

**Final Submittal**  
(Blue Paper)

**COMBINED RO/SRO WRITTEN EXAM  
WITH KAS, ANSWERS, REFERENCES,**

**BRUNSWICK NOVEMBER 2008 EXAM**

**05000325/2008302 & 05000324/2008302**

2008 SRO NRC EXAM  
SRO ONLY

RO Qs 1-75  
SRO ONLY Qs 26-100

DATE : Friday, November 07, 2008

VERSION : 0

Name: \_\_\_\_\_

Points : 100

Points Missed : \_\_\_\_\_

Score : \_\_\_\_\_

1. THE TIME LIMIT FOR THIS EXAM IS 8 HOURS
2. A Score of 80% is required for passing.
3. THIS IS AN CLOSED REFERENCE EXAMINATION.

I have neither given nor received help on this exam. All work is my own.

\_\_\_\_\_/\_\_\_\_\_  
Signature Date

**Do not turn page until told to do so.**

1. Which one of the following identifies the component manipulations that will raise CRD drive water header differential pressure indication at Panel P603?

- A. throttle open Flow Control Valve C11-F002 or throttle open Drive Pressure Valve C11-PCV-F003
- B. throttle open Flow Control Valve C11-F002 or throttle closed Drive Pressure Valve C11-PCV-F003
- C. throttle closed Flow Control Valve C11-F002 or throttle open Drive Pressure Valve C11-PCV-F003
- D. throttle closed Flow Control Valve C11-F002 or throttle closed Drive Pressure Valve C11-PCV-F003

REFERENCE:

SD-08, CRD Hydraulic System, Section 3.1 Component Control  
Big Note BN-08.0.01 Control Rod Drive Hydraulics

EXPLANATION:

to raise drive water pressure using a CRD system diagram, or system knowledge, the system configuration is such that closing the F003 or opening the F002 will raise CRD drive pressure differential.

CHOICE "A" - Incorrect. Throttling open the F003 will lower CRD drive pressure differential.

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. Throttling closed the F002 will lower CRD drive pressure differential.

CHOICE "D" - Incorrect. Throttling closed the F002 will lower CRD drive pressure differential.

201003 Control Rod and Drive Mechanism

A1. Ability to predict and/or monitor changes in parameters associated with operating the CONTROL ROD AND DRIVE MECHANISM controls including:  
(CFR: 41.5 / 45.5)

A1.02 CRD drive pressure ..... 2.8 / 2.8

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-08, Obj. 6F. Given plant and CRDHS conditions, predict the values for the following CRDH system parameters: Drive Water Header Pressure.

COG LEVEL: High

2. Unit Two is operating at rated pressure. While placing the 2B Recirculation Pump in service a complete failure of the #1 seal occurs.

#1 seal cavity pressure is 1000 psig.

Which one of the following identifies the expected system indications for this failure?

- A. #2 seal cavity pressure is 500 psig;  
PUMP B SEAL STAGING FLOW HI/LO annunciator in alarm
- B. #2 seal cavity pressure is 500 psig;  
OUTER SEAL LEAKAGE FLOW DETECTION HI annunciator in alarm
- C✓ #2 seal cavity pressure is 1000 psig;  
PUMP B SEAL STAGING FLOW HI/LO annunciator in alarm
- D. #2 seal cavity pressure is 1000 psig;  
OUTER SEAL LEAKAGE FLOW DETECTION HI annunciator in alarm

REFERENCE:

SD-02 Reactor Recirculation System

APP A-07 (4-5) Outer Seal Leakage Flow Detection Hi

APP-A-07 (5-5) Pump B Seal Staging Flow Hi

EXPLANATION:

Normal seal pressures at rated conditions are 1000 psig for seal #1 and 500 psig for seal #2. A failure of seal #1 will cause seal pressures to equalize at rated pressure of 1000 psig. Seal Staging Flow Hi alarm will be received on a failure of either seal. Outer Seal Leakage Flow Detection Hi alarm requires the #2 seal failure.

CHOICE "A" - Incorrect. A failure of seal #1 would cause seal #2 pressure to raise, normal pressure is 500#.

CHOICE "B" - A failure of seal #1 would cause seal #2 pressure to raise, normal pressure is 500#. The outer seal leakage alarm would not actuate, this would be from a failure a seal #2 only.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. A failure of seal #1 will not cause the Outer Seal Leakage Flow Detection alarm, this would be from a failure a seal #2 only.

202001 Recirculation

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

A1.09 Recirculation pump seal pressures . . . . . 3.3 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-02, Obj. 15a. Given plant conditions, determine if the following Reactor Recirculation System failures/malfunctions have occurred: #1 Recirculation Pump seal failure.

