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2011 HATCH 301

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04/18/2011

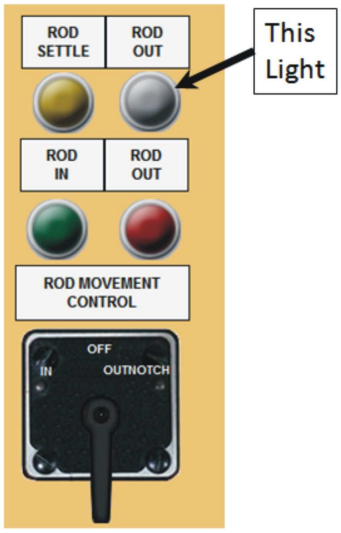
1. 201002A2.04 001

Unit 1 is at 15% power and is performing a reactor startup.

Control Rod 30-31 has an Insert limit of 04 and a Withdraw limit of 08.

- All rods in this group are at position 04.

When the NPO withdraws the control rod, the rod begins DRIFTING OUT past position 06.



Which ONE of the choices below completes both of the following statements?

When rod 30-31 reaches position 10, the Rod Movement Control "Rod Out" white light will be _____ .

IAW 34AB-C11-004-1, Mispositioned Control Rods, a reactor scram _____ required.

A. illuminated;
is NOT

B. extinquished;
is NOT

C. extinquished;
is

D. illuminated;
is

Description:

When Control rod 30-31 reaches position 10, the white "Rod Out" block light will be extinguished since the rod is past its intended 08 position. IAW 34AB-C11-004-1, Mispositioned Control Rods, at Table after 4.4 when less than the LPSP of 20.6% RTP and one control rod drifting out, entering the scram procedure is required.

The "A" distractor is plausible if the applicant confuses exactly what makes the "Rod Out" block light illuminate, whether it illuminates when a block exists or is extinguished when a block exists. The second part if the applicant thinks power is above the LPSP, which would require the applicant to enter section 4.5 and NOT scram.

The "B" distractor is plausible since the first part is correct and the second if the applicant thinks power is above the LPSP, which would require the applicant to enter section 4.5 and NOT scram.

The "D" distractor is plausible if the applicant confuses exactly what makes the "Rod Out" block light illuminate, whether it illuminates when a block exists or is extinguished when a block exists. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

201002 Reactor Manual Control System

A2. Ability to (a) predict the impacts of the following on the REACTOR MANUAL CONTROL SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)

A2.04 Control rod block 3.2 3.1

LESSON PLAN/OBJECTIVE:

C11-RMCS-LP-05401, EO 200.091.A. 03

References used to develop this question:

34AB-C11-004-1, Mispositioned Control Rods

2. 201003A4.02 001

A coupling check is being performed on Rod 38-27.

Which ONE of the choices below completes the condition that will indicate rod 38-27 is UNCOUPLED?

Position indication on the Four-Rod display will _____ **AND** the Red Full-Out light will be _____ .

A. indicate 49;
illuminated

B. indicate 49;
extinguished

C. be blank;
illuminated

D. be blank;
extinguished

Description:

The Position Indicators transmit electrical signals to provide remote indication of control rod position and CRD temperature. The indicator probes consist of a plug, receptacle, thermocouple, and a switch support with 53 switches. The switches are magnetic reed switches and are normally open. They are closed (made-up) by the magnet on the bottom of the drive piston. Switch 49 provides Red "Full Out" indication on the full core display and is located at position "48". Rod position will indicate "48". Switch 50 is 2 inches below Switch 49. This means that it is 2 inches below the point where the Control Rod should have backseated. The switch can only close if uncoupling of the control rod has occurred and will provide the Control Room operator with an annunciator. When in this condition the rod position will NOT indicate and the "Full Out" indication will NOT be lit.

The "A" distractor is plausible if the applicant thinks that switch 49 will indicate position 49 and the second if the applicant remembers that this switch normally illuminates the Red Full-Out light.

The "B" distractor is plausible if the applicant thinks that switch 49 will indicate position 49 and the second part is correct.

The "C" distractor is plausible since the first part is correct and the second if the applicant remembers that this switch normally illuminates the Red Full-Out light.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

201003 Control Rod and Drive Mechanism

A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

A4.02 CRD mechanism position: Plant-Specific 3.5 3.5

LESSON PLAN/OBJECTIVE:

C11-CRDM-LP-00102, LO 900001.001

Reference(s) used to develop this question:

Cooper 2006 NRC Exam Q# 56
2009 Biennial LCT Questions Bank, Q# SYSTEMS 089
34AR-603-248-2, Rod Overtravel

3. 201006A4.02 001

Unit 1 was operating at 100% RTP when an event occurred requiring a manual scram. The OATC inserted the scram and observed ALL "White" RPS Scram Group lights remaining ILLUMINATED.

Which ONE of the choices below completes the following statements concerning the Rod Worth Minimizer (RWM)?

In order to determine "Rod Status" using RWM, the RWM "Confirm Shutdown" display screen pushbutton, _____ depressed to confirm rod status.

Two (2) minutes later, the RWM "Confirm Shutdown" display screen indicates the following:

All Rods In	NO
Shutdown	YES
Rods Not Full-In	18

Based on these indications, ALL control rods _____ inserted to at least position 02.

A. ✔ MUST be;
are

B. MUST be;
are NOT

C. is NOT required to be;
are

D. is NOT required to be;
are NOT

Description:

Under the following conditions, the RWM display will automatically turn itself on or off.

a front panel key is pressed, or
a change of power level occurs within LPSP/LPAP, or
a change of MODE occurs on RWM, or
a change in the SELF-TEST status occurs
Reactor Scram (If either K14A or K14C AND K14B or K14D de-energize, THEN RWM display will Auto turn on)

K14A or K14C AND K14B or K14D will NOT be de-energized since ALL "White" RPS Scram Group lights remained ILLUMINATED. The OATC will be required to depress the confirm shutdown screen in order to determine confirmation status.

CONFIRM SHUTDOWN: This function determines if all control rods are fully inserted into the core and if shutdown confirmation criteria has been satisfied.

Shutdown Confirmation Criteria: If all rods are at or inserted past position N then shutdown is confirmed. N is defined in the SET PARAMETERS function as rod position "02". If shutdown is confirmed, then **SHUTDOWN: YES** will be displayed, otherwise **SHUTDOWN: NO** will be displayed. Since the Shutdown Confirmation screen indicates "Yes", then all rods are at least to the 02 position or it would indicate "No".

The "B" distractor is plausible since the first part is correct and the second if the applicant does not remember the confirm shutdown criteria of displaying "YES" if all rods are at least to 02 and thinks the OATC must depress "List Rods" to determine the remaining positions.

The "C" distractor is plausible if the applicant does not remember that with the "White" RPS Scram Group lights remaining ILLUMINATED, that the K14 relays will remain energized. The second part is correct.

The "D" distractor is plausible if the applicant does not remember that with the "White" RPS Scram Group lights remaining ILLUMINATED, that the K14 relays will remain energized. The second if the applicant does not remember the confirm shutdown criteria of displaying "YES" if all rods are at least to 02 and thinks the OATC must depress "List Rods" to determine remaining positions.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

201006 Rod Worth Minimizer System (RWM) (Plant Specific)

A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

A4.02 Pushbutton indicating switches: P-Spec(Not-BWR6) 2.9 2.9

LESSON PLAN/OBJECTIVE:

C11-RWM-LP-05403, Rod Worth Minimizer, EO 001.013.B.02 & EO 001.010.D.11

Reference(s) used to develop this question:

4. 203000A2.13 001

A **Unit 1** Reactor startup is in progress with reactor pressure 400 psig.

At 10:00 a LOCA signal is received causing Reactor pressure to decrease 50 psig per minute.

IAW 34SO-E11-010-1, Residual Heat Removal, which ONE of the following states when the 1E11-F015A, RHR injection valve, will automatically start opening and how RHR A Loop injection can be prevented?

1E11-F015A will automatically start opening _____ .

At 10:04, WITHOUT overriding ANY interlocks, RHR A Loop injection can be prevented by _____ .

A. ONLY after reactor pressure is less than 370 psig;
EITHER tripping RHR pumps OR closing 1E11-F017A, RHR injection valve

B. ONLY after reactor pressure is less than 370 psig;
tripping RHR pumps ONLY

C. IMMEDIATELY;
EITHER tripping RHR pumps OR closing 1E11-F017A, RHR injection valve

D✔ IMMEDIATELY;
tripping RHR pumps ONLY

Description:

F015A/B automatically opens *(F015 is normally closed*) on receipt of a LOCA signal when reactor pressure decreases to < 449 psig. Although the RHR injection flowpath is aligned at 449 psig, flow to the RPV will not occur until RPV pressure drops below the RHR shutoff head of approximately 220 psig.

F017A/B auto opens if closed (F017A/B is normally open) on receipt of a LOCA signal if reactor pressure is ≤ 449 psig. F017A/B is also interlocked open on a LOCA signal for 11 minutes **AFTER** reactor pressure has decreased to < 449 psig. The valve cannot be closed until the timer times out **or** the interlock is jumpered out as directed by the EOPs.

When reactor pressure decreases to less than 449 psig, F015A/B and F017A/B open (*F017 is normally open*). When RPV pressure decreases to 370 psig, Recirc pump discharge valves, B31-F031A/B, close and can not be reopened.

1E11-F048 A/B automatically opens on a LOCA signal and the valves are interlocked open for three minutes (cannot be closed with the control switch). The valve is interlocked open to ensure maximum injection rate immediately following a LOCA signal.

The "A" distractor is plausible if the applicant confuses the F017 & F015 opening pressure with the 1B31-F031A/B pressure permissive of 370 psig. After 5 minutes has elasped, reactor pressure will be below 370 psig. The second part is plausible if the applicant confuses the F048A/B opening timed interlock of 3 minutes with the F017A/B timed interlock.

The "B" distractor is plausible if the applicant confuses the F017 & F015 opening pressure with the 1B31-F031A/B pressure permissive of 370 psig. After 5 minutes has elasped, reactor pressure will be below 370 psig. The second part is correct.

The "C" distractor is plausible since the first part is correct and the second if the applicant confuses the F048A/B opening timed interlock of 3 minutes with the F017A/B timed interlock.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

203000 RHR/LPCI: Injection Mode (Plant Specific)

A2. Ability to (a) predict the impacts of the following on the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6)

A2.13 Valve openings 3.2 3.3

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 006.005.A.02

Reference(s) used to develop this question:

34SO-E11-010-1, Residual Heat Removal System
31EO-EOP-114-1, Preventing Injection Into The RPV From Core Spray And LPCI

5. 203000K5.01 001

Unit 2 has experienced a LOCA.

- o 2B Loop of RHR is injecting in the LPCI mode to maintain RWL
- o A leak develops on the flange of 2E11-F017B, RHR Injection valve
- o When both B Loop RHR pumps are secured, 2E11-F050B, RHR Injection Check valve, sticks in the OPEN position

Which ONE of the following completes both statements?

The water leaking from 2E11-F017B will be leaking into _____ Containment.

Closing 2E11-F015B, RHR Injection valve, _____ isolate the reactor water leaking from 2E11-F017B flange.

A. Secondary;
will NOT

B. ✔ Secondary;
will

C. Primary;
will

D. Primary;
will NOT

Description:

This question tests whether the applicant understands the RHR system discharge valve arrangement and location. The applicant is being examined on the following valves:

- Air operated check valve (2E11-F050)
- Inboard Discharge Valve (2E11-F015)
- Outboard Discharge Valve (2E11-F017).

F050 is located INSIDE the DW, downstream of both F015 and F017.
F015 is located OUTSIDE the DW, between F050 and F017.
F017 is located OUTSIDE the DW, upstream of both F015 and F050.

With a flange leak on on F017, the water will be going into the Reactor Building/Secondary Containment due to the valves location.

When F015 is closed, water from the reactor is isolated from F017 due to the valve arrangement (described above).

The "A" distractor is plausible since the first part is correct and the second is plausible if the applicant does not remember the above valve location/arrangement in the RHR injection flowpath.

The "C" distractor is plausible if the applicant does not remember the above valve location/arrangement in the RHR injection flowpath and thinks any water leaking from the valve will be into Primary Containment. The second part is correct.

The "D" distractor is plausible if the applicant does not remember the above valve location/arrangement in the RHR injection flowpath and thinks any water leaking from the valve will be into Primary Containment. The second is plausible if the applicant does not remember the above valve location/arrangement in the RHR injection flowpath.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

203000 RHR/LPCI: Injection Mode (Plant Specific)

K5. Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) : (CFR: 41.5 / 45.3)

K5.01 Testable check valve operation 2.7* 2.9

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 006.002.A.02

Reference(s) used to develop this question:

34SO-E11-010-2, Residual Heat Removal System

6. 205000A4.12 001

Unit 2 is in Mode 4 with 2B RHR pump in Shutdown Cooling. Preparations are in progress to warm the "B" Loop of Recirc and then start the 2B Recirc pump.

The following temperatures currently exist:

Reactor Coolant	180°F
"2B" Recirc Suction	135°F

IAW 34SO-B31-001-2, Reactor Recirculation System, with the above temperatures, which ONE of the following completes both statements?

The temperature difference between the reactor coolant inside the idle loop to be started and the coolant in the reactor pressure vessel _____ WITHIN limits.

"2B" Recirc loop Suction temperature will be monitored on panel _____ .

A. is NOT;
2H11-P602

B. is NOT;
2H11-P601

C. is;
2H11-P601

D. ✔ is;
2H11-P602

Description:

IAW 34SO-B31-001-2, ATT. 5, Recirc Pump Startup Prerequisites, Step 3.0 states: "PRIOR to starting a Recirculation pump, verify the temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel are within 50°F of each other. In this question Reactor coolant temp minus 2B Recirc suction temp will result in 180°F - 135°F = 45° differential temp which is within the procedure limits. Recirc Loop suction temperatures are indicated on Control Room panel 2H11-P602.

The "A" distractor is plausible if the applicant does not know the procedure limit and/or does not calculate the temperatures correctly. The second part is correct.

The "B" distractor is plausible if the applicant does not know the procedure limit and/or does not calculate the temperatures correctly. The second part if the applicant confuses which panel has the Recirc suction temps on it and this distractor panel is located next to the correct panel.

The "C" distractor is plausible since the first part is correct. The second part if the applicant confuses which panel has the Recirc suction temps on it and this distractor panel is located next to the correct panel.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

205000 Shutdown Cooling System (RHR Shutdown Cooling Mode)

A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

A4.12 Recirculation loop temperatures 3.4 3.4

LESSON PLAN/OBJECTIVE:

B31-RRS-LP-00401, Reactor Recirculation System, EO 004.002.A.02

Reference(s) used to develop this question:

34SO-B31-001-2, Reactor Recirculation System

7. 206000A4.10 001

The **Unit 2** HPCI system is in service with the following parameters:

- o RPV water level ..... + 38 inches
- o Reactor Pressure ..... 920 psig
- o Drywell pressure ..... 3.0 psig

IAW 34SO-E41-001-2, High Pressure Coolant Injection (HPCI) System, to shutdown HPCI with the above conditions, the Trip Pushbutton is DEPRESSED and _____ .

A. 2E41-F001, HPCI Turb Steam Supply valve, is placed to the CLOSE position ONLY after reaching ZERO rpms

B. 2E41-F001, HPCI Turb Steam Supply valve, is placed to the CLOSE position IMMEDIATELY

C. ✔ 2E41-C002-3, Aux Oil Pump, is placed to the PULL-TO-LOCK OFF position ONLY after reaching ZERO rpms

D. 2E41-C002-3, Aux Oil Pump, is placed to the PULL-TO-LOCK OFF position IMMEDIATELY

Description:

This question tests the applicants knowledge of the correct method for shutting HPCI down while an initiation signal is present (i.e. in this case: high DW pressure).

A NORMAL shutdown (section 7.3.1) directs the applicant to:

- Reduce HPCI to approx. 2000 rpm
- Press the HPCI Turbine Trip pushbutton
- Verify the HPCI Aux Oil Pump starts (1500 rpm)
- Close 2E41-F001
- The trip pushbutton is released after F001 is fully closed
- The Aux Oil Pump remains running for 10 to 15 minutes after the F001 valve is closed.

When shutting down the HPCI system with an **initiation signal present**, attempting to close 2E41-F001 will simply result in F001 coming right back open due to the initiation logic providing an OPEN signal to the valve.

The steps for securing HPCI with an initiation signal present are contained in 34SO-E41-001-2, section 7.4.4, Preventing HPCI Injection To The RPV (Note: The applicant is directed to this section from 7.3.1, Control Room Shutdown when an Initiation signal is present).:

IF HPCI is operating, perform the following:

> Depress AND hold the HPCI Turbine Trip pushbutton
> WHEN the HPCI turbine has stopped, place 2E41-C002-3, HPCI Aux Oil Pump, in PULL-TO-LOCK.
> WHEN HPCI TURBINE BRG OIL PRESS LOW alarm is received, release the HPCI Turbine Trip push-button.

The "A" distractor is plausible if the applicant confuses this action with securring the Aux Oil pump which is securred when turbine speed reaches zero rpms.

The "B" distractor is plausible if the applicant confuses this action with securring HPCI normally. If this was a normal shutdown, this distractor would be correct.

The "D" distractor is plausible if the applicant confuses this action with securring the Aux Oil pump when HPCI is not in operation and the operator desires to prevent it from starting.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

206000 High Pressure Coolant Injection System

A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

A4.10 System pumps: BWR-2,3,4 . . . . . 3.7 3.5

LESSON PLAN/OBJECTIVE:

E41-HPCI-LP-00501, High Pressure Coolant Injection System, EO 005.005.A.10

Reference(s) used to develop this question:

34SO-E41-001-2, High Pressure Coolant Injection (HPCI) System

8. 209001K5.01 001

A LOCA is in progress. The 2A Core Spray pump is injecting at 1000 gpm to maintain RPV water level above the top of active fuel.

Which ONE of the following would be an indication that the 2A Core Spray pump is experiencing cavitation?

A. The motor amps are steadily increasing.

B. The pump trips due to low suction pressure.

C. The motor winding temperatures are steadily increasing.

D. The minimum flow valve intermittently opens and closes.

Description:

This question evaluates the applicants knowledge of how CS pump cavitation will affect plant indications.

Erratic flow is one consequence of cavitation. The opening (700 gpm) and closing (950 gpm) setpoints of E21-F031A/B is sufficiently close to the 1000 gpm being pumped through the system that it is possible, with sufficient cavitation occurring, for flow to swing 300+ gpm which will to cause F031 to open and close.

When cavitation occurs, motor amps will fluctuate, but on average, will actually decrease due to less water being pumped.

Motor winding temperature is an equilibrium condition based on heat removal systems (diagonal ventilation system used to cool the motor) and heat producing components (motot bearing friction, windage etc. and, principally, I^2R heating of the windings). Assuming the heat removal system remains unchanged, overall heating of the windings due to I^2R will actually decrease, over time, due to the reduced volume being pumped caused by cavitation.

Unlike some other ECCS systems, the Core Spray pumps do not have a low suction pressure trip.

The "A" distractor is plausible if the applicant confuses which way motor amps will change when a pump is experiencing cavitation.

The "B" distractor is plausible if the applicant remembers that some ECCS pumps have a low suction pressure trip and confuses this with Core Spray.

The "C" distractor is plausible if the applicant confuses which way motor winding temps will change when a pump is experiencing cavitation.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

209001 Low Pressure Core Spray System

K5. Knowledge of the operational implications of the following concepts as they apply to LOW PRESSURE CORE SPRAY SYSTEM : (CFR: 41.5 / 45.3)

K5.01 Indications of pump cavitation 2.6 2.7

LESSON PLAN/OBJECTIVE:

E21-CS-LP-00801, Core Spray System, EO 008.002.A.09

Reference(s) used to develop this question:

Monticello 2007 NRC Exam Q#4

9. 211000K6.04 001

Unit 1 is experiencing an ATWS.

A malfunction occurs while closing 1E21-F005A, Core Spray Injection valve.

The valve motor shorts out, resulting in a loss of its respective Motor Control Center (MCC).

Which ONE of the following completes both of these statements?

The de-energized MCC is 1R24- _____ , Reactor Bldg. MCC.

With this condition, _____ available to inject boron.

A. ✔ S011;
ONLY one SBLC pump remains

B. S011;
BOTH SBLC pumps remain

C. S012;
ONLY one SBLC pump remains

D. S012;
BOTH SBLC pumps remain

Description:

The malfunction of the Core Spray (CS) injection valve will de-energize 1R24-S011, Reactor Bldg. Motor Control Center (MCC), which is the power supply to 1E21-F015A, Core Spray Injection Valve. With this MCC de-energized, 1C41-C001A, SBLC pump will be de-energized, leaving only one SBLC pump available for injection. 1C41-C001B, SBLC pump, is powered by 1R24-S012, Reactor Bldg. MCC, which is also the power supply to 1E21-F015B, CS Injection valve.

The "B" distractor is plausible since the first part is correct and the second part if the applicant does not realize that the de-energized MCC is the same power supply of the 1A SBLC pump. Also if the applicant thinks that the CS injection valves are arranged similar to the RHR inboard & outboard injection valves which have two different power supplies for the injection valves in the same loop. One comes from S011/S012 the other comes from 1R24-S018A/B, which would lead the applicant to think S011 was not de-energized.

The "C" distractor is plausible if the applicant does not remember the power supply to 1E21-F015A and confuses this with the power supply to 1E21-F015B. The second part is correct.

