Tier # _2__ Group #__2__ KA #__026000G2.4.20____
Importance Rating__4.0____ Level of Difficulty_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #20

The limits on RCS activity provided in Technical Specifications are based on the dose that would be received at the site boundary in a SGTR accident that begins with steady-state primary-to-secondary leakage of 1 gpm. Maintaining these RCS activity limits ensures that the 2-hour dose at the site boundary during a SGTR will NOT exceed:

A. 10 CFR 20 limits

B. 10 CFR 100 limits

C. EPA Protective Action Guideline thresholds

D. 5 Rem TEDE for the general public

ANSWER:
B

Reference:
TS 3.4.16 bases

SRO
Tier # __3___ Group #_____ KA #___2.1.10_____
Importance Rating __3.9_ Level of Difficulty___2_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #21

Unit 2 was operating at 100% power when a large break LOCA occurred. All safeguards equipment responded as designed. The crew has transitioned to 2BEP-1, "Loss of Reactor or Secondary Coolant."

Which of the following radiation monitor alarms must receive the highest priority from the Emergency Director?

A. 2RT-AR001 (Containment Area)

B. 2RT-AR011 (Containment Fuel Handling Incident)

C. 2RT-PR011 (Containment Atmosphere)

D. 2RT-AR020 (NEED NAME)

ANSWER:
D

REFERENCE:
Lesson Plan s49r01.doc
10 CFR 55.43.5

SRO
Tier # __3__ Group #_____ KA #____2.4.45_____
Importance Rating_3.6___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

FACILITY REVIEWER: Need name of 2RT-AR020. Also, are other distractors correct?

Question #22

Unit 1 was at 100% power when the following events occurred:

- ALL S/G faulted into the containment
- Upon transition from 1BEP-0 to 1 BEP-2, a RED path is noted on the containment critical safety function, so the actions of BFR-Z.1, "Response to High Containment Pressure" are performed.
- Auxiliary Feedwater has been throttled to 25 gpm to each steam generator
- When directed by BFR-Z.1 to return to procedure and step in effect, the following status is noted on the CSF status tress:

| | |
|---|---|
| Subcriticality: | Green |
| Core Cooling: | Green |
| Heat Sink: | Red |
| Integrity: | Orange |
| Containment: | Red |
| Inventory: | Yellow |

Which ONE of the following procedures will contain the next steps to be performed?

A. 1BEP-2, "Faulted Steam Generator Isolation"

B. 1BFR-H.1, "Response to Loss of Secondary Heat Sink"

C. 1BFR-P.1, "Response to Imminent Pressurized Thermal Shock Condition"

D. 1BFR-Z.1, "Response to High Containment Pressure"

ANSWER:
C

REFERENCE
1BFR-P.1, 1BFR-H.1
10 CFR 55.43(b)(5)

SRO
Tier # __1__ Group #__1__ KA #__W/E14EK1.04___
Importance Rating __3.6___ Level of Difficulty__3____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis_X___
Proposed references to be provided to applicants during examination:_____

Question #23

Steps 3 and 4 of BFR-S.1, "Response to Nuclear Power Generation/ATWS", require the operator to check AF pumps running and initiate Emergency Boration of RCS.

Which ONE of the following is the reason that each of the above actions must be performed manually by the operator instead of through manual initiation of SI?

A. Initiation of SI will compound the problem by charging the RCS system solid, causing pressurizer PORVs and safety valves to lift.

B. Initiation of SI will reduce the possible paths for emergency boration and create a loss of heat sink problem.

C. Initiation of SI will result in a turbine trip which is required for a heat sink.

D. Automatic initiation of SI is preferred but operator action is necessary to anticipate and mitigate the ATWS.

ANSWER
B

REFERENCE
Lesson Plan: BFR-S.1, S.2, S.3
10 CFR 55.43(b)(5)

SRO
Tier # __1____ Group #___2__ KA #__ 000007A204 ___
Importance Rating _____ Level of Difficulty_____
Bank ___X_____ Modified Bank _____ (Note changes or attach parent) New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__X___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #24

Given the following plant conditions on Unit 1:

Reactor Trip and Safety Injection have occurred
MSIVs have just closed due to Containment pressure
RCS pressure is 1700 psig and stable
CETCs indicate 570 °F
ALL S/G Narrow Range levels are 40%
PZR level is 42%

Based upon these conditions, the operators should _____ (Select ONE of the following)

A. verify all RCPs are stopped.

B. terminate Safety Injection.

C. transition to ES-0.0, "Rediagnosis"

D. initiate Containment Spray as a result of increasing containment pressure.

ANSWER:
B.

REFERENCE:
BEP-1, "LOSS OF REACTOR OR SECONDARY COOLANT,"
Figure 1BEP 1-1
10 CFR 55.43(b)(5)

SRO
Tier # __1__ Group #__2___ KA #___000009A234___
Importance Rating __4.2__ Level of Difficulty_____
Bank ___X___ Modified Bank _____ (Note changes or attach parent) New_____
Previous NRC Exam ___X___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_Figure 1BEP-1-1_

Question #25

While reviewing the results of a valve stroke timing surveillance on the safety injection system, you recall that the motor operated valve actuators had been modified during the last outage. You note that the procedure had not been revised to reflect the new valve stroke times which were discussed during the last requalification cycle training class. You notify the system engineer who confirms that the acceptance criteria should have been changed when the modification was closed out.

Which ONE of the following actions are required?

A. Complete a Procedure Deviation Form noting the new stroke times per the modification and your discussion with the system engineer.

B. Line out/initial the procedure steps and replace values with the new stroke times. Note on the front of the surveillance noting your discussion with the system engineer.

C. Complete a Procedure Approval/History Form for a temporary procedure and obtain the SFAM approval prior to approving the surveillance results.

D. Complete a Procedure Validation Form and request a PORC review prior to approving the surveillance results.

ANSWER:
D

REFERENCES:
AD-AA-101
10 CFR 55.43(b)(3)

SRO
Tier # __3__ Group #_____ KA #___2.2.6_____
Importance Rating__3.3___ Level of Difficulty_____
Bank _____ Modified Bank _____ (Note changes or attach parent) New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #26

The transition is made from EP-0 to ES-0.1 on Unit 1. Step 4 in ES-0.1 requires boration for all rods NOT fully inserted. There are 3 rods not fully inserted into the core at this point. What is the MINIMUM gallons that will have to be borated from the RWST for the three rods?

A. 1320 gallons

B. 5500 gallons

C. 3960 gallons

D. 16500 gallons

Answer :
D

Reference:
ES-0.1 step 5

Both
Tier # __1__ Group #__1__ KA #___000005K3.01___
Importance Rating__4.0__ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #27

Given the following conditions:

Unit 1 is operating at 100% power
RCP No. 1 SEAL LEAKOFF FLOW HIGH alarm is received
No. 2 seal leakoff high flow alarm has been printed
RCP No. 1 seal leakoff recorder indication is high offscale on the high range
Make-up to the RCS has increased 40 gpm to maintain PZR level

Which one of the following has occurred and what action is required?

A. The No. 1 and No. 2 seals have failed and a controlled reactor shutdown is required.

B. Only the No. 2 seal has failed and continued monitoring of RCP conditions is required.

C. The No. 1 seal has failed and immediate reactor trip is required.

D. The No. 2 and No. 3 seals have failed and continued monitoring of RCP conditions is required.

Answer:
C

References:
1BOA RCP-1

Common
Tier # __1__ Group #__1__ KA #___000015A1.22___
Importance Rating__4.0__ Level of Difficulty___4___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #28

During a small break LOCA on a cold leg, a phase is reached where the vessel level continues to decrease below the hot leg penetrations and boiling in the core is the means of transporting the core heat to the bubble. A fixed differential pressure exists between the core and the break and is maintained by the loop seal.

What is the primary mechanism for heat removal? During this phase?