COG LEVEL: High

3. Given the following plant conditions on Unit One:

Reactor water level	-25 inches
Reactor pressure	55 psig
Vessel Injection	4500 gpm from RHR

(reference provided)

In accordance with 00I-37.4, Reactor Vessel Control Procedure Basis Document, which one of the following identifies the current status of Adequate Core Cooling and the operational implications of these conditions?

- A. Adequate Core Cooling is met;  
Clad temperatures are expected to remain between 1500° F and 1800° F.
- B. Adequate Core Cooling is met;  
Clad temperatures are expected to remain  $\leq 1500^{\circ}$  F
- C. Adequate Core Cooling is NOT met;  
Clad temperatures are expected to exceed 1800° F
- D. Adequate Core Cooling is NOT met;  
Clad temperatures are expected to remain  $\leq 1800^{\circ}$  F

REFERENCE:

LL4 graph from EOP-UG to be provided to student  
Introduction to ECCS Student Handout  
CLS-LP-110B Introduction to ECCS

EXPLANATION:

Four viable methods of Adequate Core Cooling (ACC) exist within the EOPs.  
Core Submergence (Level above TAF),  
Steam Cooling with Injection (Level above LL4),  
Steam Cooling without Injection (Level above LL5) and  
Reactor water level at jet pump suction with core spray flow of at least 5000 gpm.

The conditions listed satisfy the ACC requirements for Steam Cooling with Injection. If reactor water level were to drop below LL4, and RHR injection were maintained, ACC would not be met. By maintaining this method of ACC, the core will generate sufficient steam to preclude any clad temperature from exceeding 1500F.

CHOICE "A" - Incorrect. Clad temperatures will remain below 1500F

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. ACC is maintained and Clad temperatures will remain below 1500F.

CHOICE "D" - Incorrect. ACC is maintained and Clad temperatures will remain below 1500F

203000 RHR/LPCI: Injection Mode

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)

K5.02 Core cooling methods . . . . . 3.5 / 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-110B, Obj. 1A. Define the following terms: Adequate core cooling.

COG LEVEL: High

4. Which one of the following pumps is powered from 4KV E-Bus E2?

- A. 1A RHR Pump
- B. 2C RHR Pump
- C✓ 1D RHR SW Booster Pump
- D. 2B RHR SW Booster Pump

REFERENCE:  
SD-17 Residual Heat Removal System

EXPLANATION:  
Each of the above listed pumps is powered from a different plant 4KV Emergency bus.  
The 1D RHR SW Booster Pump is powered from E-2.

CHOICE "A" - Incorrect. Powered from E3

CHOICE "B" - Incorrect. Powered from E1

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. Powered from E4

205000 Shutdown Cooling

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

K2.01 Pump motors ..... 3.1\* / 3.1\*

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-17, Obj. 17a. List the normal and emergency power sources for the following: RHR pumps.

COG LEVEL: Low

5. During accident conditions, suppression pool level has dropped below -6.5 feet.

Which one of the following identifies the required action for HPCI, including the basis for the action, in accordance with PCCP and OOI-37.8, Primary Containment Control Procedure Basis Document?

- A✓ Terminate HPCI irrespective of adequate core cooling to prevent primary containment overpressurization.
- B. Terminate HPCI irrespective of adequate core cooling to prevent exceeding Heat Capacity Temperature Limit.
- C. Maintain HPCI operation if required to maintain adequate core cooling because core cooling takes priority over primary containment integrity.
- D. Maintain HPCI operation if required to maintain adequate core cooling because the turbine exhaust flowrate is within the capacity of containment vent system.

REFERENCE:

OOI-37.8 Primary Containment Control Procedure Basis Document

EXPLANATION:

Per the PCCP, steps SP/L-26 and 27, if suppression pool level cannot be maintained above -6.5 feet then secure HPCI irrespective of ACC. Per OI-37.8, the bases for these steps is to prevent primary containment failure due to overpressurization.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. HCTL would already have been violated at this point.

CHOICE "C" - Incorrect. HPCI must be secured irrespective of ACC. Under other degraded conditions, such as NPSH limits, you would continue to run HPCI to maintain ACC

CHOICE "D" - Incorrect. HPCI must be secured irrespective of ACC. Under other degraded conditions, such as NPSH limits, you would continue to run HPCI to maintain ACC RCIC is maintained running for exactly this reason.