The "D" distractor is plausible if the applicant does not remember the power supply to 1E21-F015A and confuses this with the power supply to 1E21-F015B. The second part if the applicant does not realize that the de-energized MCC is the same power supply of the 1A SBLC pump. Also if the applicant thinks that the CS injection valves are arranged similar to the RHR inboard & outboard injection valves which have two different power supplies for the injection valves in the same loop. One comes from S011/S012 the other comes from 1R24-S018A/B, which would lead the applicant to think S011 was not de-energized.

Phil, this was question 1 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

211000 Standby Liquid Control System

K6. Knowledge of the effect that a loss or malfunction of the following will have on the STANDBY LIQUID CONTROL SYSTEM : (CFR: 41.7 / 45.7)

K6.04 Core spray system: Plant-Specific 2.7* 2.8*

LESSON PLAN/OBJECTIVE:

C41-SBLC-LP-01101, Standby Liquid Control, EO 011.001.A.04

Reference(s) used to develop this question:

34SO-C41-003-1, Standby Liquid Control System
34SO-E21-001-1, Core Spray System
34SO-E11-010-1, Residual Heat Removal System

10. 212000A3.02 001

Unit 1 is at 100% RTP.

- o The "1B" RPS MG Set trips
- o The Power Source Select switch (1H11-P610) is then placed in the "ALT A" position
- o No additional operator actions are taken

Which ONE of the choices below completes the following statement?

After 5 seconds, based on these conditions, _____ of the RPS Scram Relays (K14s) are DE-ENERGIZED and the "A" RPS bus will be _____ .

A. ALL;
de-energized

B. ✔ ALL;
energized

C. ONLY HALF;
energized

D. ONLY HALF;
de-energized

Description:

The RPS MG sets supply power to their respective buses. The alternate power supply comes from Essential A or B (normal position B). After the "1B" RPS MG Set trips, half of the scram relays (B channel) are de-energized. When the Power Source Select switch is placed to the "Alt A" position, the scram relays in the A channel of RPS will de-energize, resulting in ALL scram relays being de-energized. Five (5) seconds later, the A channel of RPS will be energized from the Alternate power supply coming from either Essential Cabinet A or B.

The "A" distractor is plausible since the first part is correct and the second if the applicant thinks that since the A RPS Channel Scram Relays are de-energized that the RPS A Bus is also de-energized.

The "C" distractor is plausible if the applicant does not remember the relay interlock when transferring a RPS Bus to alternate supply and thinks that only the "B" RPS Scram Relays are de-energized. The second part is correct.

The "D" distractor is plausible if the applicant does not remember the relay interlock when transferring a RPS Bus to alternate supply and thinks that only the "B" RPS Scram Relays are de-energized. The second par if the applicant thinks that since the A RPS Channel Scram Relays are de-energized that the RPS A Bus is also de-energized.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

212000 Reactor Protection System

A3. Ability to monitor automatic operations of the REACTOR PROTECTION SYSTEM including: (CFR: 41.7 / 45.7)

A3.02 Individual system relay status: Plant-Specific 3.2 3.5

LESSON PLAN/OBJECTIVE:

C71-RPS-LP-01001, Reactor Protection System, EO 200.102.A.01 & EO 010.002.A.01

Reference(s) used to develop this question:

11. 215003A1.06 001

Unit 1 is in Startup with IRM 1A indicating 95 on range 4. ALL other IRMs are reading between 15 and 75 on range 4.

With IRM 1A indicating 95 on range 4, annunciator(s) _____ will be in the alarm condition.

Once IRM 1A is placed on range 5, the _____ will be illuminated.

A. 603-221, IRM UPSCALE and 603-203, IRM BUS A UPSCALE TRIP OR INOP;

IRM 1A Drawer UPSC amber light on 1H11-P606

B. 603-221, IRM UPSCALE and 603-203, IRM BUS A UPSCALE TRIP OR INOP;

IRM 1A benchboard UPSC amber light on 1H11-P603

C. 603-221, IRM UPSCALE, ONLY;

IRM 1A benchboard UPSC amber light on 1H11-P603

D. 603-221, IRM UPSCALE, ONLY;

IRM 1A Drawer UPSC amber light on 1H11-P606

Description:

IAW 34AR-603-221, IRM UPSCALE, the setpoint is 80/125 full scale.
IAW 34AR-603-203, IRM BUS UPSCALE TRIP OR INOP, the setpoint is 115/125 full scale.

Panel H11-P603 IRM Indications, including Lights (RESET when the recorder decreases below the setpoint, in this case due to ranging the IRM):

> UPSCALE TRIP: Lighted (**RED**) when respective IRM (115/125 or 36.8/40 of Full Scale) upscale scram trip circuit has tripped.
> UPSCALE ALARM: Lighted (**AMBER**) when respective IRM (80/125 or 25.6/40 of full scale) upscale rod block trip circuit has tripped.

Panel H11-P606 Lights and Controls

> Reset Switch allows resetting the seal-in trip lights on the drawer front. Moving this switch out of the center position causes a reset. This switch is spring-returned to center position.
> Lights (IRM Indicators) includes
> UPSCALE ALARM: Lighted (**AMBER**) when respective IRM (80/125 or 25.6/40 of full scale) upscale rod block trip circuit has tripped.

The "A" distractor is plausible if the applicant confuses the setpoints between the upscale alarm and the upscale trip alarm (80/125 vs 115/125). The second part is correct.

The "B" distractor is plausible if the applicant confuses the setpoints between the upscale alarm and the upscale trip alarm (80/125 vs 115/125). The second part if the applicant thinks that the front panel IRM lights will remain illuminated and confuses this with the back panel indication.

The "C" distractor is plausible since the first part is correct and the second if the applicant thinks that the front panel IRM lights will remain illuminated and confuses this with the back panel indication.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

215003 Intermediate Range Monitor (IRM) System

A1. Ability to predict and/or monitor changes in parameters associated with operating the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM controls including:
(CFR: 41.5 / 45.5)

A1.06 Lights and alarms 3.3 3.2

LESSON PLAN/OBJECTIVE:

C51-IRM-LP-01202, Intermediate Range Monitors, EO 012.003.H.01

Reference(s) used to develop this question:

34AR-603-221, IRM Upscale
34AR-603-203, IRM BUS A Upscale Trip Or Inop

12. 215003K5.01 001

Unit 1 is in Mode 2 with a startup in progress.

IRM "1G" was reading 50 on range 2, when its detector power supply decreased to 0 VDC.

Which ONE of the following completes the statement below for IRM "1G" detector?

With the voltage to IRM "1G" detector at 0 VDC, the IRM "1G" Recorder (P603) indication will _____ and the final expected plant response is a _____ .

A. ✔ be downscale;
rod block with a half scram

B. remain as is;
rod block ONLY

C. remain as is;
rod block with a half scram

D. be downscale;
rod block ONLY

Description:

A high voltage supply continuously decreasing to 0 VDC will cause IRM "A" indication to decrease. When the high voltage supply reaches the low setpoint, an INOP trip condition will exist for the "A" IRM. This will result in a half scram and rod block.

The "B" distractor is plausible if the applicant remembers that the P603 indication (recorder) will remain as is if the P603 recorder loses its power supply. The second part is plausible if the applicant remembers that a rod block from IRM downscale will not occur if the range switch is positioned to 1 and confuses this with IRM Inop and also thinks that this will bypass the half scram.

The "C" distractor is plausible if the applicant remembers that the P603 indication (recorder) will remain as is if the P603 recorder loses its power supply. The second part is correct.

The "D" distractor is plausible since the first part is correct and the second if the applicant remembers that a rod block from IRM downscale will not occur if the range switch is positioned to 1 and confuses this with IRM Inop and also thinks that this will bypass the half scram.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

215003 Intermediate Range Monitor (IRM) System

K5. Knowledge of the operational implications of the following concepts as they apply to INTERMEDIATE RANGE MONITOR (IRM) SYSTEM : (CFR: 41.5 / 45.3)

K5.01 Detector operation 2.6 2.7

LESSON PLAN/OBJECTIVE:

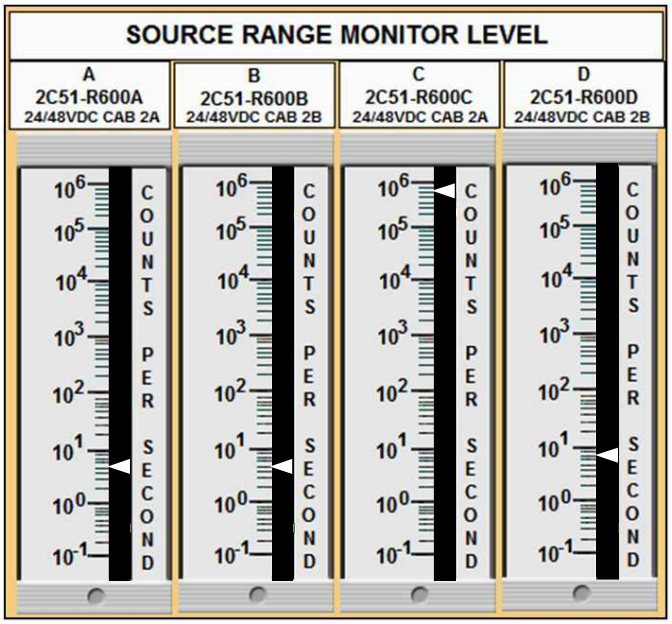
C51-IRM-LP-01202, Intermediate Range Monitors, EO 012.003.C.09

Reference(s) used to develop this question:

13. 215004A3.01 001

Unit 2 is in a refueling outage.

- o Reactor Mode Switch position ..... REFUEL
- o SRM Shorting Links ..... REMOVED



A SRM detector failure results in the indication as shown in this figure.

With NO operator action, based on these conditions, what is the expected status of RPS Channel A and B?

RPS Channel A _____ expected to be tripped.
RPS Channel B _____ expected to be tripped.

A. is NOT;
is NOT

B. is NOT;
is

C. ✔ is;
is

D. is;
is NOT

Description:

The UPSCALE TRIP (High High scram) is used only during refueling operations (setpoint 3 x 10^5 cps). With the shorting links removed, a single trip signal from any nuclear instrument channel (8 IRMs or 4 SRMs) or a single 2/4 voter module will cause a full reactor scram.

The "C" SRM has exceeded the trip setpoint and will cause RPS bus A & B to trip causing a full scram.

The "A" distractor is plausible if the applicant thinks that SRMs can not give a RPS trip and does not remember the Upscale trip setpoint.
The "B" distractor is plausible if the applicant thinks that the "C" SRM input into the "B" side of RPS and does not remember the shorting link effect.
The "D" distractor is plausible if the applicant thinks that the "C" SRM input into the "A" side of RPS and does not remember the shorting link effect.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

215004 Source Range Monitor (SRM) System

A3. Ability to monitor automatic operations of the SOURCE RANGE MONITOR (SRM) SYSTEM including: (CFR: 41.7 / 45.7)

A3.01 Meters and recorders 3.2 3.2

LESSON PLAN/OBJECTIVE:

C51-SRM-LP-01201, Source Range Monitors, EO 012.003.A.06

Reference(s) used to develop this question:

14. 215005K3.01 001

Unit 2 is operating at 100% power.

The "B" and "C" PRNM Two-Out-Of Four Trip Modules (2/4 Voters) have experienced a power failure and are de-energized.

Which ONE of the choices below completes the following statements concerning the status of the RPS buses?

A half-scram _____ be generated in RPS Bus "A".

A half-scram _____ be generated in RPS Bus "B".

A. will;
will

B. will;
will NOT

C. will NOT;
will

D. will NOT;
will NOT

Description:

Each 2/4 Logic module supplies its safety trip signals to a separate section of the RPS. Therefore, each 2/4 Logic Module can, by itself, generate a “half-scram.” Two of the modules can produce a “half-scram” in RPS trip channel A and are therefore redundant. Similarly, the other two modules are redundant in their ability to produce a “half-scram” in RPS trip channel B.

The 2/4 Logic Modules are designed to default to a trip condition. Loss of APRM/OPRM channel trip status signal causes the logic to assume a trip condition for those input signals. The 2/4 logic is powered by the same RPS power by which the output circuit is powered, so that loss of RPS power causes the 2/4 Logic Module to generate a trip even though that trip signal is supplied to a deenergized RPS trip circuit. Both effects, individually or together, generate a “half-scram.”

The "B" distractor is plausible since the first part is correct and the second if the applicant confuses the output of the 2/4 voter going to only one side of RPS, therefore only one RPS Bus will generate a scram signal. This would be the case if the question was for the A & C 2/4 voters instead of B & C 24 voters.

The "C" distractor is plausible if the applicant confuses the output of the 2/4 voter going to only one side of RPS, therefore only one RPS Bus will generate a scram signal. This would be the case if the question was for the B & D 2/4 voters instead of B & C 24 voters. The second part is correct.

The "D" distractor is plausible if the applicant confuses the output of the 2/4 voters with the output of APRMs and remembers that a half-scram cannot be generated from APRMs since the new PRNMs were installed. In this case the applicant will not think that a half scram will be generated in either RPS Bus.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

215005 Average Power Range Monitor/Local Power Range Monitor System

K3. Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM will have on following:
(CFR: 41.7 / 45.4)

K3.01 RPS 4.0 4.0

LESSON PLAN/OBJECTIVE:

C51-PRNM-LP-01203, Power Range Neutron Monitoring System, EO 012.003.D.01

Reference(s) used to develop this question:

LT-012003-098

15. 217000K1.01 001

The following RCIC valve manipulations occur beginning at Time = T1.

Time

T1 = 2E51-F029, Torus Suction valve, control switch is placed to OPEN and its Red light illuminates

T2 = 2E51-F029 full OPEN

T3 = 2E51-F031, Torus Suction valve, control switch is placed to OPEN and its Red light illuminates

T4 = 2E51-F031 full OPEN

When will 2E51-F010, CST Suction valve, FIRST receive a demand to automatically close?

A. T1

B. T2

C. T3

D. ✔ T4

Description:

This question tests the applicants knowledge of the RCIC suction valve interlock logic.

In order for the CST suction path valve (2E51-F010) to auto CLOSE, the logic requires that BOTH the Torus suction valves (2E51-F029 & F031) be FULL OPEN.

Operators often confuse this with Pressure Control logic controlling 2E51-F022, Return to CST/Test Valve. ONE Torus suction valve fully OPEN will cause F022 to automatically close.

The "A" distractor is plausible if the applicant confuses the first Torus Suction valve red light illuminating as when the signal to open for the 2E51-F010 is first received.

The "B" distractor is plausible if the applicant remembers the Torus Suction valve has to be full open to demand a close signal for 2E51-F010. It would take both Torus Suction valves full open to cause a signal for 2E51-F010. This distractor would be correct if the discussion was for 2E51-F022.

The "D" distractor is plausible if the applicant confuses the red light illuminated for both Torus Suction valves with the requirement to have both valve full open.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Inorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

217000 Reactor Core Isolation Cooling System (RCIC)

K1. Knowledge of the physical connections and/or cause effect relationships between REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) and the following:
(CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.01 Condensate storage and transfer system 3.5 3.5

LESSON PLAN/OBJECTIVE:

E51-RCIC-LP-03901, Reactor Core Isolation Cooling (RCIC), EO 039.011.A.02

Reference(s) used to develop this question:

34SO-E51-001-2, Reactor Core Isolation Cooling (RCIC) System

16. 218000K2.01 001

Which ONE of the following is the NORMAL power supply to the **Unit 2** Automatic Depressurization System (ADS) Logic?

A. ✔ 2R25-S001, 125 VDC Cabinet 2A

B. 2R25-S003, 125 VDC Cabinet 2C

C. 2R25-S005, 125 VDC Cabinet 2E

D. 2R25-S007, 125 VDC Cabinet 2L

Description:

This question tests the applicants knowledge of the normal power supply to ADS logic.

The control logic is powered from the station service batteries through 125VDC bus 2A (2R25-S001) and 2B (2R25-S002). The "A" and "B" logic is normally powered from the 125VDC 2A bus. Only the "B" logic is alternately powered from 125VDC 2B bus upon failure of the 2A bus. There is no provision for alternate power to the "A" logic. Both Logic Channels have contacts in all of the SRV control circuits. If one channel fails the other will still open the SRVs on an ADS initiation.

Plausibility of the distractors is based on whether or not the applicant is able to remember the correct DC supply to ADS logic.

The "B" distractor is plausible if the applicant confuses or does not remember the power supply to the ADS Logic.

The "C" distractor is plausible if the applicant confuses or does not remember the power supply to the ADS Logic.

The "D" distractor is plausible if the applicant confuses or does not remember the power supply to the ADS Logic.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

218000 Automatic Depressurization System

K2. Knowledge of electrical power supplies to the following: (CFR: 41.7)

K2.01 ADS logic 3.1* 3.3*

LESSON PLAN/OBJECTIVE:

B21-ADS-LP-03801, Automatic Depressurization System (ADS), EO 038.001.A.02

Reference(s) used to develop this question:

34SO-B21-001-2, Automatic Depressurization (ADS) And Low-Low Set (LLS) Systems

17. 219000A1.09 001

Unit 2 experienced an event which resulted in the following conditions:

At 11:00,

- o Torus water level is 140 inches
- o HPCI maintaining RWL at 20 inches
- o Suppression Pool Cooling is in service

At 11:10,

- o Torus water level is 105 inches
- o HPCI maintaining RWL at 20 inches
- o Suppression Pool Cooling is in service

Which ONE of the following completes these statements?

At 11:10, Torus Air temperature will be changing _____ and

Torus Air temperature can be monitored on panel _____ .

A. approximately the same rate as at 11:00;
2H11-P650

B. approximately the same rate as at 11:00;
2H11-P602

C. at a significantly faster rate than at 11:00;
2H11-P602

D. ✔ at a significantly faster rate than at 11:00;
2H11-P650

Description:

This question tests the applicants knowledge of the Torus level at which the HPCI exhaust pipe becomes uncovered and the resultant impact on the Torus Air Temperature, in addition to where the temperature can be read by the operator.

Indication for individual RTDs can be found on the same multipoint recorder as the air temperature RTDs on panels 2H11-P650 and P657.

On Unit 2 the HPCI exhaust in uncovered when Torus level decreases to below 110 inches.

In the question, the applicant is initially given a Torus level is 140 inches which subsequently decreases to 105 inches. At this point HPCI will be discharging steam directly to the Torus. This results in temperature and pressure increasing rapidly.

The "A" distractor is plausible if the applicant does not remember the Torus level at which the HPCI exhaust line is uncovered and the Torus air temp rate will be approximately the same. The second part is correct.

The "B" distractor is plausible if the applicant does not remember the Torus level at which the HPCI exhaust line is uncovered and the Torus air temp rate will be approximately the same. The second part is plausible if the applicant remembers this panel contains indication of Torus parameters as well, just not Torus Air temperature.

The "C" distractor is plausible since the first part is correct and the second part is plausible if the applicant remembers this panel contains indication of Torus parameters as well, just not Torus Air temperature.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

219000 RHR/LPCI: Torus/Suppression Pool Cooling Mode

A1. Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE controls including:
(CFR: 41.5 / 45.5)

A1.09 Suppression chamber air temperature: Plant-Specific . . . 3.2 3.3

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 007.005.A.01
D11-CAMS-LP-05101, Containment Atmosphere Monitoring System (CAMs), EO 201.074.A.15

Reference(s) used to develop this question:

Laselle NRC Exam 2003 Q#84

18. 223002G2.4.3 001

Which ONE of the following completes the statement concerning the **Unit 2** SRV control switches?

A _____ dot has been placed above the SRV control switches to indicate that _____ .

A. ✔ yellow;
they are on the Post-Accident Monitoring (PAM) Instrumentation list

B. yellow;
a potential radiological condition is possible if the valves are open

C. blue;
they are on the Post-Accident Monitoring (PAM) Instrumentation list

D. blue;
a potential radiological condition is possible if the valves are open

Description:

The following note from 34AB-T23-002-2, Small Pipe Break Inside Primary Containment, states:

The following instruments have been environmentally qualified to be used in adverse post-accident conditions and are included in the Post-Accident Monitoring (PAM) list:

2B21-F013A-H, J-L

A **yellow** dot has been placed on each device indicating it is on the PAM instrumentation list.

73EP-EIP-018-0, Prompt Offsite Dose Assessment, step 6.2 states: "The annunciators outlined in **white** in the Main Control Room are indications of a potential radiological condition.

Blue dots are placed on certain PCIS valves for quick reference to the valves.

The "B" distractor is plausible since the first part is correct and the second if the applicant confuses what the white box around annunciators means and thinks this is for the yellow dots.

The "C" distractor is plausible if the applicant confuses the blue dots on certain PCIS valves and the second part is correct.

The "D" distractor is plausible if the applicant confuses the blue dots on certain PCIS valves and the second part if the applicant confuses what the white box around annunciators means and thinks this is for the yellow dots.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

223002 Primary Containment Isolation System /Nuclear Steam Supply Shut-Off

2.4.3 **Ability to identify post-accident instrumentation.** (CFR: 41.6 / 45.4) 3.7 3.9

LESSON PLAN/OBJECTIVE:

Reference(s) used to develop this question:

34AB-T23-002-2, Small Pipe Break Inside Primary Containment
73EP-EIP-018-0, Prompt Offsite Dose Assessment

19. 230000K2.02 001

Unit 1 experiences a Loss of Offsite power.

- o 4160V 1G is the ONLY 4160V bus that is ENERGIZED.

Which ONE of the following RHR pumps can be used for Torus Spray?

A. RHR pump 1A

B. ✔ RHR pump 1B

C. RHR pump1C

D. RHR pump 1D

Description:

AC Power supplies to RHR pumps:

RHR Pump “A” - Powered by 4160 VAC Emergency Bus “1E”, 1R22-S005
RHR Pump “C” & “D” - Powered by 4160 VAC Emergency Bus “1F”, 1R22-S006
RHR Pump “B” - Powered by 4160 VAC Emergency Bus “1G”, 1R22-S007

EDG 1C supplies power to 4160 VAC Emergency Bus “1G”, 1R22-S007.