A. Condensation of vapor from the bubble at the hot leg side of the SG U-tubes which then drains back to the core via the hot legs.

B. Condensation of vapor in the head, which is cooled by fans in containment, and draining back to the core.

C. Slug flow via the cold legs through the loop seal and flashing across the cold leg break.

D. Partial natural circulation flow characterized by liquid pulses flowing from the cold leg over the U-tubes and into the hot legs.

Answer:
A

References:
LOCA Procedure Lesson Plan

Both
Tier # __1__ Group #__1__ KA #___W/E09K2.02_____
Importance Rating _3.6__ Level of Difficulty___3_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #29

The following plant conditions exist:

The reactor is shutdown
RCS temperature is 290°F and stable
RCS pressure is 320 psig and stable
RH is in shutdown cooling
RH Letdown is in service
CC surge tank level is slowly decreasing with the makeup valves to CC surge tank fully open

A leak has occurred in the ?

A. RH Heat Exchanger

B. Seal Water Heat Exchanger

C. Letdown Heat Exchanger

D. Thermal Barrier Heat Exchanger

Answer:
B

References:
BOA PRI-6 Attachment A
CC Lesson plan

Both
Tier # __1__ Group #__1__ KA #___000026A2.01___
Importance Rating__2.9__ Level of Difficulty___4___
Bank __x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #30

Given the following conditions on Unit 1:

Reactor power is steady at 100%
Tave is steady at 582°F
PZR level is 60% and slightly increasing
PZR pressure is 2230 psig and slowly decreasing
ALL systems are aligned normally

Which of the following conditions has occurred?

A. LK-459 PZR level controller has failed high

B. PZR PORV 456 is full open

C. PZR pressure transmitter PT-458 has failed high

D. PZR spray valve RY455B, has failed to 50% open

Answer:
D

References:
BAR 1-12-A1

Both
Tier # __1__ Group #__1__ KA #___000027A1.01_____
Importance Rating _4.0__ Level of Difficulty___3_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #31

Unit 1 has tripped due to a steamline break inside containment. Shortly after the trip, the following parameters were recorded:

PZR pressure 1750 psig and stable
PZR level 22% and stable
CNMT pressure 7.8 psig (on all instruments)

| | | | | |
|---|---|---|---|---|
| S/G level(NR) | 31% A, | 30% B | 25% C | 34% D |
| S/G pressures | 760 psig 1A | 775 psig 1B | 680 psig 1C | 800 psig 1D |

A steamline isolation occurred due to .....?

A. the rate sensitive S/G pressure circuit.

B. the steamline high pressure rate signal.

C. the containment pressure circuit for steamline.

D. the PZR low pressure SI.

Answer:
A

References:
SSPS lesson plan

Common
Tier # __1__ Group #__1__ KA #___000040K3.02_____
Importance Rating__4.4___ Level of Difficulty___3_____
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #32

The plant has the following conditions:

Reactor Power 52% steady state
Generator load is steady at 600MW
Condenser vacuum 2.2 in.HgA and steady

A leak developed in one of the water boxes causing pressure to rise at the rate of 0.2 inches HgA/minute. After 2 minutes, the operator began a load decrease at the rate of 10MW/minute in an attempt to offset the pressure rise and reduce load below the P-8 setpoint.

Assuming the load decrease remained constant and the rate of pressure rise remained constant throughout the event, what action is required?

A. The operator would initiate a manual turbine trip after the load is reduced to less than 30%.

B. No operator action, the turbine will automatically trip at 35% power causing a reactor trip.

C. The operator will initiate a manual reactor trip at approximately 39% power.

D. The operator will initiate a manual reactor trip at approximately 47% power.

Answer:
C

References:
1BOA SEC-3

Common
Tier # __1__ Group #__1__ KA #____000051A2.02____
Importance Rating__3.9__ Level of Difficulty____3____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New__x__
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: Chart in SEC-3 n 1BOA

Question #33

Byron is considered an Alternate AC (AAC) Station for design analysis during a Station Blackout. Which one of the following is a reason that Byron chose to qualify as an AAC station instead of a four hour coping station?

A. EDG's have a reliability of .90 and are 100% redundant

B. AAC source is available within 30 minutes.

C. EDG's have sufficient excess capacity within their 4000 hour ratings to serve as ACC for the opposite UNIT.

D. Crosstie of AP capable from the Main Control Room.

ANSWER:
D

References:
ECA 0.0 Lesson Plane
Byron FSAR

Common
Tier # __1__ Group #__1__ KA #__000055K2.1.10__
Importance Rating___3.3___ Level of Difficulty__2__
Bank #_____ Modified Bank #_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: We need reference for battery discharge rates. If these values are not presented in class or if a suitable reference cannot be found, then we may consider changing the focus of the question.

Question #34

An operator noted the following annunciators were in following an event: (Not all alarms are provided)

PWR RNG HIGH STPT RX TRIP ALERT
OPDT HIGH ROD STOP C-4
OTDT HIGH ROD STOP C-3
PZR PRESS CONT DEV LOW HTRS ON
RCP BUS UNDERVOLT RX TRIP ALERT
RCP 1C BRKR OPEN OR FLOW LOW ALERT
TURB STOP VLV CLOSED ALERT

Which bus lost power?

A. Instrument Bus 113

B. Instrument Bus 112

C. DC Bus 113

D. DC Bus 112

Answer :
A

References:
1BOP ELEC-2

Common
Tier # __1__ Group #__1__ KA #__000057K2.4.10__
Importance Rating___3.0___ Level of Difficulty__3__
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: Is it necessary to put in annunciator numbers in the stem or is what provided acceptable?

Question #35

Which ONE of the following describes the effect on containment if the Esential Service Water supply to all Reactor Containment Fan Coolers (RCFC) is secured? (Assume normal 100% power operation.)

Containment temperature would...

A. remain the same since the other containment HVAC equipment would maintain cooling.

B. increase since Containment Chiller will also trip upon Essential Service Water isolation.

C. increase because only Essential Service Water supplies RCFC's.

D. increase since Component Cooling can only supply RCFC's with a manual lineup.

ANSWER:
B

REFERENCE:
Containment Ventilation and Purge Lesson Plan
Essential Service Water Lesson Plan
1BOA PRI-7

Common
Tier # __1__ Group #__1__ KA #__000062A1.01__
Importance Rating__3.1__ Level of Difficulty__2__
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #36

The plant was operating at 50% power when an inadvertent safety injection occurred. At the time of the safety injection, the 1B AFW pump was out of service and the 1A AFW pump would not start. The operators wish to regain control of feedwater valves in order to feed the steam generators using the startup feedwater pump.

Which of the following is the correct order of actions that will be successful in restoring control of feedwater valves:

A. Reset SI, reset FW Isolation, cycle reactor trip breakers, reset FW Isolation Aux relays

B. Reset FW Isolation, reset SI, cycle reactor trip breakers, reset FW Isolation Aux relays

C. Reset SI, cycle reactor trip breakers, reset FW Isolation Aux relays, reset FW Isolation.

D. Reset SI, cycle reactor trip breakers, reset FW Isolation, reset FW Isolation Aux relays.

ANSWER:
D

REFERENCE:
FW-1 Feed Water

RO-only
Tier # __2__ Group #__1__ KA #_____013A4.02_____
Importance Rating___4.3___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #37

The Control Room has been evacuated in accordance with BOA PRI-5 and the operators are performing an RCS cooldown.

The plant conditions are as follows:

Reactor coolant temperature is 456 degrees F and stable
Reactor coolant pressure is 449 psig and stable

Which ONE of the following describes the approximate state of the Reactor coolant (per the steam tables) when checking subcooling margin?

It is about .....?

A. 3 degrees superheated

B. at the saturation point

C. 3 degrees subcooled

D. 12 degrees subcooled

ANSWER:
C

Reference
Steam Tables

Common
Tier # __1__ Group #__1__ KA #___000068A2.09___
Importance Rating__4.1_____ Level of Difficulty___3___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination: Steam Tables

Question #38

Which ONE of the following describes the relationship between the UNIT 1 Auxiliary Feedwater System (AFW) piping and the Main Feedwater System piping?