206000 HPCI

2.4.18 Knowledge of the specific bases for EOPs. (CFR: 41.10 / 43.1 / 45.13)

IMPORTANCE RO 3.3 SRO 4.0

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-300L, Obj. 13. Explain why HPCI operation is not allowed (irrespective of adequate core cooling) if suppression pool level is below -6.5 feet.

COG LEVEL: Low

6. Unit Two plant conditions following an automatic initiation of ADS are as follows:

Reactor level	-20 inches
Reactor Pressure	400 psig and lowering
Core Spray pumps	2A and 2B pumps running
ADS SRV's	7 ADS valves OPEN with control switches in AUTO

A dual unit loss of off-site power occurs and all DGs tie onto their respective E buses.

Which one of the following predicts how the ADS valves will respond during the loss of offsite power and subsequent re-energization of power to the E-busses?

- A. remain open when the LOOP initially occurs;  
remain open after the E-Busses are re-energized.
- B. close when the LOOP initially occurs;  
remain closed after the E-Busses are re-energized.
- C. close when the LOOP initially occurs;  
re-open 83 seconds after the Core Spray pumps restart.
- D. close when the LOOP initially occurs;  
re-open immediately after the Core Spray pumps restart.

REFERENCE:

SD-20 ADS Section 3.3 Logic, Section 4.3.4 AC Power

EXPLANATION:

ECCS pumps will trip on UV will LOOP. With Control Switches in AUTO, valves will close due to loss of ECCS permissive in ADS logic. Since RPV water level is still below LL3, valves will re-open when ECCS pumps sequence back on and re-satisfy the ECCS permissive. ADS timer stays sealed in (timed out) when ECCS permissive is lost.

CHOICE "A" - Incorrect. Valves will close. If power were not lost, the valves would remain open or if the switches were in the open position then they would remain open.

CHOICE "B" - Incorrect. Valves will auto re-open. If level were above LL3 they would not re-open.

CHOICE "C" - Incorrect. Would be correct if ADS timer needed to be re-satisfied.

CHOICE "D" - Correct Answer

209001 Low Pressure Core Spray

K3. Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on following: (CFR: 41.7 / 45.4)

K3.02 ADS logic . . . . . 3.8 3.9

SOURCE: Bank LOI-CLS-LP-020-A\*007(28)

LESSON PLAN/OBJECTIVE:  
CLS-LP-020, Obj. 11. Given plant conditions, determine if an automatic initiation of ADS should occur.

COG LEVEL: High

7. Following a DBA LOCA on Unit Two, plant conditions are as follows:

Reactor water level	55 inches and rising
Reactor pressure	150 psig
Torus temperature	220° F
Suppression Chamber pressure	10.5 psig
Torus level	-43 inches
2A Core Spray pump flow	5000 gpm
2B Core Spray pump flow	2000 gpm
2A RHR pump flow	8000 gpm
2B RHR pump flow	6000 gpm

(reference provided)

Which one of the following identifies the ECCS pump(s) that is/are operating within the associated NPSH limit(s)?

- A.  2B CS Pump ONLY
- B. All CS and RHR pumps
- C. 2A CS and 2B CS ONLY
- D. 2B CS, 2A RHR and 2B RHR ONLY

REFERENCE:

Unit Two Core Spray and RHR NPSH limit graphs provided in EOP flow charts (only the graphs are to be provided to examinees)

Users guide definitions (pg 13-14)

EXPLANATION:

The student will need to plot each point on NPSH limit graph.

Torus pressure must be corrected down 0.5 psig to obtain the proper restriction line.

The correct torus pressure is 10.5 psig - 0.5 psig = 10 psig.

This correction must be performed for both the RHR and CS graphs.

CHOICE "A" -Correct Answer

CHOICE "B" - Incorrect. If student fails to adjust torus pressure on CS graph, this answer would be correct.

CHOICE "C" -Incorrect. If student fails to adjust torus pressure on RHR graph, this answer would be correct.

CHOICE "D" - Incorrect. If student fails to adjust torus pressure on both graphs, this answer would be correct.

209001 Low Pressure Core Spray

2.2.37 Ability to determine operability and/or availability of safety related equipment. (CFR: 41.7 / 43.5 / 45.12)

IMPORTANCE RO 3.6 SRO 4.6

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-300B, Obj. 17. Given plant condition and the NPSH and vortex limit graphs for the RHR and CS, determine if the NPSH and/or vortex limits have been exceeded for either of the two systems.

COG LEVEL: High

8. Which one of the following methods is available to determine level in the SLC Tank following a loss of all air systems?
- A. Direct the AO to valve in the local sight glass to obtain the level.
  - B. Have the AO read the level gauge on the local instrument rack.
  - C. Use the indication on the Level / Power Control ERFIS Screen.
  - D. Direct the AO to measure the distance from the surface of the liquid to the top of the SLC Tank.