RHRSW pump are powered by:

4160 VAC Bus “1E” supplies RHRSW “1A”
4160 VAC Bus “1F” supplies RHRSW “1C”
4160 VAC Bus “1G” supplies RHRSW “1B” and RHRSW “1D”

The "A" distractor is plausible if the applicant confuses which RHR pump is powered from the same bus (C & D vs. A & B). One Division 1 pump and one Division 2 RHR pump is powered from the same bus.

The "C" distractor is plausible if the applicant confuses which RHR pump is powered from the same bus (C & D vs. A & B). One Division 1 pump and one Division 2 RHR pump is powered from the same bus. Both pumps are powered from the same bus "1F", but this bus is dead.

The "D" distractor is plausible if the applicant confuses the power supply to the RHRSW pumps with the RHR pumps. RHRSW 1D is powered by from 4160 VAC Bus “1G”.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

230000 RHR/LPCI: Torus/Suppression Pool Spray Mode

K2. Knowledge of electrical power supplies to the following: (CFR: 41.7)

K2.02 Pumps 2.8* 2.9*

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 006.001.A.02

Reference(s) used to develop this question:

34SO-E11-010-1, Residual Heat Removal System

20. 239002A4.04 001

Unit 2 is operating at 100% RTP with SRV 2L experiencing elevated leakage.

Which ONE of the following completes both statements?

Torus BULK AVERAGE temperature indication _____ be monitored on the "Primary Display" of SPDS.

The LOWEST listed Torus temperature requiring entry into the Abnormal (AB) Procedure for high Torus temperature is _____ .

A. can;
100°F

B. can NOT;
100°F

C. ✔ can;
96°F

D. can NOT;
96°F

Description:

This question tests the applicants knowledge of AB procedure entry requirements due to high Torus temp and whether SPDS displays Torus bulk average temperature (vs single point temp indications).

Torus bulk temperature is displayed on the SPDS Primary Display.
SPDS also has a screen (Torus Water Temperature Diagnostic) that displays single point Torus temp indications.

Torus Water Temp High Annunciator (P604-020) annunciates at 95°F. This annunciator is listed as and entry condition for 34AB-T23-003-2.

The "A" distractor is plausible since the first part is correct. The second is plausible since this is the temperature for entry into the PC EOP flowchart and the applicant confuses this with the Abnormal entry temperature.

The "B" distractor is plausible if the applicant does not remember if the "Primary Display" indicates a bulk average temperature and thinks that the Torus temperature "Diagnostic" screen is the only place where Torus bulk average temperature is indicated. The second is plausible since this is the temperature for entry into the PC EOP flowchart and the applicant confuses this with the Abnormal entry temperature.

The "D" distractor is plausible if the applicant does not remember if the "Primary Display" indicates a bulk average temperature and thinks that the Torus temperature "Diagnostic" screen is the only place where Torus bulk average temperature is indicated. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

239002 Relief/Safety Valves

A4. Ability to manually operate and/or monitor in the control room:
(CFR: 41.7 / 45.5 to 45.8)

A4.04 Suppression pool temperature 4.3* 4.3*

LESSON PLAN/OBJECTIVE:

B21-SLLS-LP-01401, Main Steam & Low Low Set, EO 200.009.A.01

Reference(s) used to develop this question:

21. 239002K1.05 001

The Normal pneumatic supply to the **Unit 2** Drywell is lost.

After performing section 7.3.1, Emergency Nitrogen Supply Operation, of 34SO-P70-001-2, Drywell Pneumatics System, which ONE of the following is the MAXIMUM number of SRVs that will be supplied Nitrogen from the Emergency Nitrogen Bottles?

A. two (2)

B. ✔ five (5)

C. seven (7)

D. eleven (11)

Description:

When Emergency Nitrogen botles are aligned for SRV operation, manual valves 2P70 F021 and F023 are closed to limit nitrogen to one header. 5 SRVs are served by this header..

Note from 34SO-P70-001-2, DW pneumatics System: The SRVs now being supplied with Nitrogen are 2B21-F013C, 2B21-F013D, 2B21-F013G, 2B21-F013H, & 2B21-F013M. No Inboard MSIVs will have Nitrogen supplied.

The "A" distractor is plausible if the applicant remembers there are only two SRVs controlled from the Remote Shutdown Panel and thinks that Emergency Nitrogen will only supply these valves.

The "C" distractor is plausible if the applicant remembers seven ADS valves and thinks that Emergency Nitrogen will be supplied to these valves.

The "D" distractor is plausible if the applicant thinks all SRVs receive Emergency Nitrogen to allow operators to use any and all SRVs to prevent reactor pressure from exceeding the design pressure limit.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

239002 Relief/Safety Valves

K1. Knowledge of the physical connections and/or cause effect relationships between RELIEF/SAFETY VALVES and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.05 Plant air systems: Plant-Specific 3.1 3.3

LESSON PLAN/OBJECTIVE:

P51-P52-P70-PLANT AIR-LP-03501, Plant Air Systems, EO 042.004.A.01

Reference(s) used to develop this question:

34SO-P70-001-2, Drywell Pneumatic System

22. 245000K1.04 001

With **Unit 2** at 35% RTP, which ONE of the following completes both statements?

(Limit your response ONLY to direct valve input to RPS Logic, NOT plant integrated response.)

The MINIMUM number of Turbine Control Valves (TCV) that will DIRECTLY cause at least a RPS HALF (1/2) Scram from a TCV Fast Closure Trip is _____ .

The MINIMUM number of Turbine Stop Valves (TSV) that will DIRECTLY cause a RPS FULL Scram from a TSV Closure is _____ .

A. two (2);
three (3)

B. two (2);
two (2)

C. ✔ one (1);
three (3)

D. one (1);
two (2)

Description:

This question tests the applicants knowledge of how the Main Turbine trip logic inputs, directly, to the RPS logic (i.e. Turbine Stop Valves (TSVs) and Trubine Control Valves (TCVs).

TSVs input to the RPS logic such that the correct combination of 2 TSVs going closed may cause a 1/2 scram or no RPS response at all (based on direct input to RPS logic).
Any 3 TSVs will result in a full reactor scram. This logic is similar to MSIV logic (Means and Extremes)

Example:
TSV #1 and #2 - Half Scram
TSV #1 and #3 - Half Scram
TSV #1 and #4 - No RPS response
TSV # 2 and #3 - No RPS response
TSV #1, 2 and #3 - Full Scram
TSV #2, 3 and #4 - Full Scram
etc.

Each TCV inputs to a separate RPS logic channel (A1 or A2 or B1 or B2) and as such, any one valve sensed going closed (based on EHC oil pressure) will actuate a 1/2 scram.

The "A" distractor is plausible if the applicant confuses the TCV closing logic with the TSV closing logic and thinks any two TCVs will cause a half scram. The second part is correct.

The "B" distractor is plausible if the applicant confuses the TCV closing logic with the TSV closing logic and thinks any two TCVs will cause a half scram. The second part is plausible if the applicant thinks that one TSV closing will input one RPS Division Logic and the second TSV closing inputs into the other RPS D ivision Logic generating a full scram.

The "D" distractor is plausible since the first part is correct. The second part is plausible if the applicant thinks that one TSV closing will input one RPS Division Logic and the second TSV closing inputs into the other RPS D ivision Logic generating a full scram.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

245000 Main Turbine Generator and Auxiliary Systems

K1. **Knowledge of the physical connections and/or cause effect relationships between MAIN** TURBINE GENERATOR **AND AUXILIARY SYSTEMS and the following:** (CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.04 Reactor protection system 3.6 3.7

LESSON PLAN/OBJECTIVE:

N30-MTA-LP-01701, Main Turbine, EO 200.088.A.01
C71-RPS-LP-01001, Reactor Protection System, EO 300.008.A.02

Reference(s) used to develop this question:

34SO-N30-001, Main Turbine Operation, Limitation 5.2.15

23. 256000K5.10 001

UNIT 2 is operating at 100% RTP with the SJAE dP controller in MANUAL.

Which ONE of the following completes both statements?

To INCREASE Condensate flow through the SJAE, the 2N21-F007, SJAE Bypass AOV, is throttled in the _____ direction.

This action will result in INLET pressure to the Condensate Demineralizers _____ .

A. closed;
increasing

B. ✔ closed;
decreasing

C. open;
increasing

D. open;
decreasing

Description:

IAW 34SO-N21-007-2, Condensate And Feedwater System, Condensate flow through the intercondensers is controlled by the positioning of the intercondensers' bypass valve, 2N21-F007. By opening the valve (lowering dp across valve) less flow is directed through the intercondenser. By closing the valve (increasing the dp across the valve) more Condensate water is directed through the intercondenser flowpath direction thus giving more cooling for higher power conditions. With increased flow to the SJAE via increased dP, the system pressure downstream will be reduced due to the increased dP in the system. This will lower the system pressure at the inlets to the demins.

The "A" distractor is plausible since the first part is correct and the second part if the applicant confuses dP increasing with increasing the inlet pressures to the Cond. Demins, which is actually decreasing. Also if the applicant confuses the operation of this valve with the SULCV Bypass which allows more flow to the reactor when opened.

The "C" distractor is plausible if the applicant thinks opening the valve will allow more flow through the SJAE since opening most valves increases the flow through the system. The second part if the applicant confuses dP increasing with increasing the inlet pressures to the Cond. Demins, which is actually decreasing. Also if the applicant confuses the operation of this valve with the SULCV Bypass which allows more flow to the reactor when opened.

The "D" distractor is plausible if the applicant thinks opening the valve will allow more flow through the SJAE since opening most valves increases the flow through the system. The second part is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

256000 Reactor Condensate System

K5. Knowledge of the operational implications of the following concepts as they apply to REACTOR CONDENSATE SYSTEM : (CFR: 41.5 / 45.3)

K5.10 Air ejection operation 2.8 2.8

LESSON PLAN/OBJECTIVE:

N21-CNDFW-LP-00201, Condensate & Feedwater System, EO 026.037.A.02

Reference(s) used to develop this question:

34SO-N21-007-2, Condensate & Feedwater System

24. 259001K6.01 001

Unit 2 is operating at 15% RTP with 2N21-F111, Feedwater Startup Level Control Valve, controlling Reactor Water Level (RWL), when a TOTAL loss of Plant Air occurs.

Which ONE of the following describes the response of 2N21-F111 to the loss of air pressure?

2N21-F111 will _____ .

A. fail OPEN

B. fail CLOSED

C. ✔ fail AS-IS

D. continue to control RWL

Description:

On a loss of air, as air pressure decreases, at 50 psig the Feedwater Startup Level Control Valve, 2N21-F111, LOCKS UP (fail-as-is) in its existing position.

The "A" distractor is plausible if the applicant thinks this AOV fails open to allow the ability to continue injecting Feedwater into the vessel.

The "B" distractor is plausible if the applicant thinks this AOV fails closed to prevent an uncontrolled injection of Feedwater into the vessel.

The "D" distractor is plausible if the applicant does not remember that this valve is an AOV and since the upstream valve is a MOV, confuses it with this valve. The MOV will be unaffected by the loss of air.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

259001 Reactor Feedwater System

K6. Knowledge of the effect that a loss or malfunction of the following will have on the REACTOR FEEDWATER SYSTEM : (CFR: 41.7 / 45.7)

K6.01 Plant air systems 3.0 3.0

LESSON PLAN/OBJECTIVE:

P51-P52-P70-PLANT AIR-LP-03501, Plant Air Systems, EO 200.025.A.05

Reference(s) used to develop this question:

34AB-P51-001-2, Loss Of Instrument & Service Air System Or Water Instrusion Into The Service Air System
34AB-R25-001-2, Loss Of Vital AC Bus
34AB-R25-002-2, Loss Of Instrument Buses
HLT Question Bank Q# LT-002018-001

25. 259002K3.02 001

Unit 2 is operating with reactor power at 85%.

The Reactor Water Level Control system is in normal alignment for this power level.

Which ONE of the following statements **DESCRIBES** the Feedwater system response to a blown fuse in the power supply to the Feedwater Master Controller?

A. Control of the 2A RFPT will transfer to the Speed Setter.

B. Control of the 2B RFPT will transfer to the Speed Setter.

C. ✔ The 2A RFP M/A Station will control RWL in automatic.

D. The 2B RFP M/A Station will control RWL in automatic.

Description:

This question tests the applicants knowledge of how the individual M/A RFP controllers respond to a loss of signal from the Master RFP controller.

From C32-RWLC-LP-00202, "RWLCS":

Failure of the Master Controller / Loss of Signal from Master Controller, C32-R600

1. If the "RFP A" M/A station is in Automatic, it will maintain RWL in the Single Element utilizing 37 inches as the default setpoint (PF light flashing).
   The "RFP A" M/A station setpoint may be adjusted with the set up and down keys.

2. The "B" M/A Station will default to Manual Control (it cannot change speed automatically as RWL changes).

3. RFPT A M/A Controller will control RWL in the Automatic mode.

The "A" distractor is plausible since this would be correct if the question was asking the response to a loss of Instrument Bus A, which will cause RFP A M/A Station to lose power and control to transfer to the Speed Setter.

The "B" distractor is plausible since this would be correct if the question was asking the response to a loss of Vital AC bus, which will cause RFP B M/A Station to lose power and control to transfer to the Speed Setter.

The "D" distractor is plausible since this would be correct if RFP A M/A Staion was in "Manual". RFP B M/A Station would then be automatically controlling reactor water level.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

259002 Reactor Water Level Control System

K3. Knowledge of the effect that a loss or malfunction of the REACTOR WATER LEVEL CONTROL SYSTEM will have on following: (CFR: 41.7 / 45.4) (CFR: 41.7 / 45.5 to 45.8)

K3.02 Reactor feedwater system 3.7 3.7

Replaced K3.03 Rod worth minimizer: Plant-Specific . . . . . 2.7 2.9, with K3.02

LESSON PLAN/OBJECTIVE:

C32-RWLC-LP-00202, Reactor Water Level Control, EO 002.027.C.05

Reference(s) used to develop this question:

HLT Question Bank Q# LT-002027-001

26. 259002K3.07 001

Unit 2 is operating at 100% RTP with the following RWL indications:

- o 2C32-R606A, GEMAC, indication: +37.0"
- o 2C32-R606B, GEMAC, indication: +36.6"
- o 2C32-R606C, GEMAC, indication: +36.9"

Subsequently, the REFERENCE leg for RWL intrument 2C32-R606A developes a significant leak.

With NO operator actions, which ONE of the choices below describes the INITIAL response of RWL indicator 2C32-R606B AND the speed of the RPFTs to this reference leg leak?

INITIALLY indication on RWL instrument 2C32-R606B will _____ and the RFPTs speed will _____.

A. ✔ DECREASE
DECREASE

B. DECREASE
INCREASE

C. INCREASE
DECREASE

D. INCREASE
INCREASE

Description:

This question tests the applicants understanding of the INITIAL response to a reference leg break associated with R606A (R606C uses this same reference leg), how it affects the RFPT speed and how the instruments that come off a different reference leg will respond.

A leak in the reference leg causes 2C32-R606A & C to drift UP. Since one of these instruments is the Median signal (the level indication that is in the middle as determined by the SCMS module (C32-K648)), the RWLC sistem senses that RWL is high (above the setpoint of the Master RFP controller). This causes an initial response of a RFP speed reduction, which causes actual RWL to decrease.

Since the "R606B" is working normally, it responds to actual level conditions and its indication begins to decrease.

The "B" distractor is plausible since the first part is correct and the second if the applicant confuses which instruments will be affected and which way they will fail. If so the applicant could think RWL is going down and think RFPT speed will be increasing.

The "C" distractor is plausible if the applicant remembers two R606s will be affected and thinks R606B is the second instrument. If so, R606B would then be increasing along with R606A. The second part is correct.

The "D" distractor is plausible if the applicant remembers two R606s will be affected and thinks R606B is the second instrument. If so, R606B would then be increasing along with R606A. The second is plausible if the applicant confuses which instruments will be affected and which way they will fail. If so the applicant could think RWL is going down and think RFPT speed will be increasing.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

259002 Reactor Water Level Control System

K3. Knowledge of the effect that a loss or malfunction of the REACTOR WATER LEVEL CONTROL SYSTEM will have on following: (CFR: 41.7 / 45.4) (CFR: 41.7 / 45.5 to 45.8)

K3.07 Reactor water level indication 3.4* 3.4

LESSON PLAN/OBJECTIVE:

C32-RWLC-LP-00202, Reactor Water Level Control, EO 002.021.A.03

Reference(s) used to develop this question:

34SO-N21-007-2, Condensate And Feedwater System
HLT Question Bank Q# LT-002021 002

27. 261000K4.04 001

Concerning the Standby Gas Treatment System, which ONE of the choices below is the component that is designed to remove radioactive particulates of 0.3 microns or larger?

A. Prefilter

B. ✔ HEPA Filter

C. Demister

D. Activated Charcoal Bed

Description:

Demister - The demister is the first element in the filter train. It is designed to remove 99.9% of moisture particles 2 microns or larger and 30% of those larger than 1 micron. Its construction is similar to that of the Steam Drier in the Reactor Vessel. The demister also functions as a Prefilter for the rest of the filter train.

Prefilter - Its purpose is to remove large particles (dust, lint, dirt, etc.) and to protect the high efficiency filter. The Prefilter is 90.0% efficient.

High Efficiency (HEPA) Filter - Its purpose is to remove radioactive particulates of 0.3 microns or larger. The filter bank consists of eight 2 ft square filter elements of a waterproof, fire-retardant, glass fiber media. This filter is 99.97% efficient.

Activated Charcoal Bed - Its purpose is to remove iodine in the form of methyl iodide CH_3I and elemental iodine. It performs this function through a process known as adsorption.

The distractors are plausible because each one is a type of filter in the SBGT Filter train.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

261000 Standby Gas Treatment System

K4. Knowledge of STANDBY GAS TREATMENT SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)

K4.04 Radioactive particulate filtration 2.7 2.9

LESSON PLAN/OBJECTIVE:

T46-SBGT-LP-03001, Standby Gas Treatment System, EO 030.002.A.01

Reference(s) used to develop this question:

HLT Question Bank Q# LT-030002 001

28. 262001A2.01 001

Unit 2 is operating at 50% RTP with 4160 VAC 2E, 2R22-S005, powered from Startup Auxilary Transformer (SAT) 2C.

Subsequently, the Unit 2 Main Turbine trips.

Which ONE of the following completes the statements concerning the Station Service Buses?

After the Main Generator trips, the MAXIMUM number of Station Service Buses that will be energized is _____ .

At this time, 34SO-R22-001-2, 4160V AC System Operation, _____ be used to MANUALLY re-energize 4160V Buses 2C and 2D.

A. zero (0);
can

B. zero (0);
can NOT

C. two (2);
can

D. two (2);
can NOT

Description:

Upon a loss of the Normal Power source to 4160 VAC busses A, B, C and D, the *normal* supply breakers will automatically open and the *alternate* supply breakers will automatically close when both generators output PCBs are opened. This is known as a FAST TRANSFER. This operation normally occurs following a manual or auto turbine trip. It ensures that all loads remain energized. There are several conditions in the electrical distribution system which will lockout (prevent) a fast transfer. Those conditions are as follows:

> If the fast transfer does not occur within 0.2 seconds, the automatic fast transfer is locked out, requiring a manual transfer to re-energize the 4160 VAC Station Service Busses 2A, B, C, & D.
> If any of the 4160 VAC Emergency Busses are tied to the 2C SAT (Alternate), a fast transfer of house loads is prohibited and the SAT supply breakers to 4160 2A and B receive a trip signal.

When the Main Turbine trips, the Fast transfer will not occur, therefore leaving all Station Service buses de-energized. Manual transfer to SAT 2D is allowed for the 4160 VAC Busses 2C and 2D only, and is required if the generator is no longer available.

The "B" distractor is plausible since the first part is correct and the second if the applicant confuses which buses will lose power, their power supplies and which 4160 V Buses can be re-energized.

The "C" distractor is plausible if the applicant thinks that only 2 buses did not Fast transfer and that Station Service Bus 2C & 2D will be manually re-energized from SAT 2D. The second part is correct.

The "D" distractor is plausible if the applicant thinks that only 2 buses did not Fast transfer and that Station Service Bus 2C & 2D will be manually re-energized from SAT 2D. The second if the applicant confuses which buses will lose power, their power supplies and which 4160 V Buses can be re-energized.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

262001 A.C. Electrical Distribution

A2. Ability to (a) predict the impacts of the following on the A.C. ELECTRICAL DISTRIBUTION ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:
(CFR: 41.5 / 45.6)

A2.01 Turbine/generator trip 3.4 3.6

LESSON PLAN/OBJECTIVE:

R22-ELECT-LP-02702, 4160 VAC, EO 027.009.A.03

Reference(s) used to develop this question:

34AB-R22-004-2, Loss of 4160V Bus 2A, 2B, 2C or 2D
34SO-R22-001-2, 4160V AC System Operation
HLT Question Bank Q# LT-200017 007

29. 262002A1.02 001

Unit 1 is operating at 100% RTP when 600 V Bus 1D de-energizes.

Which ONE of the choices below completes the following statement concerning the 1B RPS Motor Generator (MG) Set and the RPS Equipment Protection Circuit Breakers?

When power is restored to 600 V 1D and with NO additional operator actions,
the 1B RPS MG Set _____ AUTOMATICALLY re-start
AND
the RPS Equipment Protection Circuit Breakers 52-3B and 52-3D are expected to be in the _____ condition.