The AFW piping connects downstream of the...

A. MFW bypass valves 6-inch piping and upstream of the FWIV FWO35A.

B. MFW regulating valves 14-inch piping and upstream of the FWIV FW034A.

C. FWIV FW035A and upstream of the containment penetration.

D. Containment penetration and upstream of the last feedwater check valve after FWIV FW034A and prior to the SG.

ANSWER:
C

REFERENCE:
AFW Lesson Plan

RO only
Tier # __2__ Group #__1__ KA #_____061K1.02_____
Importance Rating___3.4___ Level of Difficulty___3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #39

Which of the following sets of actions states the proper sequence of major actions to be performed in accordance with 1BFR-C.1, "Response to Inadequate Core Cooling", for removing heat from the core?

A. Restoration of ECCS flow
RCP restart
Rapid secondary depressurization

B. Restoration of ECCS flow
Rapid secondary depressurization
RCP restart

C. RCP restart
Restoration of ECCS flow
Rapid secondary depressurization

D. RCP restart
Rapid secondary depressurization
Restoration of ECCS flow

Answer:
B

References:
1BFR-C.1 Procedure Lesson Plan

Common
Tier # __1__ Group #__1__ KA #__000074K1.03__
Importance Rating__4.5__ Level of Difficulty____3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge___x___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #40

A non-licensed individual may move control rods using the IN/HOLD/OUT switch located in the control room under which of the following conditions?

The non-licensed individual is ...

A. a plant operator performing a surveillance test and is directly supervised by the on shift NSO.

B. a qualified nuclear engineer performing a control rod test and is directly supervised by a previously licensed NSO for that unit.

C. a plant operator who is enrolled in the initial license training program and is directly supervised by a certified instructor of the class.

D. a maintenance manager who is enrolled in the initial license training program and is under the direct supervision of the on shift NSO.

Answer:
D

Reference:
BAP 300-1 Conduct of Operations

Common
Tier # _3__ Group #_____ KA #__2.1.1_____
Importance Rating __3.7___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #41

An NRC-licensed operator works shift Monday morning as an NSO for 8 hours on Unit 1. The same individual is off work on Tuesday. On Wednesday morning the same operator stands the Unit 1 NSO watch for 8 hours. The same individual is off of work on Thursday. On Friday night the same operator is assuming the Unit 1 NSO watch at shift turnover

What is the administrative procedural requirement associated with reviewing the Unit logs?

A. Thursday only.

B. Thursday and Friday only.

C. Wednesday, Thursday, and Friday only.

D. A minimum of the past five days.

Answer:
C

Reference:
OP-AA-101-401 Operating shift Turnover and Relief.

Common
Tier # __3__ Group #_____ KA #___2.1.3_____
Importance Rating __3.0___ Level of Difficulty___2____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__X___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #42

Given the following conditions on Unit 2:

Reactor Power is 100%

A leak rate surveillance indicates the following:
Total RCS leakage rate is 9.0 gpm
Leakage to PRT is 6.0 gpm
Leakage to Reactor Coolant Drain Tank is 2.0 gpm
Leakage into Secondary from Primary as follows:
Unit 2 A S/G .07 GPM
B S/G .08 GPM
C S/G .09 GPM
D S/G .10 GPM

Which of the following statements are correct concerning the above conditions?

A. No leakage limits have been exceeded.

B. Unidentified leakage limit has been exceeded.

C. Total Primary to Secondary leakage limit has been exceeded.

D. Secondary leakage limit through one S/G has been exceeded.

Answer:
A

Reference:
ITS section 3.4.13

Common
Tier # _3___ Group #_____ KA #____2.1.12_____
Importance Rating __2.9____ Level of Difficulty___3_____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #43

Which of the following operations results in the largest reactivity change?

A. Inserting 10 steps with rods initially at 190 steps on CBD at 100% power at 50 EFPH.

B. Inserting 10 steps with rods initially at 190 steps on CBD at 0% power at 11,500 EFPH

C. Withdrawing 10 steps with rods initially at 190 steps on CBD at 100% power at 11,500 EFPH.

D. Withdrawing 10 steps with rods initially at 190 steps on CBD at 0% power at 50 EFPH

Answer:
B

Reference:
1BCB-1 Integral and Differential Rod Worth

Common
Tier # __2__ Group #__1__ KA #_____001K5.05_____
Importance Rating___2.8___ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination: Integral and Differential Rod Worth vs. Steps Withdrawn

Question #44

How would the RCP seals be affected if 1CV8142, #1 Seal Bypass Valve, was opened with the associated RCP running at normal operating pressure in RCS?

A. Flow across the #1 seal will fall to 0 gpm and the seal will be damaged by overheating.

B. Differential pressure changes across the #1 seal resulting in unbalanced seal motion.

C. Full RCS pressure is applied to the #3 Seal causing it to become the primary seal.

D. Pressure to the seal return line to the VCT is lowered causing flow across #2 seal to drop.

Answer:
B

References:
RCP Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____003A1.09_____
Importance Rating___2.8___ Level of Difficulty___3____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #45

Why is the manual emergency boration valve CV8439 not used for performing emergency boration?

A. There is no way to monitor flow through the valve when in use so total boration flow could not be determined.

B. The throttling characteristics of the valve are poor, thereby resulting in full flow of 75 gpm or no flow at all.

C. The valve will only allow 10 gpm flow thereby not meeting the criteria for emergency boration.

D. Locally operated valves are not analyzed for safety functions and thereby not considered for performing safety function.

Answer:
C

References:
CVCS Lesson Plan
ITS Boration flow paths
Common
Tier # __2__ Group #__1__ KA #_____004A4.18_____
Importance Rating___4.3___ Level of Difficulty___3____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #46

Given the following plant conditions on Unit 1:

Reactor power was at 100% when a spurious SI signal was generated
Reactor Trip Breaker B failed to open
The spurious SI signal was cleared
The RH pumps, SI pumps, and 1A CV Pump were secured.

After the ECCS pumps were secured, a small break LOCA occurred.

Which of the following occurs when containment pressure rises to 10 psig? (Assuming no operator actions are taken)

A. Only the MSIV and MSIV bypass valves close.

B. 1B and 1C MSIV's close but the 1A and 1D MSIV's remain open.

C. The 1A RH, 1A SI, and 1A CV Pumps start; the MSIV and MSIV bypass valves close.

D. The 1B RH and 1B SI Pumps start; the MSIV and MSIV bypass valves close.

Answer:
D

References:
EF-2 ESF setpoints

Common
Tier # __2__ Group #__1__ KA #_____013A3.02_____
Importance Rating___4.1___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination: _____

Question #47

Which of the following determines the target temperature at which RCS cooldown is terminated following a S/G tube rupture using 1BEP-3, "Steam Generator Tube Rupture"?

A. The ruptured S/G pressure.

B. RCS subcooling of 39F.

C. The lowest intact S/G pressure.

D. Maximum temperature for placing RH in service in the event of a loss of High Head Flow.

Answer:
A

References:
1BEP-3

RO only
Tier # __1_ Group #__2__ KA #____000038K3.06_____
Importance Rating__4.2__ Level of Difficulty___2___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #48

A LOCA has occurred. Core exit thermocouple temperatures are indicating 690 °F and increasing rapidly.

The Incore Thermocouples are providing satisfactory indication and will become __(1)__ accurate above __(2)__. (Assume NO core cooling is present)

| | (1) | (2) |
|---|---|---|
| A. | less | 700 °F |
| B. | more | 1800 °F |
| C. | more | 700 °F |
| D. | less | 1800 °F |

ANSWER:
D

REFERENCE:
Incore Instrumentation Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____017K6.01_____
Importance Rating___2.7___ Level of Difficulty___2____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #49

How is the containment average temperature determined?