REFERENCE:

10P-05 Section 8.6, Manual Volume Determination

EXPLANATION:

Without the instrument air system the level indicator will fail downscale, no dp to measure. The operating procedure has a section to determine the volume by measuring the air gap in the tank and comparing that to a graph to determine how much volume is left in the tank.

CHOICE "A" The main tank does not have a local sight glass, but the test tank does.

CHOICE "B" The local guage will also be failed downscale.

CHOICE "C" The input to ERFIS is from the control room indicator which is failed downscale.

CHOICE "D" correct answer

211000 SLC

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

K5.06 Tank level measurement . . . . . 3.0 3.2

SOURCE: Bank Previous exam - 08

LESSON PLAN/OBJECTIVE:

CLS-LP-05, Obj. 9d. Describe the operation of the following: SLC Tank level measurement system

COG LEVEL: Low

9. OPT-01.1.6, Reactor Protection System Manual Scram Test, is in progress. The Reactor Scram System A pushbutton has been depressed.

Which one of the following choices completes the statement below?

The alarm(s) that will occur is/are \_\_\_\_\_.

The RPS channel(s) that is/are de-energized is/are \_\_\_\_\_.

- A✓ REACTOR MANUAL SCRAM SYS A only  
A3 only
- B. REACTOR MANUAL SCRAM SYS A only  
A1, A2 and A3
- C. REACTOR MANUAL SCRAM SYS A and REACTOR AUTO SCRAM SYS A  
A3 only
- D. REACTOR MANUAL SCRAM SYS A and REACTOR AUTO SCRAM SYS A  
A1, A2 and A3

REFERENCE:

SD-03 Reactor Protection System, Section 1.3  
OI-18 (page 45)

EXPLANATION:

The RPS trip system logics are normally energized. It is a fail safe system such that de-energizing a trip system causes a trip in that system. There are two RPS trip systems. Trip system A and Trip system B. Each trip system contains two auto trip channels and one manual trip channel. (A1/A2/A3 and B1/B2/B3) If any one trip channel in each system de-energizes, a full scram will occur. With the 'A' Scram pushbutton depressed, the A3 trip channel has de-energized the A RPS trip system. the alarm would be a manual not auto trip. There are PTs that have a manual action that does cause the Auto scram alarm (PT-01.1.7).

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. It is an Auto scram signal not a manual, does not feed into A1 or A2 channels.

CHOICE "C" - Incorrect. Is not an Auto scram signal.

CHOICE "D" - Incorrect. It does not feed into A1 or A2 channels.

212000 RPS

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

A4.02 Perform system functional test(s) . . . . . 3.6 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-03, Obj. 14. Given plant conditions and control room indications, determine whether a reactor scram has actuated properly.

COG LEVEL: High

10. Which one of the following identifies the parameter that provides a direct input into the RPS logic (i.e., does not actuate a turbine trip logic first)?

- A. Control Valve Position LVDT
- B. EHC Low Header Discharge Pressure
- C. ETS (Emergency Trip System) Pressure
- D✓ RETS (Relayed Emergency Trip Supply) Pressure**

REFERENCE:  
SD-03 Reactor Protection System

EXPLANATION:  
RETS pressure is utilized by the RPS system to detect a fast closure of the turbine control valves, for input into the TCV fast closure scram logic.

CHOICE "A" - Incorrect. do not input to RPS, LVDT provide position indication only

CHOICE "B" - Incorrect. this comes in at 1100# and actuate a turbine trip.

CHOICE "C" - Incorrect. this comes in at 800# and actuates a turbine trip.

CHOICE "D" - Correct Answer, this comes in at 600# and is a direct RPS trip signal.

212000 RPS

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

K1.12 Reactor/turbine pressure control system: . . . . . 3.4 3.6

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-03, Obj. 8. List the RPS trip signals, including setpoints and how/when each signal is bypassed.

COG LEVEL: Low

11. TIP traces are in progress with all TIP drawer Mode Switches in Auto.

A small steam leak in containment causes drywell pressure to rise to 2.7 psig.

Which one of the following predicts the final TIP ball valve position indication(s) and also identifies all available location(s) for verifying their position?

- A. Red light indication illuminated on the Back Panel P607 ONLY.
- B. White Valve Light illuminated on each TIP drawer at Back Panel P607 ONLY.
- C. Red light indication illuminated on both the P601 Panel and the Back Panel P607.
- D. Green light indication illuminated on the P601 Panel and a white Valve Light illuminated on each TIP drawer at Back Panel P607.