A. will NOT;
reset (closed)

B. will;
reset (closed)

C. ✔ will NOT;
tripped (open)

D. will;
tripped (open)

Description:

The RPS MG set trips on loss of power on loss of power and in order to restart the RPS MG set, an operator must manually start it locally after power has been restored to the 600 VAC bus. Restoration actions are directed from 34AB-R23-001-1 and 34AB-C71-002-1.

In addition, the associated RPS protection circuit breakers trip on loss of power:

Each MG set is provided with a voltage regulator, complete with an under-voltage relay (UVR), under-frequency relay (UFR), over-voltage relay (OVR), and a spike suppression filter as protective devices. In the event of a low voltage condition for an extended period of time, the scram solenoids can chatter and potentially lose their pneumatic control capability, resulting in a loss of primary scram action. To provide protection against degraded electrical conditions on the RPS busses, the output of each RPS MG set is run through two series equipment protection panels. Each equipment protection panel contains an isolation breaker, which will trip on overvoltage (129 VAC), undervoltage (111.5 VAC), and underfrequency (57.2 Hz).

The "A" distractor is plausible since the first part is correct. The second is plausible because there are some circuit breakers that remain closed when their power supply is lost and the applicant confuses this with RPS Circuit breakers.

The "B" distractor is plausible since there are power supplies that automatically power up when power is restored to the respective 600 V 1C or 1D. The applicant can confuse this with RPS and think it comes back automatically as well. The second is plausible because there are some circuit breakers that remain closed when their power supply is lost and the applicant confuses this with RPS Circuit breakers.

The "D" distractor is plausible since there are power supplies that automatically power up when power is restored to the respective 600 V 1C or 1D. The applicant can confuse this with RPS and think it comes back automatically as well. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

262002 Uninterruptable Power Supply (A.C./D.C.)

A1. Ability to predict and/or monitor changes in parameters associated with operating the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) controls including:
(CFR: 41.5 / 45.5)

A1.02 Motor generator outputs 2.5 2.9

LESSON PLAN/OBJECTIVE:

C71-RPS-LP-01001, Reactor Protection System, LO H-OP-90000.004

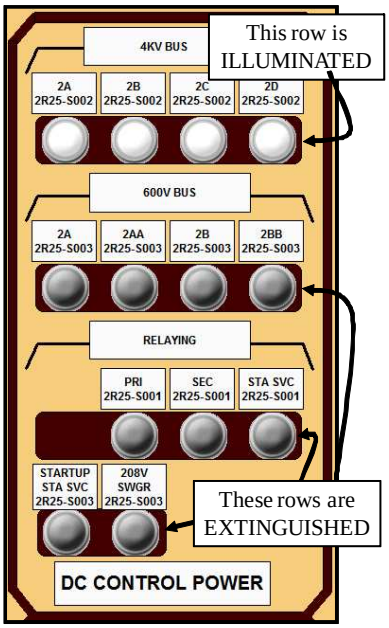
Reference(s) used to develop this question:

34SO-C71-001-1, 120 VAC RPS Supply System
Browns Ferry 2008 NRC Exam Q#20

30. 263000K4.02 001

Unit 2 is at 100% power when the following occurs:

- Panel 2H11-P651 indications:



IAW 34AB-R22-001-2, Loss Of DC Buses, which ONE of the following completes BOTH of the following statements?

If the NPO places the RFPT 2A Reset-Trip control switch to TRIP, RFPT 2A will _____ .

When the Main Generator output breakers (PCBs) are opened, the Start-Up supply breakers to 4160 V Station Service Buses 2A-2D, _____ automatically close.

A. trip;
will

B. trip;
will NOT

C. continue to operate;
will

D. ✔ continue to operate;
will NOT

Description:

34AB-R22-001-2, Section I. states "RFPT 2A & 2B will not trip manually or automatically due to loss of power to their trip circuits." It also states "If a turbine trip occurs turbine will trip but generator output breakers will not auto open. 4160 V Buses will not transfer to startup supply."

The "A" distractor is plausible if the applicant confuses RFPTs with the Main Turbine since the Main Turbine will trip and the RFPTs will not. The second part is plausible if the applicant thinks that the transfer logic will still see the position of the Generator PCBs and allow the transfer to occur. In actuality, the transfer logic has been de-energized.

The "B" distractor is plausible if the applicant confuses RFPTs with the Main Turbine since the Main Turbine will trip and the RFPTs will not. The second part is correct.

The "C" distractor is plausible since the first part is correct and the second if the applicant thinks that the transfer logic will still see the position of the Generator PCBs and allow the transfer to occur. In actuality, the transfer logic has been de-energized.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

263000 D.C. Electrical Distribution

K4. Knowledge of D.C. ELECTRICAL DISTRIBUTION design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)

K4.02 Breaker interlocks, permissives, bypasses and cross ties: Plant-Specific . 3.1 3.5

LESSON PLAN/OBJECTIVE:

R42-DC-LP-02704, DC Electrical Distribution, EO 200.018.A.03

Reference(s) used to develop this question:

34AB-R22-001-2, Loss Of DC Buses
HLT Question Bank Q# 263000G1.07-001

31. 264000K1.04 001

Unit 1 and Unit 2 are experiencing a TOTAL loss of Off-Site power.

Subsequently, **Unit 2** receives a LOCA signal.

Which ONE of the following identifies the Emergency Bus being powered from, and the cooling water supply to, 1B Emergency Diesel Generator (EDG)?

1B EDG is powering 4160 V _____ Emergency Bus and is receiving cooling water from _____ .

A. 1F;
2P41-C002, Standby Diesel Service Water Pump

B. 1F;
Unit 1 Division 1 Plant Service Water

C. ✔ 2F;
2P41-C002, Standby Diesel Service Water Pump

D. 2F;
Unit 1 Division 1 Plant Service Water

Description:

Excerpt from Attachment 3, " 'B' DIESEL GENERATOR UNIT AUTO SELECTION" of 34AB-R43-001-2, "DIESEL GENERATOR RECOVERY"

"B" Diesel Generator Unit Auto Selection Logic

Select Switch Position	Condition of U1	Condition of U2	Unit to Receive D/G
Unit 1	LOSP	LOCA/LOSP	Unit 2
Unit 2	LOSP	LOCA/LOSP	Unit 2

Since U2 has, both, a LOCA and LOSP, and U1 only has a LOSP the "1B" EDG will automatically transfer to the "2F" emergency bus.

The Standby Diesel Service Water pump is the normal supply of cooling water to the "1B" EDG. Unit 1 PSW is an alternate supply, but requires local, manual, alignment.

The "A" distractor is plausible if the applicant confuses the above logic and thinks 1B EDG will be supplied power since the local switch is positioned to U1. The second part is correct.

The "B" distractor is plausible if the applicant confuses the above logic and thinks 1B EDG will be supplied power since the local switch is positioned to U1. The second part is plausible if the applicant remembers this is one of the cooling water supplies to EDG 1B and does not remember when this supply will be providing cooling water.

The "D" distractor is plausible since the first part is correct and the second part is plausible if the applicant remembers this is one of the cooling water supplies to EDG 1B and does not remember when this supply will be providing cooling water.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

264000 Emergency Generators (Diesel/Jet)

K1. Knowledge of the physical connections and/or cause effect relationships between EMERGENCY GENERATORS (DIESEL/JET) and the following:
(CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.04 Emergency generator cooling water system . . . 3.2 3.3

LESSON PLAN/OBJECTIVE:

R43-EDG-LP-02801, Emergency Diesel Generators, EO 028.023.A.05
HLT Question Bank Q# LT-028025 009

Reference(s) used to develop this question:

34SO-R43-001-2, Diesel Generator Standby AC System

32. 264000K6.08 001

Unit 2 is performing an Emergency Diesel Generator (EDG) surveillance.

The "2A" EDG is running with its mode switch in TEST, but NOT tied to its bus.

At this time, the normal breaker to 4160 VAC bus "2E" trips open.

Which ONE of the following is the status of 4160V bus "2E" and EDG "2A"?

A. EDG "2A" remains in TEST and 4160V bus "2E" swaps to its alternate power supply.

B. EDG "2A" Test Circuit de-energizes and EDG "2A" ties to 4160V bus "2E".

C. EDG "2A" Test Circuit de-energizes and 4160V bus "2E" swaps to its alternate power supply.

D. ✔ EDG "2A" remains in TEST and 4160V bus "2E" is de-energized.

Description:

A LOCA or LOSP signal will deenergize the diesel generator Test relays regardless of the position of the diesel generator mode switch. If Startup Transformer 2C (alternate supply) is deenergized, the Test relays will deenergize unless the DIESEL TEST SAT 2C OUT OF SVC INTERLOCK switch is in the TEST position. Since the Test relays remain energized the Alternate supply will NOT close in when the Normal supply breaker trips open, therefore leaving the bus de-energized.

The "A" distractor is plausible if the applicant does not remember that the test relays are still energized and the transfer to alternate will occur normally.

The "B" distractor is plausible if the applicant confuses the test relay logic and thinks it de-energizes allowing the EDG 2A to tie to 4160 V bus 2E.

The "C" distractor is plausible if the applicant confuses the test relay logic and thinks it de-energizes allowing the transfer to alternate to occur normally.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

264000 Emergency Generators (Diesel/Jet)

K6. Knowledge of the effect that a loss or malfunction of the following will have on the EMERGENCY GENERATORS (DIESEL/JET) : (CFR: 41.7 / 45.7)

K6.08 A.C. power 3.6 3.7

LESSON PLAN/OBJECTIVE:

R43-EDG-LP-02801, Emergency Diesel Generators, EO 028.023.A.10

Reference(s) used to develop this question:

34SO-R43-001-2, Diesel Generator Standby AC System

33. 271000K4.09 001

Unit 2 is at 4% RTP with the Off Gas mode switch in "AUTO", when the Off Gas Post-Treatment radiation monitors, 2D11-K615A and 2D11-K615B, increase to just above the HIGH alarm setpoint.

Which ONE of the following is the Off Gas component that receives a signal to close?

A. 2N62-F057, Offgas Stack Inlet Valve

B. 2N62-F042, Offgas Inlet to Adsorber Valve

C. 2N62-F085, Offgas Holdup Line Drain Valve

D. ✔ 2N62-F043, Offgas Adsorbers Bypass Valve.

Description:

With the Off Gas mode switch in "Auto", the F042 is closed and F043 is open. This lineup is used during startup when there is high flow of non-radioactive gas. However, it does not allow automatic operation in the event of high radiation in Off-Gas. If a high radiation condition occurs as sensed by the Post treatment Monitors, the F042 opens and the F043 closes. This will direct the Off Gas flow through the Adsorbers to start filtering the process flow.

The "A" distractor is plausible since this valve isolates on a radiation condition generated by the Post treatment monitors. This condition is inop, downscale or a hi-hi-hi, in any combination in both channels. A Hi condition just swaps the inlet & bypass to the adsorbers.

The "B" distractor is plausible since this valve changes position on a Hi radiation signal just not in the closed direction. The applicant must realize the lineup in Auto and which valves change position and the direction of travel.

The "C" distractor is plausible since this valve isolates on a radiation condition generated by the Post treatment monitors. This condition is inop, downscale or a hi-hi-hi, in any combination in both channels. A Hi condition just swaps the inlet & bypass to the adsorbers.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

271000 Offgas System

K4. Knowledge of OFFGAS SYSTEM design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)

K4.09 Filtration of radioactive particulate 2.8 3.1

LESSON PLAN/OBJECTIVE:

N62-OG-LP-03101, Off Gas, EO 031.001.A.12

Reference(s) used to develop this question:

34SO-N62-001-2, Off Gas System, 5.2

34. 272000A3.01 001

Unit 2 is operating at 15% power when an event occurs resulting in the following alarms/condition:

- o MAIN STEAM LINE RADIATION HIGH (601-425)
- o MAIN STEAM LINE RADIATION HIGH-HIGH/INOP (603-125)
- o Main Steam Line radiation levels are 6,000 mRem/hr and increasing

A NPO responding to the above conditions, observes the following valves are OPEN:

- o 2B21-F022A-D & F028A-D, MSIVs
- o 2B31-F019 & 2B31-F020, Reactor Recirculation Sample Valves

Which ONE of the following identifies whether ALL automatic actions have occurred and the required action(s) IAW 34AB-B21-001-1, "Main Steam Line High Radiation or Suspected Fuel Element Failure."

All automatic actions _____ occurred and the operator is required to _____ .

A. ✔ have NOT; scram the reactor and then close the MSIVs

B. have NOT; perform a fast reactor shutdown IAW 34GO-OPS-014, "Fast Reactor Shutdown," and then close the MSIVs.

C. have; scram the reactor and then close the MSIVs

D. have; perform a fast reactor shutdown IAW 34GO-OPS-014, "Fast Reactor Shutdown," and then close the MSIVs.

Description:

IAW 603-125-2, the Recirc Sample valves auto close when MSL rad monitors exceed 2.5 x normal if RTP is <20%. The MSIV auto closure at this setpoint is no longer applicable at Plant Hatch. If it is suspected that the cause of this alarm is Fuel Element Failure (FEF), 34AB-B21-001-2 requires the reactor be scrammed, auto actions confirmed and MSIVs closed.

The "B" distractor is plausible since the first part is correct and the second part because a Fast Reactor Shutdown is the required action if the cause of the alarms is NOT suspected to be FEF -or- only if the MSL Rad High alarm is received when FEF is suspected.

The "C" distractor is plausible if the applicant confuses the Group 1 Sample valves, auto isolation on MSL Radiation monitors exceeding 2.5 x normal, is set to 1 Million mr/hr when >20% RTP. With Rx power <20% RTP, the Group 1 Sample vavles should have isolated. The second part is correct.

The "D" distractor is plausible if the applicant confuses the Group 1 Sample valves, auto isolation on MSL Radiation monitors exceeding 2.5 x normal, is set to 1 Million mr/hr when >20% RTP. With Rx power <20% RTP, the Group 1 Sample vavles should have isolated. The second part because a Fast Reactor Shutdown is the required action if the cause of the alarms is NOT suspected to be FEF -or- only if the MSL Rad High alarm is received when FEF is suspected.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

272000 Radiation Monitoring System

A3. Ability to monitor automatic operations of the RADIATION MONITORING SYSTEM including: (CFR: 41.7 / 45.7)

A3.01 Main steam isolation indications 3.8 3.9

LESSON PLAN/OBJECTIVE:

B21-SLLS LP-01401, Main Steam and Low Low Set, EO 200.098.A.01

Reference(s) used to develop this question:

34AB-B21-001-2, Main Steam Line High Radiation or Suspected Fuel Element Failure
MAIN STEAM LINE RADIATION HIGH-HIGH/INOP (603-125)
Hatch 2009 2009-301 HLT-04 NRC Exam Q# 60 (MODIFIED)

35. 288000G2.1.32 001

Unit 2 is operating at 100% power.

The Reactor Building Ventilation system is in service with the following alignment:

- o 2T41-C007A, Rx Bldg Vent Exhaust Fan: Running
- o 2T41-C007B, Rx Bldg Vent Exhaust Fan: Danger Tagged out of service

- o 2T41-C001A, Rx Bldg Supply Fan: Running
- o 2T41-C001B, Rx Bldg Supply Fan: Standby

IAW 34SO-T41-005-2, Reactor Building Ventilation System which ONE of the choices below completes the following statements?

If the control switch for 2T41-C001B, Rx Bldg Supply Fan is placed in the "Run" position, 2T41-C001B, Rx Bldg Supply Fan _____ START.

Subsequently, if 2T41-C007A, Rx Bldg Vent Exhaust Fan trips, the running Rx Bldg Supply Fan(s) _____ TRIP.

A. will;
will

B. will;
will NOT

C. ✔ will NOT;
will

D. will NOT;
will NOT

Description:

IAW 34SO-T41-005-2, Reactor Building Ventilation System, Precautions/Limitations, the Reactor Building Supply Fans C001A/B have the following Interlocks and Trips:

> The two fans are interlocked so that both fans cannot be run at the same time;
>
> With one fan in RUN and the other fan in STANDBY, if the fan in RUN trips, the fan in STANDBY will start unless an isolation signal is present,
>
> The supply fans are also interlocked with the exhaust fans such that a supply fan cannot be started unless an exhaust fan is already running, and the running supply fan will trip if the running exhaust fan trips.

The "A" distractor is plausible if the applicant thinks that both fans can be run at the same time and does not remember the PC&L. The second part is correct.

The "B" distractor is plausible if the applicant thinks that both fans can be run at the same time and does not remember the PC&L. The second part if the applicant does not remember the correlation between supply and exhaust fans and thinks the exhaust fan tripping has no affect on the supply fans.

The "D" distractor is plausible since the first part is correct and the second if the applicant does not remember the correlation between supply and exhaust fans and thinks the exhaust fan tripping has no affect on the supply fans.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

288000 Plant Ventilation Systems

2.1.32 **Ability to explain and apply system limits and precautions.**
(CFR: 41.10 / 43.2 / 45.12) 3.8 4.0

LESSON PLAN/OBJECTIVE:

T41-SC HVAC-LP-01303, Secondary Containment HVAC Systems, EO 037.011.A.10

Reference(s) used to develop this question:

34SO-T41-005-2, Reactor Building Ventilation System, PC&L

36. 290001K3.01 001

Unit 2 is operating at 100% RTP with the following conditions:

- o U2 Refueling Hatch installed
- o 2A SBGT Fan is Danger Tagged out for maintenance

Subsequently, the following occurs at the listed times:

10:00 A RWCU System break in the Unit 2 Reactor Building
10:05 2D11-K609A-D, "RB Bldg. Contaminated Area Radiation increase to 20 mr/hr
10:10 The Supply breaker for 2R24-S012, 600 V MCC, trips OPEN

With NO operator action, which ONE of the following predicts how the Rx. Bldg differential pressure (dP) and Rx. Bldg. monitored radioactive release rate will be affected?

At 10:08, the Rx. Bldg. Stack release rate will be _____ than at 10:04.

At 10:15, the Unit 2 Rx. Bldg. dP will be approximately _____ .

A. lower;
the same as at 10:08;

B. higher;
the same as at 10:08;

C. higher;
0.0 inches water

D✔ lower;
0.0 inches water

Description:

With the K609s exceeding their trip setpoints, at **10:05**, the Rx Bldg & RF supply and exhaust fans will shutdown and isolate. SBGT fan 2B will auto start and draw a vacuum on the U2 Rx Bldg. With the U2 RF hatch installed, the U1 SBGT fans will have NO affect on U2 Rx. Bldg. pressure. At **10:10**, when 2R24-S012 de-energizes, the 2B SBGT fan will stop allowing Rx. Bldg. delta P to trend towards 0.0 inches water.

At **10:08**, ALL Rx. Bldg. and R/F Ventilation will be securred and isolated and SBGT will replace this Ventilation flow discharging into the Rx. Bldg. Stack. SBGT flow is less than the combined Rx. Bldg. & R/F flow, therefore at **10:08**, the Rx. Bldg. Stack release rate will be lower than before the isolation.

The "A" distractor is plausible since the first part is correct. The second part is plausible if the applicant thinks that 2B SBGT fan is still running and maintaining the previously established dP in Secondary Containment.

The "B" distractor is plausible if the applicant does not remember the isolation setpoint and thinks Normal Ventilation is still in service discharging the untreated Rx. Bldg. atmosphere to the Rx. Bldg. Stack, causing the release rate to be higher. The second part is plausible if the applicant thinks that 2B SBGT fan is still running and maintaining the previously established dP in Secondary Containment.

The "C" distractor is plausible if the applicant does not remember the isolation setpoint and thinks Normal Ventilation is still in service discharging the untreated Rx. Bldg. atmosphere to the Rx. Bldg. Stack, causing the release rate to be higher. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

290001 Secondary Containment

K3. Knowledge of the effect that a loss or malfunction of the SECONDARY CONTAINMENT will have on following: (CFR: 41.7 / 45.4)

K3.01 †Off-site radioactive release rates 4.0 4.4*

LESSON PLAN/OBJECTIVE:

T22-SC-LP-01302, Secondary Containment, EO 200.023.B.02
T41-SC HVAC-LP-01303, Secondary Containment HVAC Systems , EO 037.011.A.12

Reference(s) used to develop this question:

NRC Exam 2009-301 Q# 058, 295035EA2.02-001

37. 295001AK1.01 001

A Unit 2 startup is in progress in accordance with 34GO-OPS-001-2, Plant Startup.

The following sequence of events occur:

- Both Recirc Pump speeds were raised from minimum speed to 30%
- After the recirc pump speeds were raised, the 2A ASD tripped.

Five minutes after the ASD trip, the following control panel indications exist:

- o Annunciator "**RECIRC LOOP A OUT OF SERVICE"** (602-127) in alarm
- o Core Flow Recorder 2B21-R613 7.2 Mlb/hr
- o Loop A Jet Pump Flow 2B21-R611A 5.6 Mlb/hr
- o Loop B Jet Pump Flow 2B21-R611B 12.8 Mlb/hr

Given these current conditions, which ONE of the choices below is correct?

A. ✔ Core Flow recorder indication is NOT correct.
"A" and "B" jet pump flows should be summed to obtain an accurate core flow rate.

B. Core Flow recorder indication is NOT correct.
"A" jet pump flow must be added to the recorder flow to obtain an actual core flow rate.

C. Core Flow recorder indication is correct.
"A" jet pump flow is being subtracted.

D. Core Flow recorder indication is correct.
"A" jet pump flow is NOT being subtracted.

Description:

During single loop operation, when the speed of the running pump decreases below approximately 35% speed, positive flow through the idle pump loop due to natural circulation overcomes the negative flow due to reverse flow. The total core flow summing circuitry will continue to subtract this positive idle loop flow from the running loop flow and give a misleading LOW core flow indication. Total Core Flow can be calculated by adding the JET PUMP LOOP “A” AND the JET PUMP LOOP “B” flows.