It is the calculated average of the RCFC Dry Bulb _____.

A. inlet temperature of those RCFC's that are running.

B. outlet temperature of all RCFC's regardless of operating status.

C. inlet temperature of all RCFC's regardless of operating status.

D. outlet temperature of those RCFC's that are running.

Answer:
A

References:
ITS 3.6.5 Containment Air Temperature

Common
Tier # __2__ Group #__1__ KA #_____022K2.1.32_____
Importance Rating___3.4___ Level of Difficulty___2____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #50

Given the following plant conditions on Unit 1:

Reactor power is 100%
3 CD/CB pumps are running
CD/CB Pump Selector Position is selected to the standby CD/CB Pump
1B and 1C Feedwater pumps are running

Which of the following occurs if the shaft shears between the reduction gear and the condensate pump casing for a running CD Pump?

A. 1CD152, CD pump recirc valve opens

B. 1CD157, GS condenser bypass valves A & B open

C. 1HD046A & B HDP discharge valves close

D. Both main feedwater pumps speeds decrease

Answer:
B

References:
Main Feedwater Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____056A2.04_____
Importance Rating___2.6___ Level of Difficulty___4____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #51

Given the following plant conditions:

Reactor power is 8%
A Feedwater isolation (FWI) occurred due to P-14
The startup feedwater pump is running

What actions MUST be performed in order to realign valves to establish main feedwater flow to the S/G's?

The P-14 signal must be _____

A. blocked and the main and aux FWI relays reset.

B. blocked and the reactor trip breakers need to be cycled open.

C. cleared and the FWI aux relays reset.

D. cleared, the reactor trip breakers cycled open, and main FWI relays reset.

Answer:
C

References:
Main Feedwater Lesson plans

Common
Tier # __2__ Group #__1__ KA #_____059K4.19_____
Importance Rating___3.2___ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #52

The diesel AFW pump has 2 battery packs each going to both starting motors with a selector switch determining which bank will power the starting motors. Each battery is designed to perform __(1)__ cranking cycles of __(2)__ secs each.

| | (1) | (2) |
|---|---|---|
| A. | 2 | 3 |
| B. | 3 | 4 |
| C. | 4 | 5 |
| D. | 5 | 6 |

Answer:
C

Reference:
AF-1 AFW System

Common
Tier # __2__ Group #__1__ KA #_____061K2.03_____
Importance Rating___4.0___ Level of Difficulty___2____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #53

When 0RE-PR16J, OA Blowdown After Filter Outlet Radiation Montior, has a high radiation condition, the inlet valve to the Blowdown Monitor tank __(1)__ and the isolation valve to main condenser or CST __(2)__. The system is returned to normal __(3)__ after the radiation condition has cleared.

| | (1) | (2) | (3) |
|---|---|---|---|
| A. | closes | opens | automatically |
| B. | opens | closes | manually |
| C. | closes | opens | manually |
| D. | opens | closes | automatically |

Answer:
B

References:
Liquid Rad Waste Lesson Plan

Common
Tier # __2__ Group #__1__ KA #_____068K4.01_____
Importance Rating___3.4___ Level of Difficulty___2____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #54

Waste gas decay tanks are designed to isolate at __(1)__ with a back up relief at __(2)__ .

| | (1) | (2) |
|---|---|---|
| A. | 80# | 180# |
| B. | 85# | 170# |
| C. | 90# | 160# |
| D. | 95# | 150# |

Answer:
D

Reference:
RW-1, Gaseous Radwaste

Common
Tier # __2__ Group #__1__ KA #_____071K4.01_____
Importance Rating___2.6___ Level of Difficulty___2____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #55

Given the following plant conditions:

Unit 1 is in MODE 5
Unit 2 is in MODE 6
Main Control Room Ventilation radiation monitoring is provided by train A
Gas Monitor 0RE-PR032B, Control Room Gaseous Radiation Monitor, fails low

Which of the following is required to be performed?

A. Immediately, suspend all core alterations on Unit 2.

B. Within 1 hour initiate continuous monitoring using a portable monitor having the same alarm setpoint.

C. Within 1 hour, place the redundant Control Room Ventilation Filtration System in the normal mode.

D. Within 1 hour, shut down the Control Room Makeup System.

Answer:
C

References:
Control Room HVAC Lesson Plan
ITS 3.3.7

Common
Tier # __2__ Group #__1__ KA #_____072K2.1.14_____
Importance Rating___2.5___ Level of Difficulty___2____
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam_____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #56

Maintenance must be performed on a system that will require a CLEAN and a POTENTIALLY CONTAMINATED system to be aligned together through a temporary modification.

Which of the following is required to address the cross-contamination potential?

A. A manual isolation valve is required to be installed with a person stationed at the valve when it is open controlling flow.

B. The temporary modification crosstie shall have a caution card attached identifying the crosstie and potential of cross-contamination.

C. A check valve shall be installed in the temporary modification to prevent backflow between the two systems.

D. The temporary modification will have a relief valve installed in it to acuate at the clean systems operating pressure thereby preventing cross-contamination.

Answer:
C

Reference:
CC-AA-112 Temporary Modifications

Common
Tier # __3___ Group #_____ KA #____2.2.11_____
Importance Rating ___2.5___ Level of Difficulty___2_____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #57

Unit 2 is currently in MODE 4. At 0900 today, it is discovered that a routine 24-hour surveillance involving Shutdown Margin was last performed at 0600 on the previous day.

What is the required action in response to the failure to perform the surveillance?

A. The Technical Specification LCO 3.0.3 is applied.

B. The ACTION statement (LOCAR) is immediately initiated.

C. The surveillance may be delayed for up to 24 hours from the discovery per Technical Specification 4.0.3.

D. The surveillance requirements are satisfied if the surveillance is completed by 1200.

ANSWER:
D

REFERENCE
ITS SR 3.0.2.

Common
Tier # __3___ Group #_____ KA #____2.2.12_____
Importance Rating __3.0_____ Level of Difficulty__2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #58

The reactor was operating at 85% power with Control Bank D at 190 steps. Subsequently, a continuous rod withdrawal occurred followed by a turbine runback.

Which of the following is also expected for this condition?

A. Delta-I becomes more negative

B. DEHC MW IN Feedback light will be lit

C. TAVE CONT DEV HIGH will alarm

D. ROD BANK LOW INSERTION LIMIT alarm will be in

Answer:
C

References:
1BOA ROD-1

Common
Tier # __1__ Group #__2__ KA #_____000001A2.05_____
Importance Rating___4.4____ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

NOTE TO FACILITY REVIEWER: Is it necessary to spell out acronyms for alarms?

Question #59

The following conditions exist on Unit 1:

Reactor power 80%
Rod Deviation alarm lit
Rod Bottom alarm lit
Power Range Channel Deviation alarm lit
2 Rod Bottom LEDs lit on DRPI

WHICH ONE of the following items describes the required operator response to this event?

A. Check Axial Flux Difference and Quadrant Power Tilt Ratio

B. Trip the reactor and perform 1BEP-0, "Reactor Trip or Safety Injection"

C. Restore rods per ROD-3, "Dropped or Misaligned Rod" then contact Nuclear Engineering to verify operability

D. Restore rods per ROD-3, "Dropped or Misaligned Rod" then verify operability by performing 1BOSR 1.4.2-1, Movable Control Assemblies Quarterly Surveillance

ANSWER:
B

REFERENCE
1BOA ROD-3

Common
Tier # __1___ Group #__2___ KA #_000003K2.4.4___
Importance Rating___4.0___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #60

Given the following plant conditions:

An inadvertent Unit 2 reactor trip occurred at 100% power
A loss of offsite power occurred when the Main Generator output breakers tripped
When the D/Gs energized the busses, an inadvertent SI occurred
All S/G NR levels have subsequently decreased to 38%

Which of the following describes operation of the AF Pumps under these conditions?