REFERENCE:

SD-09.5 Traversing In-Core Probe (TIP) System, section 3.1 Indications, section 3.2.2 Interlocks

EXPLANATION:

If drywell pressure reaches the PCIS Gp 2 isolation setpoint of 1.7 psig, TIP logic will initiate an automatic probe retract to the in-shield position and the TIP ball valves will auto close.

Indication of TIP ball valve position can be found on the P601 panel in the control room and the TIP back panel P607. The back panel indication white light is illuminated if the ball valve is closed (there is one on each drawer). The P601 indication is red if any one of the 4 ball valves are open, and green if all 4 of the ball valves are closed.

CHOICE "A" - Incorrect TIP ball valves will auto close on PCIS Gp 2 isolation signal. The TIP shear valve remains open. Confusion between these valves would cause a student to select this answer. The indication on the back panel is a white light. There is indication on the P601 panel also.

CHOICE "B" - incorrect There is indication on the P601 panel also.

CHOICE "C" - Incorrect The indication on the back panel is a white light.

CHOICE "D" - Correct Answer

215001 Traversing In-Core Probe

2.1.31 Ability to locate control room switches, controls, and indications, and to determine that they correctly reflect the desired plant lineup.  
(CFR: 41.10 / 45.12)

IMPORTANCE RO 4.6 SRO 4.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-09, Obj. 5b. explain the effects of the following on the TIP System: High Drywell Pressure

COG LEVEL: High

12. Unit One is commencing a startup with all SRM's fully inserted and reading approximately  $1 \times 10^5$  cps. The IRM's are reading the following:

IRM A	20 on Range 1	IRM E	21 on Range 1
IRM B	28 on Range 1	IRM F	19 on Range 1
IRM C	21 on Range 2	IRM G	23 on Range 2
IRM D	25 on Range 1	IRM H	20 on Range 1

The operator takes the range switch for IRM B from Range 1 to Range 3.

Which one of the following identifies the status of the IRM B downscale white light at P601 and also identifies the annunciator alarm(s) status for this condition?

- A✓ White light illuminated;  
ROD OUT BLOCK alarm only.
- B. White light illuminated;  
Both ROD OUT BLOCK and REACTOR AUTO SCRAM SYS B alarms.
- C. White light extinguished;  
ROD OUT BLOCK alarm only.
- D. White light extinguished;  
Both ROD OUT BLOCK and REACTOR AUTO SCRAM SYS B alarms.

REFERENCE:

SD-9.1 Startup Range Monitor System  
APP A-05 (2-2) ROD OUT BLOCK

EXPLANATION:

Taking the range switch from Range 1 to Range 3 will cause the IRM reading to drop by a factor of ten. IRM "B" will be reading 2.8 which will cause the IRM downscale light to illuminate. (setpoint of 3.5 cps) A ROD OUT BLOCK will be generated from any downscale IRM not on Range 1.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. A Reactor Auto Scram Sys B will not alarm.

CHOICE "C" - Incorrect. IRM downscale light will also illuminate for these conditions.

CHOICE "D" - Incorrect. IRM downscale light will also illuminate for these conditions and A Reactor Auto Scram Sys B will not alarm.

215003 IRM

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

A4.07 Verification of proper functioning / operability . . . . . 3.6 / 3.6

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-9.1, Obj. 3a. List the SRM/IRM system signals/conditions that will cause the following actions and the conditions under which each is bypassed: Rod Blocks.

COG LEVEL: High

13. A reactor startup is in progress following a mid cycle forced outage in accordance with OGP-02, Approach to Criticality and Pressurization of the Reactor.

The operator notes the following SRM readings:

SRM Channel A	$6.0 \times 10^5$ cps
SRM Channel B	$1.0 \times 10^5$ cps
SRM Channel C	$7.0 \times 10^4$ cps
SRM Channel D	$8.0 \times 10^4$ cps

All IRMs are on Range 4.

Which one of the following alarms will occur?

- A. ROD OUT BLOCK Alarm only
- B. SRM UPSCALE / INOP Alarm only
- C.  SRM UPSCALE / INOP and ROD OUT BLOCK Alarms
- D. ROD OUT BLOCK and NEUTRON MON SYS TRIP Alarms

REFERENCE:

SD-9.1 Neutron Monitoring System (Startup and Intermediate Range)

APP-A-05(2-2) ROD OUT BLOCK

APP-A-05(2-3) SRM UPSCALE/INOP

EXPLANATION:

SRM Upscale alarm setpoint is  $2.0 \times 10^5$  cps. An SRM Upscale alarm with any IRM below range 8 will also cause a Rod Out Block. With shorting links installed, the SRM RPS function is bypassed. No scram or half scram can occur.