The "B" distractor is plausible since the first part is correct and the second if the applicant does not remember to add the idle loop flow to the other loop, not to the recorder.

The "C" distractor is plausible if the applicant does not remember the correct way to determine core flow. The flow recorder value is providing a misleading LOW core flow indication because the 2A jet pump loop flow is positive (ie., not reverse).

The "D" distractor is plausible since below 35% pump speed, this flow is positive due to natural circulation. Plausible if applicant is unaware that an ASD relay causes the subtraction to occur automatically.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295001 Partial or Complete Loss of Forced Core Flow Circulation

AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF FORCED CORE FLOW CIRCULATION :
(CFR: 41.8 to 41.10)

AK1.01 Natural circulation 3.5 3.6

LESSON PLAN/OBJECTIVE:

B11-RXINS-LP-04404, EO 400.048.A.05
B31-RRS-LP-00401, EO 200.037.A.02

Reference(s) used to develop this question:

34S0-B31-001-2, Reactor Recirc System, P&L 5.1.5
34AR-602-127-2, Recirc Loop A Out Of Service
34SV-SUV-023-2, Jet Pump & Recirc Flow Mismatch Operability
Hatch 2007 NRC Exam

38. 295002AK1.04 001

Unit 2 is operating at 19% power when the following indications are observed:

- o Inlet Flow to Stack 80 scfm and slowly rising
- o Condenser Vacuum 24.5 in.Hg vacuum and slowly heading to 0 in. Hg vacuum
- o Steam Seal header pressure 0 psig

Which ONE of the following identifies the required operator action IAW 34AB-N61-001-2, Main Condenser Vacuum Low, and the RFPT status when Main Condenser vacuum reaches 20 in. Hg vacuum?

A. Start the mechanical vacuum pump;
The RFPT will still be in service.

B. Start the mechanical vacuum pump;
The RFPT will have tripped.

C. Throttle open 2N33-F004, Steam Seal Feed Vlv Bypass;
The RFPT will still be in service.

D. ✓ Throttle open 2N33-F004, Steam Seal Feed Vlv Bypass;
The RFPT will have tripped.

Description:

Increase in offgas flow is an indication of a loss of vacuum condition. Normal pressure of the steam seal header is 1.5 to 4 psig. IAW 34AB-N61-001-2 and 34AR-650-125-2, Steam Seal Press Low, opening the steam seal bypass valve (2N33-F004), would apply more steam to the seals and starting the process of restoring offgas system flow. The RFPTs will automatically trip when condenser vacuum reaches 22.3" Hg Vacuum. This value is 17 in. Hg vacuum on U1.

The "A" distractor is plausible since the first part is a required action in 34AB-N61-001-2 if reactor power is <5% and the second part is plausible if the applicant confuses U1 RFPT operation, which does not trip until 17 in. Hg vacuum.

The "B" distractor is plausible since the first part is a required action in 34AB-N61-001-2 if reactor power is <5% and the second part is correct.

The "C" distractor is plausible since the first part is correct and the second part is plausible if the applicant confuses U1 RFPT operation, which does not trip until 17 in. Hg vacuum.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295002 Loss of Main Condenser Vacuum

AK1. Knowledge of the operational implications of the following concepts as they apply to LOSS OF MAIN CONDENSER VACUUM : (CFR: 41.8 to 41.10)

AK1.04 Increased offgas flow 3.0 3.3

LESSON PLAN/OBJECTIVE:

N61-MCOND-LP-02501, Main Condenser, EO 200.087.A.01

Reference(s) used to develop this question:

34AB-N61-001-2, Main Condenser Vacuum Low
34AR-65-125-2, Steam Seal Press Low
34SO-N33-001-2, Seal Steam System
2008 Brunswick NRC Exam Q#37

39. 295003AK1.04 001

A concurrent LOSP and LOCA occurs on **Unit 1**.

- Reactor pressure is 50 psig
- 1B Emergency Diesel Generator fails to start and can NOT be recovered
- 1A RHR pump is Danger Tagged out of service

Which ONE of the following completes both statements?

Core Spray will be injecting from _____ .

RHR will be injecting from _____ .

A. BOTH Divisions (Loops);
ONLY one Division (Loop)

B. ONLY one Division (Loop);
ONLY one Division (Loop)

C. BOTH Divisions (Loops);
BOTH Divisions (Loops)

D. ONLY one Division (Loop);
BOTH Divisions (Loops)

Description:

4160 V bus 1E, 1R22-S005, supplies power to Core Spray 1A & RHR 1A pumps.
4160 V bus 1G, 1R22-S007, supplies power to Core Spray 1B & RHR 1B pumps.
4160 V bus 1F, 1R22-S006, supplies power to RHR 1C & 1D pumps.

The U1 RHR Injection valves, 1E11-F015A & B are powered from 1R24-S018A & B via Unit 2 600 V Bus 2C & 2D, 2R23-S003 & S004. 2A & 2C EDG will supply power to U2 600 V Busses 2C & 2D which will allow 1E11-F015A & B to open. However, only one loop of RHR will be injecting since NO A loop pumps are available.

The "B" distractor is plausible if the applicant does not remember the Core Spray pump power supplies and thinks only one loop is injecting. The second part is correct.

The "C" distractor is plausible since the first part is correct and the second part if the applicant does not remember the power supplies to the RHR Injection valves and thinks both loops are injecting.

The "D" distractor is plausible if the applicant does not remember the Core Spray pump power supplies and thinks only one loop is injecting. The second part if the applicant does not remember the power supplies to the RHR Injection valves and thinks both loops are injecting.

Phil, this was question 5 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295003 Partial or Complete Loss of A.C. Power

AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER : (CFR: 41.8 to 41.10)

AK1.04 Electrical bus divisional separation 3.1 3.2

LESSON PLAN/OBJECTIVE:

R22-ELECT-LP-02702, 4160 VAC, 200.017.A.01

Reference(s) used to develop this question:

2008 Brunswick NRC Exam Q#38

40. 295004AK3.02 001

Unit 2 is operating at 100% Reactor Power when the following alarm occurs:

- o 125/250V BATTERY GND FAULT, 651-127

IAW 34AB-R42-001-0, Location Of Grounds and 34AR-651-127-2, which ONE of the following is the resistance value which will require isolation of loads and the reason for this isolation?

A resistance value of _____ will require isolation of loads since a _____ .

A. 22,000 OHMS,
personnel or equipment hazard could occur if a second ground develops

B. ✔ 8,000 OHMS,
personnel or equipment hazard could occur if a second ground develops

C. 22,000 OHMS;
single ground frequently results in spurious equipment operation

D. 8,000 OHMS;
single ground frequently results in spurious equipment operation

Description:

The DC distribution system is a two-wire ungrounded battery/charger system equipped with ground-detection/alarm circuitry annunciating in the control room. Ground detectors are incorporated in the DC system so that if a single ground does occur, personnel are aware of the ground and can take immediate steps to investigate and clear the ground fault from the system. If a ground occurs on the DC Distribution System, it must be investigated immediately. Failure to promptly eliminate a single ground could mask subsequent additional grounds and cause a possible personnel/equipment safety hazard if a second ground were to occur. A single ground in a control system will not result in component actuation or substantial heat generation (i.e. cause a fire) due to not enough difference in potential to cause sufficient current flow through a device.

The "A" distractor is plausible since 22,000 is above the 19,000 procedure limit. This is a common misconception as to which side of 19,000 requires isolation of system loads. The second part is correct.

The "C" distractor is plausible since 22,000 is above the 19,000 procedure limit. This is a common misconception as to which side of 19,000 requires isolation of system loads. The second part is plausible since multiple grounds cause spurious equipment actuation, but single grounds normally do not. Also plausible since a single ground could result in spurious equipment operation with use of a low resistance ground detection system.

The "D" distractor is plausible since the first part is correct and the second part is plausible since multiple grounds cause spurious equipment actuation, but single grounds normally do not. Also plausible since a single ground could result in spurious equipment operation with use of a low resistance ground detection system.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295004 Partial or Complete Loss of D.C. Power

AK3. Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER : (CFR: 41.5 / 45.6)

AK3.02 Ground isolation/fault determination 2.9 3.3

LESSON PLAN/OBJECTIVE:

R42-ELECT-LP-02704, DC Electrical Distribution, EO 200.122.A.01

Reference(s) used to develop this question:

34AB-R42-001-0, Location Of Grounds
34AR-651-127-2, 125/250V BATTERY GND FAULT
NRC Exam 2009-302 Q# 32

41. 295005G2.4.34 001

An event occurs requiring the Main Control Room to be evacuated.

NO operator actions were performed prior to leaving the Control Room.

Which ONE of the following completes both statements concerning locally tripping the **Unit 2** Main Turbine and the Turning Gear Oil Pump (TGOP) operation?

The Main Turbine will be tripped locally by depressing _____ .

After the Main Turbine is tripped, without any additional operator actions, the Main Turbine bearings _____ receive adequate lubrication from the TGOP.

A. EITHER ONE of the Trip pushbuttons;
will

B. EITHER ONE of the Trip pushbuttons;
will NOT

C. BOTH Trip pushbuttons simultaneously;
will NOT

D. ✔ BOTH Trip pushbuttons simultaneously;
will

Description:

31RS-OPS-001-2, Shutdown From Outside Control Room, requires tripping the Main Turbine after the reactor has been shutdown. A local turbine trip is accomplished using the Emergency Tripping Device at the main turbine front standard area, which consists of two pushbuttons. Both main turbine trip pushbuttons must be simultaneously pressed to trip the main turbine.

IAW 34SO-N30-001-2, Main Turbine Operation, Section 7.3.1, Note states "IF the turning gear is on alternate power supply, it will NOT automatically start and engage. It must be started manually at panel 2H21-P203." IF the Control Room is uninhabitable, the TGOP start must be confirmed by local observation of the pump. The TGOP will still auto start as the Turbine coasts down. The TGM and the TGOP (turning gear oil pump) are supplied by the same power supply at all times.

The "A" distractor is plausible if the applicant confuses how to trip the main turbine trip with tripping other turbines such as RFPTs, RCIC & HPCI, which only require one pushbutton or switch to trip them. Also a recent change to the front standard, changed the trip function from one pull handle to two pushbuttons. The second part is correct.

The "B" distractor is plausible if the applicant confuses how to trip the main turbine trip with tripping other turbines such as RFPTs, RCIC & HPCI, which only require one pushbutton or switch to trip them. Also a recent change to the front standard, changed the trip function from one pull handle to two pushbuttons. The second part if the applicant remembers that the TGM will not auto start or engage under certain conditions and confuses this with TGOP operation.

The "C" distractor is plausible since the first pat is correct and the second part if the applicant remembers that the TGM will not auto start or engage under certain conditions and confuses this with TGOP operation.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295005 Main Turbine Generator Trip

2.4.34 **Knowledge of RO tasks performed outside the main control room during an emergency and the resultant operational effects.** (CFR: 41.10 / 43.5 / 45.13) 4.2 4.1

LESSON PLAN/OBJECTIVE:

N30-MTA-LP-01701, Main Turbine, EO 017.002.A.07

Reference(s) used to develop this question:

34SO-N30-001-2, Main Turbine Operation

42. 295006G2.4.1 001

Unit 2 is operating at 70% power when a transient occurs.

Current plant conditions:

- Reactor water level ..... +8 inches (lowest level reached)
- Reactor pressure ..... 1080 psig (highest pressure reached)
- Drywell temperature ..... 135°F (highest temperature reached)
- Torus water level ..... 149.5 inches (highest level reached)

Which ONE of the following completes both of these statements?

Entry conditions have been met or exceeded _____ Emergency Operating Procedure (EOP) flow chart(s).

IAW 34AB-C71-001-2, "Scram Procedure", performance of the RC-1, RC-2 and _____ placards are required IMMEDIATE actions.

A. ONLY for the Reactor Controls (RC);
RC-3

B. ONLY for the Reactor Controls (RC);
TC-1

C. for BOTH the RC and Primary Containment (PC);
RC-3

D. for BOTH the RC and Primary Containment (PC);
TC-1

Description:

EOP entry conditions are as follows:

RC EOP flowcharts are:

- RWL < +3"
- RPV pressure >1074 psig
- DW pressure >1.85 psig
- A conditions that requires reactor scram and reactor power >5%
- A conditions that requires reactor scram and reactor power is unknown

PCC EOP flowchart:

- Torus water level >150"
- Torus water level <146"
- DW pressure >1.85 psig
- Torus water temp >100°F
- DW temp >150°F
- PC H2 concentration >1.5%

Upon entry of Scram Procedure, 34AB-C71-001, the RC-1, RC-2 and RC-3 placards are performed. TC-1 is directed to be performed as the first **subsequent** action step of the scram procedure.

The "B" distractor is plausible because the candidate must recall from memory the EOP entry condition for the EOP flowcharts. The second part is plausible because TC-1 is not directed from an immediate action step and the applicant must recall the Immediate Action steps from the scram procedure correct.

The "C" distractor is plausible because the candidate must recall from memory the EOP entry condition for the EOP flowcharts. The second part is correct.

The "D" distractor is plausible because the candidate must recall from memory the EOP entry condition for the EOP flowcharts. The second part is plausible because TC-1 is not directed from an immediate action step and the applicant must recall the Immediate Action steps from the scram procedure correct.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295006 SCRAM

2.4.1 **Knowledge of EOP entry conditions and immediate action steps.**
(CFR: 41.10 / 43.5 / 45.13) 4.6 4.8

LESSON PLAN/OBJECTIVE:

EOP-RC-LP-20308, RPV Control (NON-ATWS), EO 201.093.A.01

Reference(s) used to develop this question:

Modified from HLT 4 2009-301 NRC Exam Q#74

31EO-EOP-010-2, RC RPV Control (Non-ATSW)
31EO-EOP-012-2, U2 PC Primary Containment Control
34AB-C71-001-2, Scram Procedure

43. 295007AK2.03 001

Unit 2 is at 100% power with RHR B Loop in Torus Cooling.

A transient occurs resulting in the following conditions:

- Drywell pressure ..... 3.5 psig
- Reactor pressure ..... 490 psig
- Reactor level ..... -40 inches

With NO Operator actions, which ONE of the following describes how 2E11-F048B, Hx Bypass Vlv, will respond to these conditions, and the HIGHEST reactor pressure at which RHR will inject?

2E11-F048B will _____ and RHR will be injecting with reactor pressure at _____ .

A. automatically OPEN;
250 psig

B. remain CLOSE;
250 psig

C. ✔ automatically OPEN;
150 psig

D. remain CLOSE;
150 psig

Description:

2E11-F048 A/B automatically opens on a LOCA signal and the valves are interlocked open for three minutes (cannot be closed with the control switch). The valve is interlocked open to ensure maximum injection rate immediately following a LOCA signal. If in Torus cooling and a LOCA signal occurs, the F048 is interlocked open for 3 minutes. IAW 31EO-EOP-010-2, RC EOP Flowchart, the RHR LPCI Shutoff head is 220 psig while Core Spray Shutoff head is 383 psig.

The "A" distractor is plausible since the first part is correct and the second if the applicant does not remember the RHR LPCI Shutoff head or confuses it with the Core Spray Shutoff head of 383 psig. In this case the applicant would choose 250 psig which is below 383 psig.

The "B" distractor is plausible if the applicant does not remember the interlock associated with a LOCA signal. Also plausible if the applicant confuses this interlock with the interlock for opening the F015 valve which will not auto open until reactor pressure is < 425 psig. The second part if the applicant does not remember the RHR LPCI Shutoff head or confuses it with the Core Spray Shutoff head of 383 psig. In this case the applicant would choose 250 psig which is below 383 psig.

The "D" distractor is plausible if the applicant does not remember the interlock associated with a LOCA signal. Also plausible if the applicant confuses this interlock with the interlock for opening the F015 valve which will not auto open until reactor pressure is < 425 psig. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295007 High Reactor Pressure

AK2. Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: (CFR: 41.7 / 45.8)

AK2.03 RHR/LPCI: Plant-Specific 3.1 3.2

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 006.005.A.05

Reference(s) used to develop this question:

34SO-E11-010-2, Residual Heat Removal System

44. 295016AA 1.04 001

The control room has been abandoned and 31RS-OPS-001-2, Shutdown From Outside Control Room, is being implemented.

Which ONE of the following completes the statements for starting CRD pump 2A IAW 31RS-C11-001-2, CRD Operation From Outside The Control Room?

In order to start the 2A CRD pump, the _____ 4160 V Bus must be energized.

After opening the 125 VDC 30 Amp Control Power breaker, the DC Undervoltage Trip Device _____ required to be disabled to close the 2A CRD pump breaker.

A. 2E;
is

B. ✔ 2E;
is NOT

C. 2F;
is

D. 2F;
is NOT

Description:

The CRD system is used for control rods movement, RWL makeup, and cooling/purge flow for the Recirc seals. ONLY CRD pump 2B can be controlled from the RSDP 2H21-P173. 2A CRD pump can be started locally at the 4160 V breaker. 4160 V bus 2E supplies power to the 2A CRD pump while the 2B CRD pump is powered from 4160 V bus 2F. The 2B CRD pump will trip on a loss of DC control power. The 2A CRD pump is unaffected by a loss of DC control power.

The "A" distractor is plausible since the first part is correct and the second if the applicant confuses which CRD pump on U2 has the DC Control power undervoltage trip. This part of the distractor would be correct if we were asking about the 2B CRD pump.

The "C" distractor is plausible if the applicant confuses the CRD pump power supplies (4160 V bus 2E vs. 2F). The second part if the applicant confuses which CRD pump on U2 has the DC Control power undervoltage trip. This part of the distractor would be correct if we were asking about the 2B CRD pump.

The "D" distractor is plausible if the applicant confuses the CRD pump power supplies (4160 V bus 2E vs. 2F). The second part is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295016 Control Room Abandonment

AA1. Ability to operate and/or monitor the following as they apply to CONTROL ROOM ABANDONMENT : (CFR: 41.7 / 45.6)

AA1.04 A.C. electrical distribution 3.1 3.2

LESSON PLAN/OBJECTIVE:

R22-ELECT-LP-02702, 4160 VAC, EO 200.017.A.01
C11-CRD-LP-00101, Control Rod Drive System, EO 001.005.A.04 & EO 001.005.A.09

Reference(s) used to develop this question:

45. 295018AK1.01 001

Unit 2 is operating at 100% power with RBCCW pumps 2A and 2B in service.

- o 2C 600 VAC switchgear de-energizes and can NOT be restored.

Which ONE of the following completes these statements?

The Standby RBCCW pump _____ automatically start.

RBCCW flow inside the Drywell _____ the flow before the 2C 600 VAC switchgear tripped.

A. will NOT;
remains approximately the same as

B. will;
remains approximately the same as

C. ✔ will NOT;
will be lower than

D. will;
will be lower than

Description:

600V Emergency Bus 2C supplies 2 of the 3 RBCCW pumps, ie., 2A & 2C pumps. Normally the 2A & 2B RBCCW pumps will be running. There will be no standby pump (2C) to start resulting in only the 2B pump running therefore, RBCCW flow inside the Drywell will be lower than the flow before 2C 600 VAC Switchgear tripped.

The "A" distractor is plausible since the first part is correct. The second is plausible if the applicant confuses the normal lineup and pump power supplies and thinks two pumps will still be operating. Other systems, such as Station Service Air Compressors (SSACs), have 1 SSAC powered from 600 2C, 1 powered from 600 2D and the other from a Station Service Bus. The applicant can confuse this with RBCCW power supplies and think 2 RBCCW pumps are still in service, since only 600 2C is lost.

The "B" distractor is plausible if the applicant does not remember the auto start requirements for the standby RBCCW pump and thinks system pressure did not drop to the auto start setpoint of 90 psig. The second is plausible if the applicant confuses the normal lineup and pump power supplies and thinks two pumps will still be operating. Other systems, such as Station Service Air Compressors (SSACs), has 1 SSAC powered from 600 2C, 1 powered from 600 2D and the other from a Station Service Bus. The applicant can confuse this with RBCCW power supplies and think 2 RBCCW pumps are still in service, since only 600 2C is lost

The "D" distractor is plausible if the applicant does not remember the auto start requirements for the standby RBCCW pump and thinks system pressure did not drop to the auto start setpoint of 90 psig. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295018 Partial or Complete Loss of Component Cooling Water

AK1. Knowledge of the operational implications of the following concepts as they apply to PARTIAL OR COMPLETE LOSS OF COMPONENT COOLING WATER :
(CFR: 41.8 to 41.10)

AK1.01 Effects on component/system operations 3.5 3.6

LESSON PLAN/OBJECTIVE:

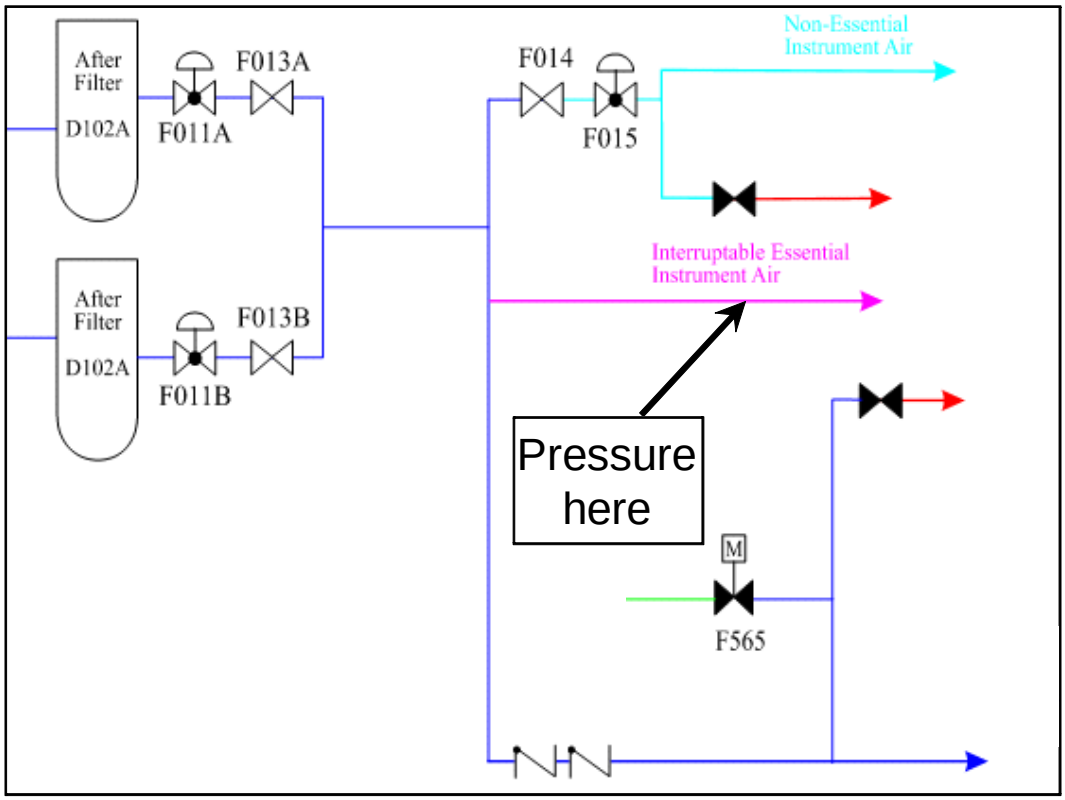
P42-RBCCW-LP-00901, Reactor Building Closed Cooling Water, EO 009.002.A.02

Reference(s) used to develop this question:

34AB-P42-001-2, Loss of Reactor Building Closed Cooling Water
RBCCW Lesson Plan P42-RBCCW-LP-00901
34AB-R23-001-2, Loss of 600 Volt Emergency Bus

46. 295019AA2.01 001

Unit 2 is operating at 100% RTP when a malfunction occurs on the Interruptible Essential Instrument Air Header causing this header to decrease to 45 psig.