A. The 2A AF Pump is sequenced on after a time delay of 35 seconds and the 2B AF Pump started on RCP Bus Undervoltage.

B. The 2A AF Pump is sequenced on after a time delay of 35 seconds and the 2B AF Pump started due to low S/G levels.

C. The 2A AF Pump started due to low S/G levels when the D/G output breaker closed and the 2B AF Pump started on the SI signal.

D. The 2A AF Pump started due to low S/G levels when the D/G output breaker closed and the 2B AF Pump started on the loss of offsite power.

Answer:
A

References:
AFW Lesson Plan
EF-1 ESF Setpoints

RO only
Tier # __2__ Group #__2__ KA #_____064K4.11_____
Importance Rating___3.5___ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #61

WHICH ONE of the following is the cause for a RAPID increase in Pressurizer level following a LOCA event with a loss of subcooling margin?

A. A PZR vapor space leak.

B. SI accumulator Injection.

C. SI flow refilling the PZR.

D. PZR reference leg temperature decreased.

ANSWER:
A

REFERENCE:
PZR Lesson Plan

Common
Tier # __1___ Group #__2___ KA #__000008A2.12_____
Importance Rating___3.4___ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___X___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #62

A small break LOCA has occurred outside containment.

Actions of BCA-1.2 "LOCA Outside Containment", have been completed and RCS pressure continued to decrease. A transition was made to BCA-1.1, "Loss of Emergency Coolant Recirculation"

Which of the following is the reason a transition was made to BCA-1.1?

A. To recover after the break was isolated

B. To terminate offsite release

C. To reverify that all automatic actions have been completed

D. To take compensatory actions for lack of inventory in the containment sump

Answer:
D

References:
1BCA-1.1

Common
Tier # __1__ Group #__2__ KA #_W/E04K1.02____
Importance Rating___3.5__ Level of Difficulty___2_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #63

Which of the following describes the methods for depressurizing the RCS in preparation for Refill in the order of preference used in 1BEP ES-1.2, "Post LOCA Cooldown and Depressurization"?

A. One Pzr PORV
Normal Spray
Aux Spray

B. Normal Spray
One Pzr PORV
Aux Spray

C. Normal Spray
Aux Spray
Two Pzr PORVS

D. Two Pzr PORVS
Normal Spray
Aux Spray

Answer:
B

Reference:
1BEP ES-1.2

Common
Tier # __1__ Group #__2__ KA #_W/E03K3.03_____
Importance Rating___3.9__ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #64

Which of the following will satisfy conditions necessary to MANUALLY OPEN Containment Recirculation Valve SI8811A?

1. SI8812A - open
2. SI8812A - closed

3. CS001A - open
4. CS001A - closed

5. RH8701A - open
6. RH8701B - closed

A. 1, 3, 5

B. 2, 3, 5

C. 1, 4, 6

D. 2, 4, 6

Answer:
D

Reference
ECCS Lesson Plan
ECCS-3 ECCS

Common
Tier #__1__ Group #__2__ KA #__W/E11K2.1__
Importance Rating__3.6__ Level of Difficulty___2___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #65

A plant heatup was in progress in accordance with BGP 100-1, when a leak was detected by the actuation of alarm "CNMT DRAIN LEAK DETECT FLOW HIGH."

Following stabilization of the leak rate, the following plant conditions exist:

PZR level 42% and stable
PZR pressure 1600 psig and stable
Charging flow is 98 gpm as read on FI-121
Total letdown flow is 75 gpm
Total seal injection flow is 27 gpm
RCP seal parameters are normal

Which of the following actions will identify the correct leak location?

A. Closing the RCS loop drain valves will isolate a tube leak in the excess letdown heat exchanger.

B. Closing the orifice isolation valves and the letdown line isolation valves will isolate the leak downstream of 1CV131 letdown line pressure control valve.

C. Closing the individual seal injection isolation MOVs will isolate the leak at the seal injection line flange to the RCPs seal package.

D. Closing the charging line CNMT isolation valves will isolate the leak at the discharge line from the in service regenerative heat exchanger.

Answer:
D

References:
1BOA PRI-1

Common
Tier # __1_ Group #__2__ KA #____000022A2.02_____
Importance Rating___3.2_ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #66

Given the following plant conditions:

Plant in Mode 5
RCS temperature is 195 °F and stable
RCS pressure is 325 psig and stable
Train "A" RH is in service, Train "B" RH is inoperable (OOS for repairs)
RCS is intact
All systems aligned in normal configuration for present conditions

A loss of RH shutdown cooling occurs with the temperature rising, which of the following is the preferred method for heat removal in accordance with 1BOA PRI-10?

A. RWST gravity feed to RCS, spill through the PZR PORVS

B. SI Pump Hot Leg Injection with spill through the 2-inch vent.

C. Natural or forced RCS flow while steaming intact S/Gs.

D. Reflux cooling to any S/G with level equal to or greater the 27% NR level.

Answer:
C

Reference:
1BOA PRI-10

Common
Tier # __1__ Group #__2__ KA #____000025K3.01____
Importance Rating_3.1_ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #67

The following plant conditions exist on Unit 2:

A load reduction from 32% power was initiated 5 minutes ago
Current reactor power is 28%
PZR pressure 2235 psig and stable
PZR level 30% and stable
S/G levels (NR) 37%A, 39%B, 37%C, 38%D and stable

If the 2D S/G level were to drop to 29% and then rise to 35% 20 seconds later, what would be the response of the ATWS Mitigating System (AMS)?

A. AMS actuation signal is generated; the reactor trips and the motor driven AF pump start.

B. AMS actuation signal is generated; the main turbine would trip and both AF pumps start.

C. AMS actuation signal is NOT generated because turbine power is below C-20 setpoint.

D. AMS actuation signal is NOT generated because of a time delay in the S/G level circuit.

Answer:
D

References:
AMS Lesson Plan

Common
Tier # __1__ Group #__2__ KA #____000029A1.15____
Importance Rating_4.1_ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #68

Unit 1 is at 100% power with the following plant conditions:

All PZR heaters are energized
Letdown flow is 75 gpm
Charging flow is 105 gpm
S/G levels are constant
Tavg/Tref are matched

Which of the following events is in progress?

A. The PZR level control channel has failed high.

B. An atmospheric steam dump valve has opened.

C. A S/G tube leak has occurred.

D. PZR spray bypass flow has increased.

Answer:
C

Reference:
1BOA SEC-8

Common
Tier # __1_ Group #__2__ KA #____000037A2.01_____
Importance Rating__3.0__ Level of Difficulty___4___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #69

Given the following:

Reactor power is 100%.
RCS Tavg is stable at 582°F on all 4 loops.
RCS pressure is stable at 2235 psig.
Containment Pressure is INCREASING.
Steam Flow on each SG is STABLE
1A SG Feed Flow is pegged HIGH
1A SG Main FW Reg Valve is full OPEN
1A SG pressure is STABLE
1A SG level is DECREASING

Which ONE of the following events is in progress?

A. Feed Line Break INSIDE Containment.

B. Steam Line Break INSIDE Containment.

C. Main FW Reg Valve failed OPEN.

D. Feed Flow Indicator pegged HIGH.

ANSWER:
A

REFERENCE:
1BEP-2
WOG HP BACKGROUND EP-2

**B. Wrong due to Tave stable**
**C. Wrong due to S/G level decreasing, CNMT Humidity increasing**
**D. Wrong due to feed reg valve full open, CNMT Humidity increasing**

Common
Tier # __1__ Group #__2__ KA #___000054K1.01___
Importance Rating___4.1___ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #70

Given the following plant conditions:

The plant has experienced an unisolable main steam line break inside containment. The operators are implementing actions of 1BCA-2.1 "Uncontrolled Depressurization of all S/G's". Feed flow was reduced to 25 gpm to each S/G by operator action.