CHOICE "A" - Incorrect. SRM Upscale alarm will also occur. If IRMs were on range 8 or higher this answer would be correct.

CHOICE "B" - Incorrect. Rod Out Block will also occur.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. This answer would be correct if shorting links were not installed. RPS SRM scram is non-coincident.

215004 Source Range Monitor

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

K4.01 Rod withdrawal blocks . . . . . 3.7 / 3.7

SOURCE: Modified Bank LOI-CLS-LP-009-A\*03A (10)

LESSON PLAN/OBJECTIVE:

CLS-LP-9.1, Obj. 3a. List the SRM/IRM system signals/conditions that will cause the following actions and the conditions under which each is bypassed: Rod Blocks.

COG LEVEL: High

14. Unit Two is operating at 100% rated power.

Which one of the following plant transients will cause the APRM ODA displays to automatically shift to the stability screen?

- A. FW-V120, FW Htrs 4 & 5 Byp Vlv, is inadvertently opened
- B. Control Rod drifting into the core
- C. "A" Recirculation Pump Trip
- D. Inadvertant HPCI injection

REFERENCE:

SD-9.6 Power Range Neutron Monitoring And Rod Block Monitor  
APP-A-05(4-8) OPRM TRIP ENABLED

EXPLANATION:

The stability screen will be automatically displayed on the ODA for both APRMs when either APRM enters the power-flow map region where instability can occur as defined by the OPRM trip enabled setpoint. (reactor power greater than or equal to 25% and recirc. flow less than or equal to 60%)  
The student must know what causes the APRM ODA to shift to the STABILITY screen.  
If they do not, any of the given transients is a plausible selection.

CHOICE "A" - Incorrect. This will cause power to rise moving up on the power to flow map.

CHOICE "B" - Incorrect. a control rod insertion moves power straight down the power to flow map and not toward the OPRM enabled region.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. cold water injection could damage fuel, but does not cause instabilities. This will cause power to rise moving up on the power to flow map.  
215005 APRM / LPRM

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

A3.03 Meters and recorders . . . . . 3.3 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS=LP-9.6, Obj. 28. Given plant conditions and entry into one of the following Power to Flow Map regions, use procedures to determine the actions required to control and/or mitigate the consequences of the event: OPRM Enabled Region.

COG LEVEL: High

15. Unit Two is at rated power when a faulty CST level instrument initiates a false low CST level input to the RCIC logic. RCIC SUCT XFER CST LO LVL annunciator is received.

Which one of the following identifies the correct RCIC system suction valves response?

Suppression Pool Suction Valves, E51-F029 and E51-F031, \_\_\_\_\_;  
CST Suction Valve, E51-F010, \_\_\_\_\_.

- A. immediately auto open;  
begins to close when both suppression pool suction valves are not full closed.
- B. immediately auto open;  
begins to close after both suppression pool suction valves are full open.
- C. begin to open when CST suction valve is not full open;  
immediately auto closes.
- D. begin to open only after the CST suction valve is full closed;  
immediatley auto closes.

REFERENCE:

SD-16 Reactor Core Isolation Cooling, section 3.2  
APP-A-02(3-8) RCIC SUCTION TRANS CST LO LVL

EXPLANATION:

The normal RCIC suction valve configuration is the CST suction (F010) open and the suppression pool suction valves (F029 and 31) closed. If a low CST level is sensed, with reactor pressure above the RCIC isolation setpoint, the F029 and 31 will auto open. When they are both full open, the F010 will auto close. If reactor pressure is below the RCIC isolation setpoint, the valves respond differently.

CHOICE "A" - Incorrect. Has to see both valves full open not when they come off the closed seat.

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. Suppression pool suction open first then the CST valve to make sure that a suction flowpath exists.

CHOICE "D" - Incorrect. Suppression pool suction open first then the CST valve to make sure that a suction flowpath exists.

217000 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

SOURCE: Bank LOI-CLS-LP-016-A\*010 (6)

LESSON PLAN/OBJECTIVE:

CLS-LP-16, Obj. 10. Given a RCIC system valve, list the interlocks/automatic actions associated with that valve.