If NO operator action is taken, which ONE of the following choices correctly states how the plant will respond to this instrument air pressure reduction?

The Non-Essential Instrument Air Header Isolation Valve (2P52-F015) will _____ and the Outboard MSIVs will _____ .

A. close and remain closed;
remain open

B. close and remain closed;
drift closed

C. continuously cycle open and closed;
remain open

D. continuously cycle open and closed;
drift closed

Description:

At 50 psig, the 2P52-F015, Non Essential Instrument Air closes, isolating the Non Essential Instrument Air System. With pressure down to 45 psig on the Interruptable Essential Instrument Air Header, the 2P52-F565, Non-Interruptible Instrument Air Nitrogen Backup Isolation valve will come open (80 psig). This will continue to provide motive force for the Outboard MSIVs to remain opern.

The "B" distractor is plausible since the first part is correct and the second if the applicant does not remember the opening setpoint for the 2P52-F565.

The "C" distractor is plausible since this valve senses upstream pressure and would cycle open and close as the header pressure upstream of this valve changed above and below 50 psig. When this valve closes upstream header pressure would increase causing this valve to re-open and the cycle would continue. The second part is correct.

The "D" distractor is plausible since this valve senses upstream pressure and would cycle open and close as the header pressure upstream of this valve changed above and below 50 psig. When this valve closes upstream header pressure would increase causing this valve to re-open and the cycle would continue. The second if the applicant does not remember the opening setpoint for the 2P52-F565.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295019 Partial or Complete Loss of Instrument Air

AA2. Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR : (CFR: 41.10 / 43.5 / 45.13)

AA2.01 Instrument air system pressure 3.5 3.6

LESSON PLAN/OBJECTIVE:

P51-P52-P70-PLANT AIR-LP-03501, Plant Air Systems, EO 200.025.A.05

Reference(s) used to develop this question:

34AB-P51-001-2, Loss Of Instrument and Service Air System Or Water Intrusion Into The Service Air System

47. 295021G2.4.8 001

Unit 2 is Shutdown with the following conditions:

- Reactor pressure is 80 psig and slowly lowering
- 2D RHR pump is in Shutdown Cooling (SDC)

An event occurs on **Unit 2** with the following:

- The Supply breaker to 600 V Bus 2D trips and can NOT be re-closed
- 31EO-EOP-010-2, RC RPV Control (Non ATWS), is in progress
- RWL is 5" increasing 1" per minute (lowest level reached -10")

Given these conditions, which ONE of the following completes both statements?

IAW 34AB-R23-001-2, "Loss of 600 Volt Emergency Bus", energizing 600 VAC bus "2D" using the 4160/600V "2CD" Transformer is _____ .

In order to return SDC to service, the Group Isolation Reset switches _____ required to be placed in the Gr. 2/5 position.

A. NOT allowed;
are NOT

B. NOT allowed;
are

C. allowed;
are NOT

D. allowed;
are

Description:

IAW 34AB-R23-001-2, step 4.3 states "IF the affected 600 V bus is de-energized due to a loss of its 4160 V supply bus AND its 4160 V supply bus cannot be restored, ENERGIZE the 600 V bus from its alternate 4160 V supply per procedure 34SO-R23-001-2, 600V/480BV AC System. ONLY use 4160/600V 2CD transformer WHEN in plant condition 4 OR 5 OR when EOP's are entered AND THEN only IF 1B D/G loading permits. With the supply breaker to 600 V Bus 2D open, 600 V 2D will remain de-energized. Since the RC flowchart (EOPs) is entered, the procedure allows 600 V 2D to be energized through 4160/600V 2CD transformer.

Since RWL is above 3" from 2A CRD pump, the RHR pumps will not be required to maintain RWL. This will allow RHR to be used for SDC. IAW 34AB-C71-002-2, Loss Of RPS, directs the operator to reset Group Isolations IAW 34AB-C71-001-2, Scram Procedure. Attachment 2 of the Scram Procedure requires the Group Isolation Switches to be placed in the Gr. 2/5 position to open the F008/F009, RHR SDC valves.

The "A" distractor is plausible if the applicant does not remember the requirement for being in the EOPs and only remembers the Mode 4 or 5 condition (currrent Mode is 3). Loading considerations for the 1B EDG will be zero since there are no conditions indicating the 1B EDG is running loaded. The second part is plausible if the applicant does not remember the Group 6 isolation signal is reset by using the Gr. 2/5 switches nor remembers that a loss of 600 2D will cause RHR SDC valves to isolate.

The "B" distractor is plausible if the applicant does not remember the requirement for being in the EOPs and only remembers the Mode 4 or 5 condition (currrent Mode is 3). Loading considerations for the 1B EDG will be zero since there are no conditions indicating the 1B EDG is running loaded. The second part is correct.

The "C" distractor is plausible since the first part is correct. The second part is plausible if the applicant does not remember the Group 6 isolation signal is reset by using the Gr. 2/5 switches.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295021 Loss of Shutdown Cooling

2.4.8 **Knowledge of how abnormal operating procedures are used in conjunction with EOPs.** (CFR: 41.10 / 43.5 / 45.13) 3.8 4.5

LESSON PLAN/OBJECTIVE:

R23-ELECT-LP-02703, 600 / 480 / 208 VAC Electrical, EO 027.019.A.02

Reference(s) used to develop this question:

34AB-R23-001-2 "Loss of 600 Volt Emergency Bus" (Pg 2 of 7, step 4.3)
31EO-EOP-010-2, RC (NON-ATWS)
NRC Exam 2009-302-038

48. 295022AK3.02 001

Unit 2 is operating at 100% RTP when a High Drywell pressure scram signal is received.

Which ONE of the following is the temperature response of the Control Rod Drive Mechanisms (CRDM) and the reason for this response due to the High Drywell pressure scram signal?

CRDM temperatures are expected to _____ .

NO Operator actions occur other than those listed.

A. ✔ increase to a high temperature (>250°F) and then stabilize at this high temperature, until the NPO restarts the CRD pump

B. increase to a high temperature (>250°F) and then stabilize at this high temperature, until the NPO resets the reactor scram

C. slightly increase (5°F) and then stabilizes there when 2C11-F002A, FCV, re-opens after the HCU Accumulators re-charge

D. decrease and then stabilize at a lower value until the NPO resets the reactor scram

Description:

On a non LOCA scram, the accumulators discharge, causing CRD flow to be diverted to the charging water header. The flow control, valve F002A/B, senses maximum flow and closes. When the Scram is reset, the accumulators will recharge, the Flow Control Valve will open, and the system returns to normal conditions. The System response for a Scram with a LOCA signal is similar except the CRD pumps will trip and the flow controller will sense no flow, causing the Flow Control Valve (F002) to open fully.

The "B" distractor is plausible if the applicant thinks that the CRD system will be sensing maximum flow and that a minimum amount of cooling water flow will be provided until the NPO resets the scram. Once reset, system flow & FCV will return to a normal non scram position/value.

The "C" distractor is plausible if the applicant does not recognize the CRD pumps have tripped and remembers how the system responds on a non LOCA scram condition.

The "D" distractor is plausible if the applicant confuses thermal stratification when both Recirc pumps have tripped, with a LOCA scram. Allowing the scram to be remain in a tripped condition, will allow excessive amounts of water to be injected through the CRD system and possibly causing thermal stratification.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295022 Loss of CRD Pumps

AK3. Knowledge of the reasons for the following responses as they apply to LOSS OF CRD PUMPS: (CFR: 41.5 / 45.6)

AK3.02 CRDM high temperature 2.9 3.1

LESSON PLAN/OBJECTIVE:

C11-CRD-LP-00101, Control Rod Drive System, EO 001.013.A.07

Reference(s) used to develop this question:

49. 295023AA2.02 001

Fuel movement is in progress on **Unit 1**.

Currently a fuel bundle is on the Main Grapple.

- The Main Grapple is in the Normal Up position

Subsequently, the Unit 1 Main Steam line plugs fail causing the Reactor Cavity and Fuel Pool water levels to decrease.

Which ONE of the following completes this statement?

IAW 34AB-G41-002-1, Decreasing Rx Well/Fuel Pool Water Level, the grappled fuel bundle can be placed _____ in-core location OR _____ Fuel Pool location.

A. into any;
into any

B. ONLY in its proper;
ONLY in its proper

C. into any;
ONLY in its proper

D✔ ONLY in its proper;
into any

Description:

34AB-G41-002-1, Decreasing RX Well/Fuel Pool Water Level, states:

4.3 IF fuel movement is in progress, place the fuel bundle in a safe condition by performing one of the following:

4.3.1 Return fuel bundle to its proper incore location, OR

4.3.2 Place fuel bundle in a fuel storage rack in the fuel pool, OR

4.3.3 Lower fuel bundle as deep into the vessel as possible.

The "A" distractor is plausible if the applicant does not remember or confuses the above requirement and thinks that 4.3.3 allows the bundle to be placed into any core location. The second part is correct.

The "B" distractor is plausible since the first part is correct. The second part if the applicant does not remember or confuses the above requirement and thinks the bundle must be placed into its proper fuel pool location.

The "C" distractor is plausible if the applicant does not remember or confuses the above requirement and thinks that 4.3.3 allows the bundle to be placed into any core location. The second part if the applicant does not remember or confuses the above requirement and thinks the bundle must be placed into its proper fuel pool location.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295023 Refueling Accidents

AA2. Ability to determine and/or interpret the following as they apply to REFUELING ACCIDENTS : (CFR: 41.10 / 43.5 / 45.13)

AA2.02 Fuel pool level 3.4 3.7

LESSON PLAN/OBJECTIVE:

G41-FPC-LP-04501, Fuel Pool Cooling and Cleanup, EO 200.076.A.01

Reference(s) used to develop this question:

G41-FPC-LP-04501, Fuel Pool Cooling and Cleanup
2009 Biennial LCT Questions Q# LR-LP-200076-005

50. 295024EK2.01 001

Which ONE of the following completes both statements concerning a High Drywell pressure signal to the HPCI System?

The LOWEST listed Drywell pressure that will cause HPCI to initiate is _____ .

After HPCI starts, the Standby HPCI Pump Room Cooler will start _____ .

A. ✔ 1.9 psig;

as soon as 2E41-F001, Steam Supply valve, opens

B. 1.9 psig;

ONLY after the HPCI room temperature increases above the start setpoint

C. 2.1 psig;

as soon as 2E41-F001, Steam Supply valve, opens

D. 2.1 psig;

ONLY after the HPCI room temperature increases above the start setpoint

Description:

The HPCI system will auto initiate on a High Drywell Pressure of 1.85 psig. A high Drywell pressure signal will directly cause the F001 valve to initate. In AUTO the HPCI room coolers B005A/B will automatically start on any one of the following:

Once the F001 is open
High HPCI room temperature (A: 95°F, B: 100°F)

The "B" distractor is plausible since the first part is correct and the second if the applicant does not remember that the coolers start on high temp or F001 valve open. Also plausible since most of the other components are directly affected by the initation signal.

The "C" distractor is plausible if the applicant confuses the TS setpoint for HPCI DW pressure of 1.92 psig. The second part is correct.

The "D" distractor is plausible if the applicant confuses the TS setpoint for HPCI DW pressure of 1.92 psig and the second if the applicant does not remember that the coolers start on high temp or F001 valve open. Also plausible since most of the other components are directly affected by the initation signal.

Phil, this was question 6 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295024 High Drywell Pressure

EK2. Knowledge of the interrelations between HIGH DRYWELL PRESSURE and the following: (CFR: 41.7 / 45.8)

EK2.01 HPCI (FWCI): Plant-Specific 3.9 4.0

LESSON PLAN/OBJECTIVE:

E41-HPCI-LP-00501, High Pressure Coolant Injection System, EO 005.005.A.02

Reference(s) used to develop this question:

34SO-E41-001-2, High Pressure Coolant Injection (HPCI) System

51. 295025EK3.02 001

IAW 34SO-B31-001-2, Reactor Recirculation System, the reason the Recirculation Pumps Trip at a high reactor pressure setpoint of _____ , is to reduce the challenge to the integrity of the Reactor Coolant Pressure Boundary during _____ conditions.

A. ✔ 1170 psig;
ATWS

B. 1150 psig,
ATWS

C. 1170 psig;
NON-ATWS

D. 1150 psig,
NON-ATWS

Description:

IAW TS B 3.3.4.2, Excessively high RPV pressure may rupture the RCPB. An increase in the RPV pressure during reactor operation compresses the steam voids and results in a positive reactivity insertion. This increases neutron flux and THERMAL POWER, which could potentially result in fuel failure and APPLICABILITY overpressurization. The Reactor Steam Dome Pressure - High Function initiates an RPT for transients that result in a pressure increase, counteracting the pressure increase by rapidly reducing core power generation.

IAW 34SO-B31-001-1/2, Reactor Recirculation System, Limitation 5.2.2.6, states 1170 psig is the reactor pressure for the ATWS trip. 1150 psig is the value where all SRVs will be open mechanically.

The "B" distractor is plausible if the applicant does not remember or confuses this setpoint with the mechanical lift setpoint of 1150 psig. The second part is correct.

The "C" distractor is plausible since the first part is correct and the second part if the applicant does not remember the bases for when the Recirc Pump trip protection is to occur.

The "D" distractor is plausible if the applicant does not remember or confuses this setpoint with the mechanical lift setpoint of 1150 psig. The second part if the applicant does not remember the bases for when the Recirc Pump trip protection is to occur.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295025 High Reactor Pressure

EK3. Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE : (CFR: 41.5 / 45.6)

EK3.02 Recirculation pump trip: Plant-Specific 3.9 4.1

LESSON PLAN/OBJECTIVE:

B31-RRS-LP-00401, Reactor Recirculation System, EO 200.037.A.01

Reference(s) used to develop this question:

TS B 3.3.4.2
TS B 3.6.1.6
34SO-B31-001-1/2, Reactor Recirculation System, Limitation 5.2.2.6

52. 295026EA1.01 001

Unit 1 experienced a transient which resulted in the following plant conditions:

- o Reactor power 3%
- o RPV Water Level -180 inches compensated (level band -155" to -185")
- o RPV pressure 800 psig
- o Drywell pressure 1.5 psig
- o Torus temperature 125 °F

IAW 34SO-E11-010-1, Residual Heat Removal System, which ONE of the following choices completes the statements concerning opening 1E11-F024A, Full Flow Test Line Vlv and 1E11-F028A, Torus Spray or Test Vlv and placing Torus Cooling in service?

To OPEN 1E11-F024A and 1E11-F028A;

the Containment Spray Vlv Control switch _____ REQUIRED to be placed in the "MANUAL" position and

the Cnmt Spray Vlv Cntl 2/3 Core Ht Permis switch _____ REQUIRED to be placed in the "MANUAL OVERRD" position.

Reference Provided

A. ✔ is;
is

B. is;
is NOT

C. is NOT;
is NOT

D. is NOT;
is

Description:

The 1E11-F028A & F024A valves are interlocked closed for the duration of the LOCA signal, in this case -101". However, during a LOCA condition, it may be necessary to spray the containment or place Torus cooling in service. Therefore, the valves are interlocked closed for the duration of the LOCA signal **UNLESS**:

With a LOCA signal present the containment spray valve control switch (pistol grip) is positioned to **MANUAL** or:

With a LOCA signal present and water level <-193", the Containment Spray Valve Manual Override keylock permissive switch (2/3 core height) is placed to **MANUAL OVERRIDE** and then the containment spray valve control switch (pistol grip) is placed to **MANUAL**.

With compensated RWL at 180" the un-compensated RWL will be below the 2/3 Core Height permissive of -193". This will require both switches above to be placed in the Manual & Manual Override positions in order to open both Torus Cooling Valves.

The "B" distractor is plausible since the first part is correct and the second if the applicant does not remember that the 2/3 permissive comes off of uncompensated RWL instruments and therefore will be below the -193" level. The applicant will think RWL is above the 2/3 permissive.

The "C" distractor is plausible if the applicant does not remember that this switch is also applicable for RWL low as well as DW pressure being high. With DW pressure only 1.5 psig the applicant may think it is not required to be manipulated. The second if the applicant does not remember that the 2/3 permissive comes off of uncompensated RWL instruments and therefore will be below the -193" level. The applicant will think RWL is above the 2/3 permissive.

The "D" distractor is plausible if the applicant does not remember that this switch is also applicable for RWL low as well as DW pressure being high. With DW pressure only 1.5 psig the applicant may think it is not required to be manipulated. The second part is correct.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
34AB-B21-002-1, RWL Corrections, Attachment 3 ONLY

K/A:

295026 Suppression Pool High Water Temperature

EA1. Ability to operate and/or monitor the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: (CFR: 41.7 / 45.6)

EA1.01 Suppression pool cooling 4.1 4.1

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, 007.003.A.03

Reference(s) used to develop this question:

2008 Brunswick SRO NRC Exam Q#52
2009-302 NRC Exam Q#94

53. 295028EK3.06 001

Unit 2 experienced a transient resulting in the following conditions:

- Reactor power .....…… 3%
- RPV Pressure..... 1140 psig, slowly increasing
- RWL……..... -110 inches, stable
- ADS Inhibit Switches..... "INHIBIT" position
- RHR pumps ..... ONLY 2A running
- Drywell (DW) Pressure……. 3.0 psig, increasing at 0.5 psi/minute
- DW Temperature ..... 370°F, slowly increasing

After the above conditions have existed for ten (10) minutes, the NPO places the ADS "INHIBIT" switches to the "NORMAL" position and NONE of the ADS valves OPEN.

Based on the conditions above, the MOST likely reason the ADS valves did NOT open is that _____ .

A. conditions have NOT existed long enough to meet the required ADS time limits

B. ✔ DW temperature is above the design criteria for valve operation

C. RWL is NOT low enough for the ADS Timers to start.

D. too few RHR pumps are operating.

Description:

IAW 31EO-EOP-012-2, PC Primary Containment Control, the drywell design temperature is 340°F and temperature must be reduced or the RPV depressurized prior to reaching this value. Above 340°F, equipment within the drywell may fail to operate if required.

The "A" distractor is plausible if the applicant does not remember or confuses the ADS Logic requirements and thinks 102.5 second timer has not timed out, therefore, ADS will not initiate.

The "C" distractor is plausible if the applicant does not remember or confuses the ADS Logic requirements and thinks 11 minute timer has not timed out, therefore, ADS will not initiate.

The "D" distractor is plausible if the applicant does not remember or confuses the ADS Logic requirements and thinks a RHR pump has to be in servie in both divisions, therefore, ADS will not initiate.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295028 High Drywell Temperature

EK3. Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE : (CFR: 41.5 / 45.6)

EK3.06 ADS 3.4 3.7

DOES NOT MEET THIS K/A CHANGE TO OTHER K/A NUMBER

LESSON PLAN/OBJECTIVE:

EOP-PC-LP-20310, Primary Containment Control (PC), EO 201.073.A.17

Reference(s) used to develop this question:

31EO-EOP-012-1, PC Primary Containment Control
34AR-654-066-2, Drywell Temp High

54. 295029EA2.03 001

IAW 31EO-EOP-105-2, Primary Containment Water Level Determination, which ONE of the following completes these statements?

The method of containment water level determination changes from Torus water level instrumentation to 31EO-EOP-105-2, when Torus water level goes above _____ . (Select the LOWEST level that applies)

Differential pressure readings used to determine Containment water level will be read from _____ .