Based on the above conditions, which of the following describes the use of 1BFR-H.1, "Loss of Secondary Heat Sink" .

The transition to and implementation of 1BFR-H.1 is ___?

A. Required immediately.

B. Required when 10% NR level cannot be restored to ONE steam generator.

C. Required when 10% NR level cannot be restored to ALL steam generators.

D. Not required.

Answer:
D

References:
1BFR-H.

Common
Tier # __1___ Group #__2__ KA #_____W/E05A2.01_____
Importance Rating___3.4___ Level of Difficulty____2____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #71

Given the following Unit 1 conditions:

Reactor Power is 6%
Startup FW pump is in service
A and B CD/CB pumps are running
Instrument Air pressure is at 70 psig and dropping due to a header leak

Loss of air to which of the following COMPONENTS would result in an automatic reactor trip?

A. Condensate Pump recirculation valve CD152

B. CVCS Charging Flow Control valve CV121

C. RCP #1 Seal Leakoff Isolation valve CV8141A

D. Main FW Reg Bypass valve FW510A

Answer:
D

Reference:
Instrument Air Lesson Plan

RO only
Tier # __2__Group #__3__ KA #___078K3.02____
Importance Rating___3.5 _ Level of Difficulty___3_____
Bank___x____ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #72

The following stable conditions are encountered when surveying a room located in the auxiliary building RPA:

| | |
|---|---|
| General Area Radiation level in room | 60 mrem/hr |
| Radiation level at 30 cm from pipe | 375 mrem/hr |
| Radiation level on contact with pipe elbow | 400 mrem/hr |
| Contamination levels | 850 dpm/cm2 beta-gamma |
| | 0 dpm/cm2 alpha |
| Airborne radiation level | 0.6 DAC |

What are the correct radiological postings or labels required to reflect the current radiological conditions for this room?

A. "DANGER, HIGH RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".

B "CAUTION, RADIATION AREA"
"HOT ZONE"
"CAUTION, CONTAMINATED AREA".

C. "DANGER, HIGH RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".

D. "CAUTION, RADIATION AREA"
"HOT SPOT"
"AIRBORNE RADIOACTIVITY AREA".

ANSWER:
C

REFERENCE:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # __3__ Group #_____ KA #___2.3.1_____
Importance Rating __2.6____ Level of Difficulty___3_____
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X__
Proposed references to be provided to applicants during examination:_____

Question #73

An operator received radiation exposure at both Braidwood and Byron Stations during the year.

The exposure record until the last day of the year is:

| | Braidwood | Byron |
|---|---|---|
| Deep Dose Equivalent (DDE) | 275 mrem | 75 mrem |
| Lens Dose Equivalent (LDE) | 15 mrem | 10 mrem |
| Committed Effective Dose Equivalent (CEDE) | 120 mrem | 25 mrem |
| Shallow dose Equivalent (SDE) | 25 mrem | 15 mrem |
| Committed Dose Equivalent (CDE) | 25 mrem | 5 mrem |

On the last day of the year the individual, at Byron Station, was requested to work in an area where the known radiation rate is 280 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has been collecting and it has been determined to be totally gamma radiation.

If the worker takes 15 minutes to complete the task, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

A. 450 mrem

B. 565 mrem

C. 595 mrem

D. 660 mrem

ANSWER:
B

REFERENCE:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # __3___ Group #_____ KA #___2.3.4_____
Importance Rating __2.5____ Level of Difficulty___3____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #74

Unit 1 was operating at 28% power when the Loop B Reactor Coolant Pump (RCP) tripped on overcurrent.

Which ONE of the following describes the unit's initial response? (Assume no operator action or no rod motion.)

A. A reactor trip occurs and unaffected loop Tavg increases.

B. A reactor trip occurs and unaffected loop Tavg decreases.

C. A reactor trip will NOT occur and unaffected loop Tavg decreases.

D. A reactor trip will NOT occur and unaffected loop Tavg increases.

ANSWER:
C.

Reference:
ESF Setpoints EF-1

Common
Tier # __2___ Group #__2___ KA #____002K6.02_____
Importance Rating___3.6____ Level of Difficulty____2____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #75

Given the following plant conditions:

A LOCA has occurred on Unit 1
Power has been lost to BUS 142
The crew is initiating 1BEP ES-1.3 "Transfer to Cold Leg Recirculation Alignment"

Which of the following describes the affect of the loss of this bus on the Cold Leg Recirculation Alignment?

The SI pump's suction is supplied by .....

A. both "A" train RH and "B" train RH from redundant paths.

B. "A" train RH only via crosstie to the CV Pumps suction valve 1CV8804A.

C. "B" train RH only via 1B RH discharge supply.

D. "A" train RH only via crosstie to the SI pumps suction valve 1SI8804B.

Answer:
B

Reference:
ECCS Lesson Plan

Common
Tier # __2___ Group #__2___ KA #____006K2.04_____
Importance Rating___3.6____ Level of Difficulty____3____
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #76

Given the following plant conditions:

Unit 1 Reactor power was 85% with all control systems in automatic
1A MFP tripped .
The operator initiated a turbine runback

What was the initial response of the PZR pressure control system during this event?

A. The PORVs were blocked from opening to maintain pressure above the low reactor trip setpoint.

B. The variable heaters and the backup heaters turn full on to raise pressure to normal.

C. PZR Spray valves will throttle open to reduce pressure to normal.

D. Both PZR PORVs open to maintain pressure below the high reactor trip setpoint.

Answer:
C

Reference:
PZR Lesson Plan

Common
Tier # __2___ Group #__2___ KA #____010A3.02_____
Importance Rating___3.6____ Level of Difficulty____3____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #77

WHICH of the following describes (1) how, and (2) why Pressurizer Level is programmed?

A. (1) From auctioneered-high Tave

(2) Pressurizer volume is INSUFFICIENT to accommodate reactor coolant system water volume changes while limiting pressure transients.

B. (1) From auctioneered-high Tave

(2) Pressurizer volume is ADEQUATE to accommodate reactor coolant system water volume changes while limiting pressure transients.

C. (1) From auctioneered-high Tc

(2) Pressurizer volume is ADEQUATE to accommodate reactor coolant system water volume changes while limiting pressure transients.

D. (1) From auctioneered-high Tc

(2) Pressurizer volume is INSUFFICIENT to accommodate reactor coolant system water volume changes while limiting pressure transients.

ANSWER:
A

REFERENCE:
PZR Lesson Plan

Common
Tier # __2___ Group #__2___ KA #_____011K5.12_____
Importance Rating___3.2____ Level of Difficulty____2____
Bank ___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #78

The following rod position indications exist:

The DATA B failure light is lit
LED for 24 steps is lit

What will be the range of the rod, using the normal and maximum indication accuracies due to coil placement and thermal expansion?

A. 20-32

B. 18-30

C. 16-30

D. 14-28

Answer:
D

Reference:
Rod Position Lesson Plan
Tech spec bases

Common
Tier # __2__ Group #__2__ KA #_____014K5.01_____
Importance Rating___2.7___ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #79

Following a Large Break Loss of Coolant Accident the Reactor Vessel Level Instrument System (RVLIS) is being used to monitor level. No RCPs are running. The RCS is saturated.

What is the expected response for RVLIS indication when the 1A RCP is started?

A. Only RVLIS Head Level will read lower.

B. Only RVLIS Plenum level will read lower.

C. RVLIS Head and Plenum levels will read higher.

D. RVLIS Head and Plenum levels will read accurately.

Answer:
B

References:
ICCDS Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____016K1.01_____
Importance Rating___3.4___ Level of Difficulty___3___
Bank ___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #80

The following plant conditions exist:

LOCA is in progress
Containment Spray actuated due to high containment pressure
Containment Spray signal has been reset
Actions of ES-1.3 "Transfer to Cold Leg Recirculation" have been completed
Containment pressure is now 17 psig

Offsite power is then lost and the D/G output breakers have just closed onto the ESF buses

How are the Containment Spray Pumps restarted?