COG LEVEL: Low

16. Following a small steam line break in the drywell, plant conditions are as follows:

Drywell Pressure	20.8 psig
Drywell Average Air Temp.	292° F
Torus Pressure	19.0 psig
Reactor Pressure	675 psig
Reactor Water Level	100 inches
HPCI System	Unavailable
RCIC System	Started at LL2 and injecting

Which one of the following identifies the current status of the ADS Initiation Timer and what operator action must be taken in accordance with PCCP?

ADS Initiation Timer \_\_\_\_\_ started;  
Before Drywell Average Air temperature reaches 300° F, \_\_\_\_\_.

- A. has;  
Drywell Spray is required
- B✓ has not;  
Drywell Spray is required
- C. has;  
Emergency Depressurization is required
- D. has not;  
Emergency Depressurization is required

REFERENCE:  
SD-20 Automatic Depressurization System, section 3.3 Logic  
PCCP

EXPLANATION:  
The conditions required to start the ADS timer have not been meet. (LL3 / 45 inches)  
The conditions listed require entry into PCCP. Per the direction of PCCP, before drywell average air temperature reaches 300F, spray the drywell.

CHOICE "A" - Incorrect. ADS timer has not started

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. ADS timer has not started

CHOICE "D" - Incorrect. Per PCCP, emergency depress is required if drywell temp cannot be restored and maintained below 300°F.

218000 ADS

A2. Ability to (a) predict the impacts of the following on the AUTOMATIC DEPRESSURIZATION 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)

A2.01 Small steam line break LOCA . . . . . 4.1 / 4.3\*

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-020, Obj. 11. Given plant conditions, determine if an automatic initiation of ADS should occur.

COG LEVEL: High

17. Unit Two is operating at full power.

2B RHR and 2B RHR SW pumps have been placed in Suppression Pool Cooling to lower torus temperature.

A subsequent LOCA causes reactor water level to drop rapidly.

Plant conditions are as follows:

Drywell Pressure	18.1 psig
Torus Pressure	13.7 psig
Reactor Pressure	885 psig
Reactor water level	36 inches
E11-F048B	Closed

Which one of the following describes the effect these conditions will have on the status of Suppression Pool Cooling?

- A. 2B RHR and 2B RHR SW pumps remain running  
E11-F048B will auto open
- B. 2B RHR and 2B RHR SW pumps remain running  
E11-F048B will remain closed
- C✓ ONLY the 2B RHR SW Pump will trip  
E11-F048B will auto open
- D. ONLY the 2B RHR SW Pump will trip  
E11-F048B will remain closed

REFERENCE:

SD-17 Residual Heat Removal System, section 3.9

EXPLANATION:

The student must first recognize that an RHR initiation signal is present. (LL3) Upon receipt of the initiation signal, the HX bypass valve will receive an auto open signal and will be prevented from closing for 3 minutes and RHR SW will receive a trip signal.

CHOICE "A" - Incorrect. The RHR SW pump will auto trip.

CHOICE "B" - Incorrect. The F048 will auto open and be interlocked for three minutes and the RHR SW pump will auto trip.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. The F048 will auto open and be interlocked for three minutes.

219000 RHR/LPCI: Torus/Pool Cooling Mode

K1. Knowledge of the physical connections and/or cause effect relationships between RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.09 Nuclear boiler instrumentation . . . . . 3.3 / 3.4

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-17, Obj. 9. given an RHR pump or valve, list the interlocks, permissives and/or automatic actions associated with the RHR pump or valve, including setpoints.

COG LEVEL: High

18. During an ATWS, circuit alterations are performed per EOP-SEP-10, Circuit Alteration Procedure, to prevent a Group I Isolation from occurring.

Which one of the following Group I Isolation signals is defeated by this circuit alteration and how is the alteration physically accomplished?

- A✓ Low Reactor Water Level;  
Installing jumpers
- B. Low Condenser Vacuum;  
Installing jumpers
- C. Low Reactor Water Level;  
Bypass Switch
- D. Low Condenser Vacuum;  
Bypass Switch

REFERENCE:  
SEP-10 Circuit Alterations

EXPLANATION:  
The Gp 1 Isolation signal is defeated in these conditions to prevent a closure of the MSIVs as reactor water level is intentionally lowered to assist in controlling power. Jumpers must be installed. there is a bypass switch for the Low condenser vacuum, but it is not in SEP-10.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. Gp 1 Isolation signal, but it is not defeated.

CHOICE "C" - Incorrect. Jumpers must be installed to bypass this.

CHOICE "D" - Incorrect. Gp 1 Isolation signal, but it is not defeated and Jumpers must be installed to bypass the required signal.