A. 285 inches;
locally installed pressure gauges

B. 285 inches;
DRWL to Torus dp indicators, 2T48-R635, (2H11-P654)

C. ✔ 300 inches;
locally installed pressure gauges

D. 300 inches;
DRWL to Torus dp indicators, 2T48-R635, (2H11-P654)

Description:

IAW 31EO-EOP-105-2, Primary Containment Water Level Determination, provides the explicit instructions for determining primary containment water level when it exceeds 300 inches. The torus water level instrumentation in the control room can only indicate up to 300 inches. Once this level is reached, the operator must use alternative methods to determine primary containment water level.

The "A" distractor is plausible if the applicant does not remember or confuses this level, since 285 inches is the Torus level where the Torus Spray header is submerged. The second part is correct.

The "B" distractor is plausible if the applicant does not remember or confuses this level, since 285 inches is the Torus level where the Torus Spray header is submerged. The second part is plausible since these instruments measure dP between Drywell and Torus and the applicant thinking they are the ones required to be used.

The "D" distractor is plausible since the first part is correct. The second part is plausible since these instruments measure dP between Drywell and Torus and the applicant thinking they are the ones required to be used.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295029 High Suppression Pool Water Level

EA2. Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13)

EA2.03 Drywell/containment water level 3.4 3.5

LESSON PLAN/OBJECTIVE:

EOP-105-LP-20316, EOP 105: Primary Containment Water Level Determination, EO 201.048.A.05

Reference(s) used to develop this question:

31EO-EOP-105-2, Primary Containment Water Level Determination
31EO-EOP-015-2, CP-1 Alternate Level Control, Steam Cooling, & Emergency RPV Depressurization

55. 295030EK2.01 001

An event has occurred on **Unit 1** resulting in the following conditions:

- 4160V Buses 1A and 1B are de-energized (can NOT be restored)
- RPV Pressure ..... 850 psig
- RPV Water Level ..... 12 inches
- Torus Water Level ..... 56 inches
- Condenser vacuum ..... 3 inches Hg vacuum

Given these conditions, which ONE of the following systems is required to be used to Emergency Depressurize the reactor?

A. Bypass valves

B. Safety Relief valves

C. ✔ RCIC in pressure control mode

D. HPCI in pressure control mode

Description:

In order to have the Main Condenser available the Circ Water System must be available, which will require either 4160 V bus 1A or 1B to be energized to supply power to the Circ Water pumps. Condeser vacuum of 3 inches Hg will not allow the Bypass valves to be used. The SRV tailpipes will become uncovered when Torus water level drops below 63". IAW the PC EOP flowchart, HPCI will be secured/disabled from running when Torus level cannot be maintained above 115".

The "A" distractor is plausible since this is the normal system used to ED and if the applicant does not remember that SRV tailpipes will be uncovered <63".

The "B" distractor is plausible if the applicant remembers that with Torus level <63", alternate ED is required, but does not remember that the Condenser heat sink is unavailable.

The "D" distractor is plausible if the applicant remembers that the condenser is not available and does not remember that HPCI will be disabled below Torus level of 115".

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295030 Low Suppression Pool Water Level

EK2. Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: (CFR: 41.7 / 45.8)

EK2.01 HPCI: Plant-Specific 3.8 3.9

LESSON PLAN/OBJECTIVE:

EOP-108-LP-20319, EOP 108: Alternate RPV Depressurization, EO 005.029.A.05
EOP-PC-LP-20310, Primary Containment Control (PC), EO 201.075.A.11

Reference(s) used to develop this question:

31EO-EOP-012-1, Primary Containment Control
31EO-EOP-108-1, Alternate RPV Depressurization

56. 295031EA2.01 001

Which ONE of the following actuations occurring due to low RWL, is the indication of the LOWEST RWL achieved during a transient on **Unit 2?**

A. Recirc Pump Speed Limiter #4.

B. RPS K14 Scram Relays de-energizing

C. ARI valves automatically opening.

D. ✔ Recirc Pumps tripping

Description:

IAW 34SO-B31-001-2, Reactor Recirc System, Limitation 5.2.2.6, the Recirc pumps will trip at -60".

The "A" distractor setpoint is 30" and is plausible if the applicant does not know the setpoint for when this occurs.

The "B" distractor setpoint is 3" and is plausible if the applicant does not know the setpoint for the scram relays de-energizing.

The "C" distractor setpoint is -35" and is plausible if the applicant thinks that ARI initiates at level 1 (-101") as enscribed on the alarm for ARI initiating.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

295031 Reactor Low Water Level

EA2. Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13)

EA2.01 Reactor water level 4.6* 4.6*

LESSON PLAN/OBJECTIVE:

B11-RXINS-LP-04404, Reactor Vessel Instrumentation, EO 200.002.A.11

Reference(s) used to develop this question:

34SO-B31-001-2, Reactor Recirculating System
34AR-603-901-2, ARPS For Control Panel 2H11-P603, Alarm Panel 1, (603-108-2)
34AR-603-902-2, ARPS For Control Panel 2H11-P603, Alarm Panel 2, (603-205-2)
34AR-603-903-2, ARPS For Control Panel 2H11-P603, Alarm Panel 3, (603-301-2)

57. 295033EK1.02 001

Unit 2 is in Mode 5 with Main Control Room Environmental Control System (MCREC) in a Normal lineup, when a fuel handling accident causes the following Area Radiation Monitors to increase to 22 mr/hr:

- o 2D21-K601A, Reactor Head Laydown Area
- o 2D21-K601M, Spent Fuel Pool And New Fuel Storage

Based solely on the given radiation conditions, which ONE of the following is the desired MCREC mode of operation to protect the Control Room personnel and the status of 1Z41-F015, Roll Filter Bypass valve?

A. Isolation Mode;
closed

B. Isolation Mode;
open

C. ✔ Pressurization Mode;
open

D. Pressurization Mode;
closed

Description:

The Control Room Ventilation System will automatically switch to the Pressurization Mode on any of the following signals:

LOCA signal from Unit 1 or Unit 2
RF Area High Radiation (ARM) from Unit 1 or Unit 2 (15 mr/hr)
Main Steam Line High Flow from Unit 1 or Unit 2
Main Control Room Air Intake High Radiation

During Pressurization Mode, outside air (via F015 & F016) mixes with recirculation air and is treated by a filter train. The filter train discharges to the air handling units, which discharge into the Control Room. The exhaust fans are off and their suction dampers are closed. The only air flow out of the Control Rooms is through leakage.

The Isolation Mode has no makeup or discharge air flow. Part of the recirculation air flow is directed through the filter trains. When in this mode, the roll filter bypass (F015), outside air intake damper (F016) and both filter train inlet damper (F013A and F013B) must be closed by the operator.

The "A" distractor is plausible if the applicant thinks that since radiation levels are high, that isolating the Control Room, from the outside environment, will provide the necessary protection to personnel. The second part is plausible if the applicant remembers that the lineup for isolation mode requires the F015 valve to be in the closed position.

The "B" distractor is plausible if the applicant thinks that since radiation levels are high, that isolating the Control Room, from the outside environment, will provide the necessary protection to personnel. The second part is correct.

The "D" distractor is plausible since the first part is correct and the second part is plausible if the applicant remembers that the lineup for isolation mode requires the F015 valve to be in the closed position and confuses this with the pressurization mode position.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295033 High Secondary Containment Area Radiation Levels

EK1. Knowledge of the operational implications of the following concepts as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS :
(CFR: 41.8 to 41.10)

EK1.02 Personnel protection 3.9 4.2*

LESSON PLAN/OBJECTIVE:

Z41-MCREC-LP-03701, Main Control Room Environmental Control System, EO 037.008.A.02

Reference(s) used to develop this question:

34SO-Z41-001-1, Control Room Ventilation System

58. 295034G2.2.39 001

UNIT 2 is operating at 100% RTP when I&C personnel report that ALL 2D11-K609A-D, Reactor Building Vent Exhaust radiation monitors, will NOT provide a trip signal, due to a calibration error.

IAW TS 3.3.6.2, Secondary Containment Isolation Instrumentation, which ONE of the following is the MINIMUM REQUIRED TS action to be completed within one hour of receiving this report?

A. ✔ restore isolation capability

B. isolate the penetration flow paths

C. declare all 4 Standby Gas Treatments inop

D. declare associated Secondary Containment Isolation Valves inop

Description:

IAW TS 3.3.6.2, Secondary Containment Isolation Instrumentation, Table 3.3.6.2-1, 2 channels per trip system are required. Since there are 2 trip systems, then 4 total are required. With all 4 instruments unable to provide the trip, TS 3.3.6.2, Condition B, is entered requiring restoration of isolation capability within one hour. Condition A will also be entered for each channel but has a 24 hr completion time.

The "B" distractor is plausible and would be correct, if the isolation capability required action, had not been completed, after the first one hour had expired.

The "C" distractor is plausible and would be correct, if the isolation capability required action, had not been completed, after the first one hour had expired.

The "D" distractor is plausible and would be correct, if the isolation capability required action, had not been completed, after the first one hour had expired.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295034 Secondary Containment Ventilation High Radiation

2.2.39 **Knowledge of less than or equal to one hour Technical Specification action statements for systems.** (CFR: 41.7 / 41.10 / 43.2 / 45.13) 3.9 4.5

LESSON PLAN/OBJECTIVE:

T22-SC-LP-01302, Secondary Containment, EO 300.006.C.01

Reference(s) used to develop this question:

IAW TS 3.3.6.2, Secondary Containment Isolation Instrumentation

59. 295036EA1.04 001

Unit 2 is operating at 100% RTP when a leak occurs in Secondary Containment (SC) requiring entry into 31EO-EOP-014-2, SC Secondary Containment Control/ RR Radioactivity Release.

Subsequently, a loss of Instrument Bus 2A occurs.

The Shift Supervisor directs the NPO to monitor SC water and radiation levels.

Which ONE of the choices below completes the following statements?

SC radiation levels _____ be monitored by using area radiation monitoring (ARM) instrumentation located in the Main Control Room.

Personnel _____ to determine that Max Normal SC Water level has been exceeded.

A. can NOT;
can use the Main Control Room SC sump alarms by themselves

B. ✔ can NOT;
must be dispatched LOCALLY

C. can;
can use the Main Control Room SC sump alarms by themselves

D. can;
must be dispatched LOCALLY

Description:

The Secondary Containment Radiation monitors are powered from Instrument Bus 2A. Since this bus is de-energized, radiation levels can NOT be monitored from the Control Room ARM panel.

A recent change to the Annunciator Response Procedures associated with Secondary Containments water level, requires local observation of water level for determination of Max Normal levels.

The "A" distractor is plausible since the first part is correct and the second if the applicant does not remember the recent change to the procedures.

The "C" distractor is plausible if the applicant does not remember the power supply to the ARM panel in the Control Room and the second if the applicant does not remember the recent change to the procedures.

The "D" distractor is plausible if the applicant does not remember the power supply to the ARM panel in the Control Room and the second is correct.

Phil, this was question 9 of 10 that you have already reviewed. Any discussed changes have been incorporated.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295036 Secondary Containment High Sump/Area Water Level

EA1. Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL : (CFR: 41.7 / 45.6)

EA1.04 Radiation monitoring: Plant-Specific 3.1 3.4

LESSON PLAN/OBJECTIVE:

EOP-SCRR-LP-20325, Secondary Containment / Radioactivity Release Control,
EO 201.093.A.01

Reference(s) used to develop this question:

31EO-EOP-014-2, SC Secondary Containment Control/ RR Radioactivity Release
34AR-G11-115-2
34AR-G11-107-2

60. 295037EK1.01 001

During an ATWS, in order to avoid exceeding the Heat Capacity Temperature Limit (HCTL) graph, the SRO has ordered reactor pressure to be lowered to 700 psig using SRVs.

Which ONE of the following describes the reactor power response IMMEDIATELY following the opening of the SRVs and why?

A. Reactor power will rise due to the lowering of the reactor coolant temperature adding positive reactivity.

B. Reactor power will rise due to the water level inside the core rising causing more moderation of neutrons.

C. ✔ Reactor power will drop due to the voiding of the water in the core as it flashes to steam.

D. Reactor power will drop due to the moderator temperature rising caused by low flow through the core.

Description:

The pressure drop that occurs as SRVs are opened will result in an increase in void fraction in the core as saturated moderator flashes to steam. The increase presence of voids in the core will result in a decrease in power due to a drop in thermal neutrons. Moderator temperature will decrease to saturation temperature for the lower pressure value, but the void coefficient effect is the primary factor.

The "A" distractor is plausible if the applicant remembers lowering pressure will eventually cause coolant temperature to reach a lower saturation temperature and then cause positive reactivity to be added from the lower coolant temperature.

The "B" distractor is plausible if the applicant confuses indicated water level rising when an SRV is opened. Actual watel level in the core is being replaced by voids.

The "D" distractor is plausible if the applicant confuses reactor pressure reducing causing less NPSH delivered to the Recirc pumps, therefore resulting in a slightly less recirc/core flow through the core. With less flow through the core, moderator temperature will increase causing reactor power to decrease.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown

EK1. Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : (CFR: 41.8 to 41.10)

EK1.01 Reactor pressure effects on reactor power 4.1* 4.3*

LESSON PLAN/OBJECTIVE:

EOP-RCA-LP-20328, RPV CONTROL - ATWS (RCA), EO 201.069.A.13

Reference(s) used to develop this question:

2008 River Bend NRC Exam Q#17

61. 295038EA1.03 001

The following annunciator is in the alarm condition for 2D11-K605, Service Water Liquid Radiation Monitor:

601-407, Service Water Effluent Radiation High

Which ONE of the following completes these statements?

The system being monitored by this detector is _____ .

This flowpath _____ AUTOMATICALLY isolate due to this High radiation signal.

A. RHR Service Water (RHRSW)
will NOT

B. ✔ Plant Service Water (PSW)
will NOT

C. RHR Service Water (RHRSW)
will

D. Plant Service Water (PSW)
will

Description:

The discharge from the Reactor Building and Radwaste Building tie into the discharge from the Turbine Building before exiting the Turbine Building. At this point, the PSW is monitored for radioactivity release by a scintillation detector which is monitored in the Control Room. The Plant Service Water detector is located in the overhead of the 112' elevation in the PSW combined discharge header. The detector is located prior to the discharge line splitting into two lines with one going to the river and the other discharging to the flume. The RHRSW system is not monitored automatically for high radiation.

The "A" distractor is plausible if the applicant thinks that since RHRSW has the term "service water" in its title that it will be monitored by the Service Water radiation monitor. The second part is correct.

The "C" distractor is plausible if the applicant thinks that since RHRSW has the term "service water" in its title that it will be monitored by the Service Water radiation monitor. The second part is plausible and would be correct if the radiation monitor was the Radwaste monitor.

The "D" distractor is plausible since the first part is correct and the second part is plausible and would be correct if the radiation monitor was the Radwaste monitor.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

295038 High Off-Site Release Rate

EA1. Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE : (CFR: 41.7 / 45.6)

EA1.03 Process liquid radiation monitoring system 3.7 3.9

LESSON PLAN/OBJECTIVE:

D11-PRM-LP-10007, Process Radiation Monitors, EO 200.030.A.06

Reference(s) used to develop this question:

34AR-601-407-2, Service Water Effluent Radiation High

62. 300000K2.01 001

Which ONE of the choices below identifies the correct power supplies for the **Unit 2** Station Service Air Compressors?

	SSAC 2A	SSAC 2C
A.	600V 2D	600V 2A
B.	600V 2C	600V 2BB
C. ✔	600V 2C	600V 2A
D.	600V 2D	600V 2BB

Description:

Electrical Power Supplies;

600 VAC Bus 2C (1C) 2R23-S003 (1R23-S003) supplies Service Air Compressor “A”
600 VAC Bus 2A (1BB) 2R23-S001 (1R23-S012) supplies Service Air Compressor “C”

The "A" distractor is plausible since SSAC "2B" is powered by 600V 2D and the second part is correct.

The "B" distractor is plausible since the first part is correct and the second part is the power supply for SSAC "1C".

The "D" distractor is plausible for the above reasons for 600V 2D & 2BB.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

300000 Instrument Air System (IAS)

K2 Knowledge of electrical power supplies to the following: (CFR: 41.7)

K2.01 Instrument air compressor 2.8 2.8

LESSON PLAN/OBJECTIVE:

P51-P52-P70-PLANT AIR-LP-03501, Plant Air Systems, EO 035.001.A.03

Reference(s) used to develop this question:

63. 400000G2.1.30 001

Unit 2 is operating at 100% RTP when alarm 650-248, RBCCW Surge Tk Level Low Or Excess Leakage, is received.

IAW 34AR-650-248-2, which ONE of the following completes the statement concerning the RBCCW surge tank timer indication and where the operator will reset the RBCCW surge tank timer?

The RBCCW surge tank counter will indicate _____ and once the system is repaired, the operator will reset the timer at the _____ panel.

A. 2;

2H21-P350

B. 2;

2H11-P650

C. 0;

2H11-P650

D. ✔ 0;

2H21-P350.

Description:

Leakage out of the system is monitored by a Timer/Counter system. The counter-timer will cause an alarm if there has been more than one fill cycle in 13 hours, which indicates at least 134 gallons leakage (0.17 gpm). The timer portion is normally reset to 13 hours and the counter portion is normally reset to 0002. The counter decreases to 0001 and the 13 hour timer starts timing backwards toward zero (also at this time the makeup water valve opens to fill the tank to 62.5”).

If the surge tank level again decreases to the demin makeup valve opening setpoint during that 13 hour period, the following occurs:

1) The counter decreases to 0000.
2) The timer stops timing.
3) An annunciator sounds in the Main Control Room indicating excess leakage is occurring in the RBCCW System.

The RBCCW Surge Tank Timer is located on the 203' elevation of the Unit 2 Reactor Building on Panel 2H21-P350..

The "A" disctractor is plausible due to a misconception as to whether the counter counts up or counts down to indicate leakage. If it counts up, the counter will read "2" and if it counts down the counter will read "0". The second part is correct.

The "B" distractor is plausible due to a misconception as to whether the counter counts up or counts down to indicate leakage. If it counts up, the counter will read "2" and if it counts down the counter will read "0". The second part is plausible if the applicant thinks that, since the 2H11-P650 panel is the location of various other RBCCW controls/indications, that the timer will be reset from this panel.

The "C" distractor is plausible since the first part is correct and the second part if the applicant thinks that, since the 2H11-P650 panel is the location of various other RBCCW controls/indications, that the timer will be reset from this panel.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

400000 Component Cooling Water System (CCWS)

2.1.30 **Ability to locate and operate components, including local controls**.
(CFR: 41.7 / 45.7) 4.4 4.0

LESSON PLAN/OBJECTIVE:

P42-RBCCW-LP-00901, Reactor Building Closed Cooling Water, EO 009.001.A.03

Reference(s) used to develop this question:

34AR-650-248-2, RBCCW Surge Tk Level Low Or Excess Leakage

64. 600000AK2.04 001

The plant is operating at 100% power when a fault in the **Unit 1** Main Transformer results in the transformer exploding with a subsequent fire.

- o 651-114, Main XFMR Fault Pressure Alarm is received
- o Fire Alarm (651-160) on Unit 1 P651 panel is received

Which ONE of the following is the status of the Unit 1 Reactor and the 4160 kV Station Service transfer logic?

The reactor _____ automatically scram immediately after the explosion occurs AND 4160 KV Station Service transfer logic _____ allow a transfer to the alternate source, when needed.

A. ✔ will;
will

B. will;
will NOT

C. will NOT;
will

D. will NOT;
will NOT

Description:

With alarm 651-114 alarming, a Simultaneous trip of the Main Transformer will occur. Simultaneous type of tripping is used when immediate disconnection of the Generator is required. On a Main Transformer Sudden Pressure (Generator fault conditions), the main turbine will trip (reactor scrams since power > 27.6%), the EX2100 Static Exciter will trip and the Main Generator Output breakers will open simultaneously. When both Main Generator Output breakers open, the Station Service transfer logic will transfer supply to the Startup Transformers.

The "B" distractor is plausible since the first part is correct and the second if the applicant thinks that since the Main Transformer is being sprayed with water, that this will cause the transfer logic to not function when both Generator PCBs are opened.

The "C" distractor is plausible if the applicant does not remember or know that alarm 651-114 will cause a turbine trip with subsequent reactor scram and the second part is corrrect.

The "D" distractor is plausible if the applicant does not remember or know that alarm 651-114 will cause a turbine trip with subsequent reactor scram and the second if the applicant thinks that since the Main Transformer is being sprayed with water, that this will cause the transfer logic to not function when both Generator PCBs are opened.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

600000 Plant Fire On Site

AK2. Knowledge of the interrelations between PLANT FIRE ON SITE and the following:

AK2.04 Breakers / relays / and disconnects 2.5 2.6

LESSON PLAN/OBJECTIVE:

N40-MG-LP-10002, Main Generator, EO 017.006.A.09

Reference(s) used to develop this question:

651-114-1, Main Xfmr Fault Pressure Alarm

65. 700000AA2.01 001

Unit 1 is operating at 100% power.
Unit 2 is in Refuel Mode.

Following a grid disturbance, the following Unit 1 conditions exist:

- o Generator H_2 pressure 55 psig
- o Generator Megawatts 930 MWe
- o Generator Megavars + 400 MVARs
- o 230 KV switchyard voltage 231 kV

Based on the requirements of 34AB-S11-001-0, Operation With Degraded Voltage, which ONE of the following choices correctly completes BOTH parts of this statement?

Based on the existing conditions, the 230 kV switchyard voltage is currently _____ than the normal MINIMUM voltage AND the Unit 1 Main Generator is operating _____ the limits of the Generator Capability Curve.

Reference Provided

A. less;
within

B. ✔ less;
outside

C. greater;
within

D. greater;
outside

Description:

IAW 34AB-S11-001-2, Operation With Degraded Voltage, the normal minimum voltage with either Unit in Modes 1, 2, or 3 is 233 kV. Normal minimum voltage with both units in COLD SHUTDOWN, REFUEL or with Fuel Removed is 225 kV.