A. The pumps will auto start 15 seconds following closure of the D/G output breakers.

B. The pumps will auto start 40 seconds following closure of the D/G output breakers.

C. The operator immediately places the CS & PHASE B ISOL switches for both trains to ACTUATE, the pumps will auto start 15 seconds following closure of the D/G output breakers.

D. The operator immediately places the CS & PHASE B ISOL switches for both trains to ACTUATE, the pumps will auto start 40 seconds following closure of the D/G output breakers.

Answer:
C

References:
CS Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____026A4.01_____
Importance Rating___4.5___ Level of Difficulty___3___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #81

The normal containment purge system is capable of performing the following functions:

A. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

B. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6

C. Two complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 4/5/6

D. One complete air change outs in containment every hour and safe access to containment within 3 hours after S/D in Modes 5/6

Answer:
D

Reference:
VP-2 Containment Purge

Common
Tier # __2__ Group #__2__ KA #_____029K2.1.27_____
Importance Rating___2.8___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #82

If all fuel racks in the Spent Fuel Pool are filled with radiated fuel assemblies, what is the MINIMUM boron concentration required to maintain a safe reactivity condition of less than 0.95 Keff?

A. 0 ppm

B. 1250 ppm

C. 2000 ppm

D. 2400 ppm

ANSWER;
C

REFERENCE:
ITS Tech Spec 3.7.15

Common
Tier # __2__ Group #__2__ KA #_____033A4.05_____
Importance Rating___3.1___ Level of Difficulty___2___
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #83

What is the mechanism that MINIMIZES the effect of shrink on indicated narrow range level for the D-5 S/G's when load is reduced from 80% to approximately 60% on the loss of a feed pump?

A. The circulatory velocity in the downcomer increases causing a pressure decrease.

B. Constant tempering flow reduces the preheat requirements for the incoming feedwater.

C. The level program maintains mass constant in the S/G.

D. The location of the lower level tap experiences a rise in static pressure that tends to offset the drop in the steaming rate.

Answer:
D

References:
S/G Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____035K5.03_____
Importance Rating___2.8___ Level of Difficulty___3___
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #84

A loss of the condenser air removal system has occurred, which of the following is the expected sequence of alarms?

A. Condenser vacuum low, turbine trip, C-9 Bypass Permissive lights

B. C-9 Bypass Permissive lights, condenser vacuum low, turbine trip

C. Condenser vacuum low, C-9 Bypass Permissive lights, turbine trip

D. Turbine trip, C-9 Bypass Permissive lights, condenser vacuum low

Answer:
C

Reference:
Sec-3 Condenser Vacuum

Common
Tier # __2__ Group #__2__ KA #_____055K3.01_____
Importance Rating___2.5___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #85

Which of the following conditions are required to MANUALLY close the SAT feed on a 6.9KV breaker?

A. No lockouts on SAT or UAT feed

B. All SAT trips are in

C. UAT Feed Brkr C/S in A/C

D. UAT Feed Brkr open

Answer:
A

Reference:
AC-6 AC Power

Common
Tier # __2__ Group #__2__ KA #_____062K2.01_____
Importance Rating___3.3___ Level of Difficulty___2___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x__ Comprehension or Analysis____
Proposed references to be provided to applicants during examination:_____

Question #86

Which of the following identifies ALL the Fire Protection Pumps that will be running if system water pressure falls to 128 psig?

A. Diesel Engine Fire Pump, Electric Motor Driven Fire Pump, and both Jockey Pumps (OA and OB).

B. Electric Motor Driven Fire Pump and the OB Jockey Pump.

C. Diesel Engine Fire Pump and the OA Jockey Pump.

D. Electric Motor Driven Fire Pump and both Jockey Pumps (OA and OB).

Answer:
D

References:
Fire Protection Lesson Plan

Common
Tier # __2__ Group #__2__ KA #____086A2.02_____
Importance Rating___3.0___ Level of Difficulty___2___
Bank___x___ Modified Bank _____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #87

The following plant conditions exist on Unit 2:

The "0" CC HX is in service with the 2A CC Pump running
CC Surge Tank level was at 55% and is now at 60%
"0" CC HX Radiation Monitor RE-PR009 HIGH radiation level alarm is in
2A Letdown Heat Exchanger has ruptured a tube

Which of the following describes the response of the CC system for these conditions?

A. No automatic actions occur.

B. The CC Surge Tank Vent Valve 2CC017 will automatically close and 1CC017 remains open.

C. The CC Surge Tank will be automatically isolated from letdown, prior to the CC Surge Tank completely filling and pressurizing.

D. Both CC Surge Tank Vent Valves 1/2CC017 will automatically close.

Answer:
D

References:
Component Cooling Lesson Plan

Common
Tier # __2__ Group #__2__ KA #_____073K1.01_____
Importance Rating___3.6___ Level of Difficulty___3___
Bank_____ Modified Bank_____ **(Note changes or attach parent)** New__x__
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #88

The following conditions exist for a job to be performed on a system.

The general area radiation levels are 10 mrem/hr in the room.
The hot spot in the room is a pipe elbow that has radiation levels of 100 mrem/hr.
The job will be performed near the hot spot area.

(Assumptions: ALL 4 cases below have the same transition time to and from destinations. All shielding placement and removal is at 100 mrem/hr)

Choose the method that best reduces personnel exposure.

A. Two Radiation Control personnel hang and remove 1 tenth thickness of lead shielding on the hot spot in 1.5 hours for the job. The job is performed after the lead shielding is in place by using 2 operators for 3 hrs each on the job.

B. The job is performed by 3 operators for 1 hr each on the job at the hot spot and a fourth operator reading instructions in the general room area for 1 hr.

C. The job is performed by 2 operators for 2 hrs each on the job at the hot spot and a third operator reading instructions in the general room area for 2 hrs.

D. The job is performed by using 2 operators for 3 hrs each on the job at the hot spot.

Answer:
B

Reference:
NUCLEAR GENERAL EMPLOYEE TRAINING

Common
Tier # _3____ Group #_____ KA #____2.3.10_____
Importance Rating _2.9_____ Level of Difficulty___3___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #89

Given the following conditions on Unit 1:

A LOCA has occurred.
The crew is in EP-0 at step 15 with the following plant conditions:

CETCs are reading 1090 °F
RCS pressure is 1950 psig
Containment pressure 6 psig and increasing
S/G pressures are 1180 psig
AFW maximum flow capability 400 gpm
S/G levels (NR): 1A S/G 25%, 1B S/G 24%, 1C S/G 26%, 1D S/G 30%

Based on the above conditions, what is the proper procedure to be in?

A. FR-C.1, "Response to Inadequate Core Cooling"

B. FR-H.1, "Response to a Loss of Secondary Heat Sink"

C. FR-Z.1, "Response to High Containment Pressure"

D. Transition to EP-1, "Loss of Reactor or Secondary Coolant"

Answer:
B

Reference:
1BFR-H.1 LOSS OF SECONDARY HEAT SINK

Common
Tier # ___3__ Group #_____ KA #___2.4.1_____
Importance Rating___4.3___ Level of Difficulty__2__
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge____ Comprehension or Analysis__x__
Proposed references to be provided to applicants during examination:_____

Question #90

Unit 1 is at 100% power. WHICH of the following describes the plant response if the controlling pressurizer level channel fails HIGH with NO operator action taken?

A. The PZR heaters trip and letdown isolates on low level. The reactor eventually trips on actual high PZR level.

B. PZR level decreases until the reactor trips on low pressure. Letdown then isolates when level drops to 17%.

C. PZR level decreases initially, but stabilizes below the programmed setpoint. The controller will then restore level to program with an appropriate time constant.

D. The PZR heaters trip and letdown isolates on low level. The PZR will then gradually fill until a high pressure reactor trip occurs.