To ensure proper operation of the Main Generator with the different types of loading, the Generator capabilities curve is used. The curve is based on Hydrogen pressure, kilowatts, and megavars. Using the value for machine gas pressure, the generator pressure operating line should be the next lower pressure line. With Hydrogen pressure, GMWe, & MVARs at their present value, the generator is operating at a point that is outside the limits of the Generator Capability curve (Att. 1).

The "A" distractor is plausible since the first part is correct and the second if the applicant uses the wrong Hydrogen pressure line, 60 psig vs. 52 psig line.

The "C" distractor is plausible if the applicant remembers the "both Units in Cold, Refuel or De-fueled" value of 225 kV and compares to 231 kV. The second if the applicant uses the wrong Hydrogen pressure line, 60 psig vs. 52 psig line.

The "D" distractor is plausible if the applicant remembers the "both Units in Cold, Refuel or De-fueled" value of 225 kV and compares to 231 kV. The second is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
34SO-N40-001-1, Att. 1, Operating Limits For Generator Voltage Regulator in Automatic

K/A:

700000 Generator Voltage and Electric Grid Disturbances

AA2. Ability to determine and/or interpret the following as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID | DISTURBANCES:
(CFR: 41.5 and 43.5 / 45.5, 45.7, and 45.8)

AA2.01 Operating point on the generator capability curve 3.5 3.6

LESSON PLAN/OBJECTIVE:

N40-MG-LP-10002, Main Generator, EO 017.022.A.01

Reference(s) used to develop this question:

34SO-N40-001-1, Main Generator Operation
34AB-S11-001-0, Operation With Degraded Voltage
2009-302 NRC Exam Q#93

66. G2.1.8 001

Unit 2 is operating at 100% RTP.

IAW 34SO-B31-001-2, Reactor Recirculation System, which ONE of the following describes the MINIMUM qualification and the coordination requirements for changing Recirc Pump "A" speed locally?

A. A qualified Systems Operator, in communication with the Main Control Room, can perform the speed adjustment.

B. ✔ A licensed Nuclear Plant Operator, in communication with the Main Control Room, can perform the speed adjustment.

C. A qualified Systems Operator, can ONLY perform the speed adjustment if a licensed Nuclear Plant Operator is present at the local ASD A FPC Cabinet.

D. A licensed Nuclear Plant Operator, can ONLY perform the speed adjustment if a Senior Reactor Operator is present at the local ASD A FPC Cabinet.

Description:

IAW 34SO-B31-001-2, Reactor Recirculation System, section 7.3.14, Controlling Recirc Pump A or B Speed Locally, states that "Controlling ASD A or B locally must be performed by a licensed operator". Step 7.3.14.1.2 states "Establish and maintain communications with the Main Control Room while changing Recirc Pump A speed."

The "A" distractor is plausible since System Operators normally operate most of the equipment outside the control room.

The"C" distractor is plausible if the applicant thinks that since a licensed Nuclear Plant Operator is present, that a Systems Operator (who normally operates most of the equipment outside the control room) can change ASD A speed.

The "D" distractor is plausible if an applicant thinks that since a Senior Reactor Operator is present at the local ASD A FPC Cabinet, that the licensed Nuclear Plant Operator can make the speed adjustment without communicating with the Main Control Room.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.1.8 **Ability to coordinate personnel activities outside the control room.**
(CFR: 41.10 / 45.5 / 45.12 / 45.13) 3.4 4.1

LESSON PLAN/OBJECTIVE:

LT-LP-30003, Tech Specs / Administrative Controls, EO 300.036.B.01

Reference(s) used to develop this question:

34SO-B31-001-2, Reactor Recirculation System

67. G2.1.20 001

During the execution of 31EO-EOP-010-2, RPV Control (Non-ATWS), which ONE of the following is the correct action when "Anticipating Emergency Depressurization"?

A. Use Safety Relief Valves to maintain cooldown rate $\leq$ 100°F per hour.

B. Open ALL ADS Safety Relief Valves to depressurize irrespective of the cooldown rate.

C. Use Main Turbine Bypass Valves to maintain cooldown rate $\leq$ 100°F per hour.

D. ✔ Open ALL Main Turbine Bypass Valves to depressurize irrespective of the cooldown rate.

Description:

The depressurization is performed “irrespective of the resulting cooldown rate” since the need for rapid depressurization takes precedence over normal cooldown rate limits. Rapid depressurization is achieved by depressing and holding the Bypass Valve Opening Jack increase pushbutton until all available bypass valves are full open.

The "A" distractor is plausible and is a correct action when MSIVs are CLOSED and a normal RPV Cooldown is required IAW 31EO-EOP-010-2, RPV Control (Non-ATWS).

The "B" distractor is plausible and is a correct action when Emergency Depressurization criteria has already been exceeded, and is performed IAW 31EO-EOP-015-2, CP-1 - Alternate Level Control, Steam Cooling & Emergency Depressurization.

The "C" distractor is plausible and is a correct action when MSIVs are OPEN and a normal RPV Cooldown is required IAW 31EO-EOP-010-2, RPV Control (Non-ATWS).

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Correct** - See description above.

References:
NONE

K/A:

2.1.20 **Ability to interpret and execute procedure steps.**

(CFR: 41.10 / 43.5 / 45.12) 4.6 4.6

LESSON PLAN/OBJECTIVE:

EOP-RC-LP-20308, RPV Control (Non-ATWS), EO 201.066.A.01

Reference(s) used to develop this question:

31EO-EOP-010-2, RPV Control (Non-ATWS)
34SO-N30-001-2, Main Turbine Operation

68. G2.2.13 001

IAW NMP-AD-003-001, Tag Standards, which ONE of the following completes these statements?

Danger tags AND _____ tags are BOTH allowed to be hung (co-exist) on a single component.

While these tags co-exist, the _____ tag should be placed on top.

A. Caution;
Caution

B. ✔ Caution;
Danger

C. Operating Permit;
Operating Permit

D. Operating Permit;
Danger

Description:

NMP-AD-003-001, step 6.2.2.3 states: Caution Tags may co-exist with other tag types on the same component. 6.2.4.3 states: Danger Tags and Operations Permit Tags shall not co-exist on the same component. Step 6.3.6 states: When a Danger Tag is co-existing with a Caution Tag, the Danger Tag should be "on top" to be most visible.

The "A" distractor is plausible since the first part is correct and the second if the applicant thinks that since the Caution tag will contain information concerning the component, that it is prudent to display this tag on top for ease of compliance with the information on the Caution tag.

The "C" distractor is plausible if the applicant confuses this type of tag with a Caution tag. The second part is plausible if the applicant thinks that since the Operating Permit tag means the component can be operated that it is prudent to display this tag on top for ease of operating the component.

The "D" distractor is plausible if the applicant confuses this type of tag with a Caution tag. The second part is correct.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.2.13 Knowledge of tagging and clearance procedures. (CFR: 41.10 / 45.13) . . . 4.1 4.3

Replaced 2.2.19 **Knowledge of maintenance work order requirements.**
(CFR: 41.10 / 43.5 / 45.13) . . . . . 2.3 3.4 with 2.2.13

LESSON PLAN/OBJECTIVE:

GE-LP-400, Fleet Equipment Clearance and Tagging Training, S-GE-400.010.A.05

Reference(s) used to develop this question:

NMP-AD-003, Equipment Clearance and Tagging
NMP-AD-003-001, Tag Standards

69. G2.2.21 001

Given the following:

1E11-F017A, RHR Injection valve was declared INOPERABLE for preventative maintenance (PM).

Following the PM, operators performed the stroke test on 1E11-F017A IAW 34SV-E11-002-1, RHR Valve Operability.

The stroke test data is shown below:

COLUMN 1 MPL (TYPE)	COLUMN 2 REFERENCE TIME (SEC)		COLUMN 3 CALCULATED ALLOWABLE TIME (SEC)				COLUMN 4 OPERATING TIME (SEC)		COLUMN 5 MAXIMUM TIME LIMIT (SEC)	
	OPEN	CLOSE	OPEN MIN / MAX		CLOSE MIN / MAX		OPEN	CLOSE	OPEN	CLOSE
1E11-F017A MOV	**24.2**	N/A	**20.6**	**27.8**	N/A	N/A	**30.5**	N/A	≤34	N/A

IAW 34SV-E11-002-1, which ONE of the following describes the timing and status of 1E11-F017A?

To time this valve OPEN, the NPO will START the stopwatch when the _____ .

Based on the above data, 1E11-F017A _____ be IMMEDIATELY declared OPERABLE.

A. control switch is placed to OPEN;
can

B. red light FIRST illuminates;
can

C. control switch is placed to OPEN;
can NOT

D. red light FIRST illuminates;
can NOT;

Description:

34SV-E11-002-1, RHR Valve Operability, step 4.3.5 states: Full-stroke time is that time interval from initiation of the actuating signal to the end of the actuation cycle. Valves will be timed from WHEN the **switch** is positioned UNTIL either the green light EXTINGUISHES (open) OR the red light EXTINGUISHES (close). Step 7.7.2.2 states: Valves with OPERATING times that do NOT meet the CALCULATED ALLOWABLE time will be immediately retested OR declared inoperable. They can not be immediately declared OPERABLE.

The "A" distractor is plausible since the first part is correct. The second is plausible if the applicant thinks that since the valve meet the Maximum Time Limit, it can be immediately declared operable. The valve must be immediately re-tested.

The "B" distractor is plausible if the applicant thinks timing occurs when the red light first illuminates and does not know the procedure requirement. The second is plausible if the applicant thinks that since the valve meet the Maximum Time Limit, it can be immediately declared operable. The valve must be immediately re-tested.

The "D" distractor is plausible if the applicant thinks timing occurs when the red light first illuminates and does not know the procedure requirement. The second part is correct.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.2.21 **Knowledge of pre- and post-maintenance operability requirements.**
(CFR: 41.10 / 43.2) 2.9 4.1

LESSON PLAN/OBJECTIVE:

E11-RHR-LP-00701, Residual Heat Removal System, EO 100.035.A.03
LT-LP-30005, Technical Specifications, EO 300.006.A.23

Reference(s) used to develop this question:

Peach Bottom 2008 NRC Exam Q#70
34SV-E21-002-2, Core Spray Valve Operability
TS SR 3.01

70. G2.3.11 001

Which ONE of the following is the BASIS for restarting the Turbine Building (TB) Ventilation when executing 31EO-EOP-014-2, "SC Secondary Containment Control - RR Radioactivity Release Control?

Restarting the TB Ventilation _____ **AND** assures a release from the TB Ventilation System is monitored prior to exiting the _____ .

A. maintains equipment availability;
Reactor Building Stack

B. ✔ preserves personnel accessibility;
Reactor Building Stack

C. maintains equipment availability;
Main Stack

D. preserves personnel accessibility;
Main Stack

Description:

Continued personnel access to the turbine building may be essential for responding to emergencies or transients which may degrade into emergencies. The turbine building is not an air-tight structure. A radioactivity release inside the turbine building would limit personnel access and eventually lead to an unmonitored ground level release. Operation of the turbine building ventilation system: helps preserves turbine building accessibility, AND assures that radioactivity in turbine building areas is discharged through a monitored release point. (Discharged to the reactor building stack).

The "A" distractor is plausible if the applicant thinks that since there is equipment, that may be operated in the Turbine Building, then equipment availability is the reason. The second part is correct.

The "C" distractor is plausible if the applicant thinks that since there is equipment, that may be operated in the Turbine Building, then equipment availability is the reason. The second part if the applicant remembers that SBGT system discharges to the Main Stack and since the Turbine Building Ventilation will be processing the TB atmosphere, that it will discharge to the Main Stack as well.

The "D" distractor is plausible since the first part is correct. The second part if the applicant remembers that SBGT system discharges to the Main Stack and since the Turbine Building Ventilation will be processing the TB atmosphere, that it will discharge to the Main Stack as well.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.3.11 **Ability to control radiation releases.** (CFR: 41.11 / 43.4 / 45.10) 3.8 4.3

LESSON PLAN/OBJECTIVE:

EOP-SCRR-LP-20325, Secondary Containment / Radioactivity Release Control,
EO 201.082.A.01

Reference(s) used to develop this question:

31EO-EOP-014-2, "SC Secondary Containment Control - RR Radioactivity Release Control

71. G2.3.12 001

A NORMAL Drywell (DW) entry is required on **Unit 1**.

With Unit 1 at 8% RTP, which ONE of the choices below completes the following statements IAW 31GO-OPS-005-0, Primary Containment Entry?

The MAXIMUM reactor power allowed for this type of DW entry is _____ .

A Containment Entry Tagout to prevent control rod withdrawal _____ required to be in place for this entry.

A. 15% RTP;
is

B. ✔ 10% RTP;
is

C. 15% RTP;
is NOT

D. 10% RTP;
is NOT

Description:

31GO-OPS-005-0 states that for a normal DW entry, the maximum reactor power is 10% and step 6.4.2 requires a containment entry tagout must be established.

The "A" distractor is plausible if the applicant remembers 15% reactor power is the power level which requires the Drywell to be de-inerted. The second part is correct.

The "C" distractor is plausible if the applicant remembers 15% reactor power is the power level which requires the Drywell to be de-inerted. The second part is plausible if the applicant does not remember the requirement for a Normal entry and thinks the tagout will only be required for an Abnormal entry.

The "D" distractor is plausible since the first part is correct. The second part is plausible if the applicant does not remember the requirement for a Normal entry and thinks the tagout will only be required for an Abnormal entry.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.3.12 **Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc**. (CFR: 41.12 / 45.9 / 45.10) 3.2 3.7

LESSON PLAN/OBJECTIVE:

LT-LP-30004 ,Administrative Procedures, EO 013.033.A.13

Reference(s) used to develop this question:

31GO-OPS-005-0, Primary Containment Entry
34AR-602-220-1, Drywell/Torus Press High
Modified from NRC Exam 2009-301 HLT-04 Q#73

72. G2.3.13 001

Two NPOs are required to enter a "Locked High Radiation" area room to perform a tagout. The NPOs will be accompanied by a Health Physics (HP) Technician (Tech).

IAW 62RP-RAD-016-0, Control Of High Radiation Areas, which ONE of the choices below completes the following statements?

The keys to the "Locked High Radiation" area room can be issued to _____ .

After exiting the Locked High Radiation Area, the door can be verified secure by _____ .

A. ✔ the HP Tech ONLY
one of the NPOs

B. the HP Tech ONLY
the HP Tech ONLY

C. either the HP Tech OR one of the NPOs;
one of the NPOs

D. either the HP Tech OR one of the NPOs;
the HP Tech ONLY

Description:

62RP-RAD-016-0, states for Very High and Locked High Radiation Area keys, the keys will ONLY be issued to HP technicians. Upon exiting Locked High Radiation Area doors, concurrent verification is required assuring that the door/padlock is secured AND locked. This will be performed by the HP technician holding the key and a second worker that will act as the verifier. For entry in to Very High Radiation Areas, HP personnel only will verify that the door used during the entry is secured, AND locked.

The "B" distractor is plausible since the first part is correct. The second is plausible if the applicant confuses Locked High Radiation Area door requirements with Very High Radiation Area requirements. Very High requires HP personnel to verify the door.

The "C" distractor is plausible since this is the way we use to verify High radiation doors. If the applicant remembers the old way they will choose this distractor. The second part is correct.

The "D" distractor is plausible since this is the way we use to verify High radiation doors. If the applicant remembers the old way they will choose this distractor. The second is plausible if the applicant confuses Locked High Radiation Area door requirements with Very High Radiation Area requirements. Very High requires HP personnel to verify the door.

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.3.13 **Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.**
(CFR: 41.12 / 43.4 / 45.9 / 45.10) 3.4 3.8

LESSON PLAN/OBJECTIVE:

LT-LP-30008, Radiation Control Adminstration Procedures And Instrumentation, LO LT-30008.003

Reference(s) used to develop this question:

62RP-RAD-016-0, Control Of High Radiation Areas

73. G2.4.16 001

Unit 2 has experienced a complete loss of offsite power (LOSP).

The following conditions exist on Unit 2:

- o ONLY 4160 VAC bus 2G is energized
- o Torus pressure is currently 11 psig and rising 1.0 psig per minute

Which ONE of the following completes these statements?

With the above conditions, actions in the _____ takes precedent over actions in any other procedure.

34AB-R22-003-2, Station Blackout procedure, will be EXITED when a MINIMUM of _____ 4160V Emergency buses are energized on Unit 2.

A. 34AB-R22-003-2, Station Blackout procedure;
two (2)

B. 34AB-R22-003-2, Station Blackout procedure;
three (3)

C. ✔ EOP procedures;
two (2)

D. EOP procedures;
three (3)

Description:

34AB-R22-003-2, Station Blackout, contains the following a Note at step 4.1 which states:

This procedure is intended to maintain the plant in a safe condition assuming:

* A loss of all AC power exists for up to one hour,

AND

* Only one 4160V AC emergency bus is energized for the next 3 hours,

AND

* No other accident occurs during this time.

UNDER the above circumstances, actions in this procedure take precedence over actions in any other procedure.

IF any condition exists requiring entry into the EOPs WHICH is NOT a direct result of the SBO OR of actions taken per this procedure, THEN EOP actions must take precedence, AND this procedure is to be used for guidance ONLY.

With Torus pressure 11 psig, more than a station blackout, currently exists which will require actions in the EOPs to take precedent over the station black procedure actions. 34AB-R22-003-2 states, IF power is restored to more than one of the 4160V AC Emergency busses, THEN exit this procedure.

The "A" distractor is plausible if the applicant confuses the note and thinks that since a Station Black does exist that the station black procedure will take precedent over the EOPs. The second part is plausible since it is correct.

The "B" distractor is plausible if the applicant confuses the note and thinks that since a Station Black does exist that the station black procedure will take precedent over the EOPs. The second part is plausible if the applicant confuses the requirement to exit the procedure and thinks it takes all three emergency buses energized to leave the procedure.

The "C" distractor is plausible since the first part is correct and the second part is plausible if the applicant confuses the requirement to exit the procedure and thinks it takes all three emergency buses energized to leave the procedure.

A. **Incorrect** - See description above.

B. **Incorrect** - See description above.

C. **Correct** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.4.16 **Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines.** (CFR: 41.10 / 43.5 / 45.13) 3.5 4.4

LESSON PLAN/OBJECTIVE:

LT-LP-20201, Introduction To Abnormal Procedures, LO LT-20201.019

Reference(s) used to develop this question:

34AB-R22-003-2, Station Blackout

74. G2.4.4 001

Unit 2 is conducting a HPCI Pump Operability Surveillance.

- At 14:00 Torus Bulk average water temperature is 94°F, increasing at 0.5°F/minute.

Based on the current trend, which ONE of the following is the EARLIEST listed time that entry into 31EO-EOP-012-2, PC Primary Containment, is REQUIRED?

A. 14:13;

B. 14:23;

C. 14:33;

D. 14:53;

Description:

Entry into 31EO-EOP-012-2, PC Primary Containment, will be REQUIRED when Torus temperature reaches 100°F. At the current trend, Torus temperature will be above this value at 14:13.

The "B" distractor is plausible if the applicant confuses the time when Torus temperature will be above the temperature requirement to stop all testing that adds heat to the Torus (105°F).

The "C" distractor is plausible if the applicant confuses the time when Torus temperature will be above the temperature requirement to enter 34AB-C71-001-2, Scram Procedure, and scram the reactor (110°F).

The "D" distractor is plausible if the applicant confuses the time with the requirement to reduce reactor pressure to < 200 PSIG within 12 hours (120°F).

A. **Correct** - See description above.

B. **Incorrect** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.4.4 **Ability to recognize abnormal indications for system operating parameters that are entry-level conditions for emergency and abnormal operating procedures.**
(CFR: 41.10 / 43.2 / 45.6) 4.5 4.7

LESSON PLAN/OBJECTIVE:

EOP-PC-LP-20310, Primary Containment Control (PC), EO 201.093.A.01

Reference(s) used to develop this question:

34AB-T23-003-2, Torus Temperature Above 95°F
31EO-EOP-012-2, PC Primary Containment
HLT Question Bank Q# LT-200040 002

75. G2.4.5 001

Of the procedure types listed below, which ONE would provide the detailed guidance for notifying state and local agencies in the event of a Fuel Handling accident that resulted in a radioactive release?

A. 34FH-OPS, Fuel Handling Procedures

B. ✔ NMP-EP, Nuclear Management Procedures for Emergency Preparedness

C. 31EO-EOP, Emergency Operating Procedures

D. NMP-RP, Nuclear Management Procedures for Radiation Protection

Description:

NMP-EP-111, Emergency Notifications, is the procedure used to notify state and local agencies in the event of an emergency.

The "A" distractor is plausible since Fuel Handling procedures would be in use with fuel handling in process but they do not provide the quidance to notify state and local agencies.

The "C" distractor is plausible since a Fuel Handling accident would result in entering the Emergency Operating Procedures to mitigate the accident but would not provide the quidance to notify state and local agencies.

The "D" distractor is plausible since a Fuel Handling accident would result in entering Radiation Protection procedures but would not provide the quidance to notify state and local agencies.

A. **Incorrect** - See description above.

B. **Correct** - See description above.

C. **Incorrect** - See description above.

D. **Incorrect** - See description above.

References:
NONE

K/A:

2.4.5 **Knowledge of the organization of the operating procedures network for normal, abnormal, and emergency evolutions**. (CFR: 41.10 / 43.5 / 45.13) 3.7 4.3

LESSON PLAN/OBJECTIVE:

EP-LP-20101, Initial/Terminating Activities, TO 300.046.A

Reference(s) used to develop this question:

NMP-EP-111, Emergency Notifications
River Bend 2008 NRC Exam Q#75