ANSWER:
A

Reference:
PZR lesson plan

Common
Tier # __1___ Group #_3____ KA #___000028K2.03___
Importance Rating __2.6__ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #91

The plant was operating at 10% Reactor Power when a loss of offsite power caused the RCPs to trip. Identify ALL of the indications that verify natural circulation is occurring.

1 - Core exit thermocouples --- decreasing
2 - Core exit thermocouples --- stable or increasing

3 - RCS hot leg temperature --- stable or decreasing
4 - RCS hot leg temperature --- increasing

5 - RCS subcooling --- decreasing
6 - RCS subcooling --- increasing

7 - RCS cold leg temperature --- at saturation for SG pressure
8 - RCS hot leg temperature --- at saturation for SG pressure

A. 1, 4, 5, 7

B. 2, 4, 6, 8

C. 1, 3, 6, 7

D. 2, 3, 5, 8

ANSWER:
C

REFERENCE:
1BCA-0.1

Common
Tier # _1____ Group #___3__ KA #__000056K1.01___
Importance Rating _3.7___ Level of Difficulty___2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam ___x___
Memory or Fundamental Knowledge___x___Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #92

Which ONE of the following statements explains the BEP-1, "Loss of Reactor or Secondary Coolant," bases for stopping the RCPs as directed by the Operator Action Summary page following a containment Phase B actuation?

A. Delays the onset of two phase flow.

B. Preempt the RCP's tripping on cavitation because it is assumed that if containment spray actuates, an RCS depressurization is in progress.

C. Reduces the containment high pressure transient by lowering the energy release rate to containment from forced flow.

D. Precludes RCP bearings and seals from overheating on loss of component cooling water.

ANSWER
D.

REFERENCE:
1BEP-1 fold out page

RO only
Tier # __1__ Group #__2__ KA #_000011K2.4.18_
Importance Rating___2.7__ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #93

Which of the following list ALL administrative requirements and interlocks associated with opening cold leg recirculation valves SI8811A and SI8811B.

A. No SI signal present
RWST level 45%
4 sump lights lit for RHR Pump NPSH.

B. SI signal present
RWST level 45%
2 sump lights lit for RHR Pump NPSH.

C. No SI signal present
RWST level 46%
2 sump lights lit for RHR Pump NPSH.

D. SI signal present
RWST level 46%
4 sump lights lit for RHR Pump NPSH.

Answer:
D

Reference:
1BEP ES1.3 Sump Recirculation
ESF LESSON PLAN

Common
Tier # _3____ Group #_____ KA #____2.4.2_____
Importance Rating __3.9_ Level of Difficulty__2_____
Bank___x___ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge__X____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #94

If the Reactor Coolant Subcooling Margin Monitor is not working properly, how will the subcooling margin be calculated?

A. Use 5 highest CETC average and RCS wide range pressure to determine subcooling margin.

B. Use 5 lowest CETC average and RCS wide range pressure to determine subcooling margin.

C. Use 10 highest CETC average and RCS wide range pressure to determine subcooling margin.

D. Use 10 lowest CETC average and RCS wide range pressure to determine subcooling margin.

Answer:
C

Reference:
ITS table 3.3.i note c

Common
Tier # __3___ Group #_____ KA #___2.4.3_____
Importance Rating ___3.5___ Level of Difficulty__4__
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__X____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #95

WHICH ONE of the following is a positive indication that the PRT has ruptured following a pressurizer PORV failing full OPEN?

A. PRT temperature is decreasing.

B. PORV relief line temperature is increasing.

C. PRT level decreases to its normal value of 70%.

D. Pressurizer level is decreasing.

ANSWER:
A

REFERENCE:
1BEP-0

Common
Tier # __2__ Group #__3__ KA #___007A2.01_____
Importance Rating___3.9___ Level of Difficulty___2_____
Bank _____ Modified Bank _____ **(Note changes or attach parent)** New___x____
Previous NRC Exam _____
Memory or Fundamental Knowledge__x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #96

Both units are at 100% power. The Component Cooling (CC) system is in its alignment for normal operations with ALL equipment operable.

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

Alarm window for CC SURGE TANK LEVEL HIGH LOW actuates.
CC Surge Tank level is 33% and slowly falling
Demin Water and Primary Water makeup valves indicate OPEN
RCS temperature (average Tave) is 584F and stable
PZR level is 60% and stable
VCT level is 42% and stable
Charging and letdown flows are balanced and normal Spent Fuel Pool level is stable

Where is the location of the CC System leak?

A. The seal water heat exchanger

B. The 2A RH pump seal cooler

C. The 2B letdown heat exchanger

D. The 2B excess letdown heat exchanger

Answer:
B

Reference:
1BOA PRI-6 Attachment A

Common
Tier # __2__Group #__3__ KA #____008K3.01_____
Importance Rating __3.4__ Level of Difficulty___4___
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__x___
Proposed references to be provided to applicants during examination:_____

Question #97

Which ONE of the following is an indication that recombination is occurring after having placed the Hydrogen Recombiners in service?

A. Hydrogen Recombiner power increases to 20 KW.

B. Containment dewpoint decreases after Hydrogen Recombiners are placed in service.

C. Hydrogen Recombiner average thermocouple temperature is at or above 1200 °F.

D. Containment pressure deceases after Hydrogen Recombiners are placed in service.

ANSWER:
C

REFERENCE:
OBOSR 6.8.1-1

Common
Tier # _2__ Group #__3___ KA #__028A4.01__
Importance Rating __4.0____ Level of Difficulty___3_____
Bank _____ Modified Bank_____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #98

Which of the following is the function of the Service Air system?

A. Supply Instrument Air

B. Primary emergency breathing air system

C. Supplies air to only essential components

D. Oil filled compressed air for maintenance use

Answer:
A

Reference:
SA/IA-2 Service Air

RO only
Tier # __2__ Group #__2__ KA #____079K2.1.28_____
Importance Rating___3.2___ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge___x___ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____

Question #99

During a cooldown on Unit 1 the following conditions exist:

RCS loop Tave (4 loops) 550F(1), 548F(2), 551F(3), 548F(4) and all decreasing
Steam header pressure- 1030 psig and decreasing
Steam Dump Mode Selector switch-STM PRESS MODE
Steam Dump Controller-MAN set at 30% demand

The operator momentarily places the Train A and Train B Steam Dump Bypass Interlock switches to Bypass and then releases them.

What is the status of the Steam Dump valves following the operator's actions?

A. All valves are fully closed

B. Three valves in group 1 are partially open

C. Three valves in group 1 are fully open and valves in group 2 are fully shut.

D. Three valves in group 1 are fully open and three valves in group 2 are partially open.

Answer:
C

Reference:
Steam Dump Lesson Plan

Common
Tier # __2__ Group #__3___ KA #____041K4.09____
Importance Rating __3.0___ Level of Difficulty___3_____
Bank___x____ Modified Bank_____ **(Note changes or attach parent)** New_____
Previous NRC Exam _____
Memory or Fundamental Knowledge_____ Comprehension or Analysis__X___
Proposed references to be provided to applicants during examination:_____

Question #100

The basis for depressurizing all intact steam generators to atmospheric pressure in FR-C.1, "RESPONSE TO INADEQUATE CORE COOLING," is to:

A. insure core exit thermocouple temperatures are reduced to less than 700 °F.

B. reduce S/G pressure to increase feedwater flow.

C. reduce RCS pressure for establishing low-head safety injection.

D. enhance natural circulation cooling of the reactor core.

ANSWER:
C

REFERENCE:
FR-C1. Procedure Lesson Plan 41

Common
Tier # __3___ Group #_____ KA #___2.4.6_____
Importance Rating __3.1_____ Level of Difficulty___2_____
Bank_____ Modified Bank _____ **(Note changes or attach parent)** New___x___
Previous NRC Exam _____
Memory or Fundamental Knowledge__x____ Comprehension or Analysis_____
Proposed references to be provided to applicants during examination:_____