223002 PCIS / Nuclear Steam Supply Shutoff

K4. Knowledge of PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF design feature(s) and/or interlocks which provide for the following: (CFR: 41.7)

K4.08 †Manual defeating of selected isolations  
during specified emergency conditions . . . . . 3.3 / 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-300K, Obj. 18e. Explain the reasons for installation of jumpers to defeat/actuate the following: MSIV LL3 Isolation.

COG LEVEL: Low

19. Unit One is performing OGP-02, Approach to Criticality and Pressurization of the Reactor, with the following plant conditions:

- MSIVs are open
- Inboard Drain Isolation valve, B21-F016, is open
- Outboard Drain Isolation valve, B21-F019, is open

Which one of the following identifies the plant response to opening the feeder breaker to 1A RPS MG set?

- A✓ The AC solenoids on the Inboard MSIVs and the DC solenoids on the Outboard MSIVs de-energize. The B21-F016 closes.
- B. The AC solenoids on the Inboard MSIVs and the DC solenoids on the Outboard MSIVs de-energize. The B21-F019 closes.
- C. The DC solenoids on the Inboard MSIVs and the AC solenoids on the Outboard MSIVs de-energize. The B21-F016 closes.
- D. The DC solenoids on the Inboard MSIVs and the AC solenoids on the Outboard MSIVs de-energize. The B21-F019 closes.

REFERENCE:

SD-3.0 Reactor Protection System, section 4.1.4

EXPLANATION:

Opening the feeder breaker to the 'A' RPS MG set will cause RPS bus 'A' to deenergize. RPS MG Flywheel action will not keep the bus energized. A half Group 1 A1/A2 MSIV isolation occurs due to loss of power to isolation logic. The Inboard steam line drain and div 1 reactor sample valve F016 will close.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. the outboard valve does not close

CHOICE "C" - Incorrect. this would be for a loss of B RPS.

CHOICE "D" - Incorrect. this would be for a loss of B RPS. the outboard valve does not close

223002 PCIS / Nuclear Steam Supply Shutoff

K6. Knowledge of the effect that a loss or malfunction of the following will have on the PRIMARY CONTAINMENT ISOLATION SYSTEM/NUCLEAR STEAM SUPPLY SHUT-OFF: CFR: 41.7 / 45.7)

K6.08 Reactor protection system . . . . . 3.5 / 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-03, Obj. 18a. State the power supplies for the following: RPS MG Set A.

COG LEVEL: High

20. On Unit Two, the SRO directs the RO to place drywell sprays in service per 0EOP-01-SEP-02, Drywell Spray Procedure.

During the execution of SEP-02, SW-V111, Conv SW to Vital Header Vlv, trips on magnetics and remains in the full closed position.

Which one of the following describes the impact this failure will have on RHR/Drywell Spray system and also identifies the required operator actions in accordance with SEP-02?

- A. loss of cooling water to RHR Room Coolers only;  
Open SW-V117, Nuc SW to Vital Header Vlv.
- B. loss of cooling water to RHR Room Coolers only;  
Open SW-V118, Vital Header Crosstie Vlv.
- C✓ loss of cooling water to RHR Room Coolers and RHR Pump Seal Coolers;  
Open SW-V117, Nuc SW to Vital Header Vlv.
- D. loss of cooling water to RHR Room Coolers and RHR Pump Seal Coolers;  
Open SW-V118, Vital Header Crosstie Vlv.

REFERENCE:

SEP-02 Drywell Spray Procedure  
SD-17 Residual Heat Removal System

EXPLANATION:

SEP-02 directs supplying cooling water to the vital header by opening either the SW-V111 valve or the SW-V117 valve. If one is unavailable or trips, the procedure will direct opening the other valve. Opening the SW-V118 is not an option provided in SEP-02. The loads supplied by the vital header include the RHR Room Coolers and the RHR Pump Seal Coolers.

CHOICE "A" - Incorrect. Cooling is also lost to the RHR Pump seal coolers

CHOICE "B" - Incorrect. Cooling is also lost to the RHR Pump seal coolers; Opening SW-V118 is not a procedural option.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. Opening SW-V118 is not a procedural option.

226001 RHR/LPCI: CTMT Spray Mode

A2. Ability to (a) predict the impacts of the following on the RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE ; 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)

A2.03 Valve closures . . . . . 3.1 / 3.1

SOURCE: New

LESSON PLAN/OBJECTIVE:

COG LEVEL: High

21. Following a dual unit Loss Of Offsite Power, which one of the following is the first makeup source to be used for filling the fuel pool in accordance with OAOP-38.0, Loss of Fuel Pool Cooling?

- A. Demin water header stations
- B. Fire Protection Hose Stations**
- C. Condensate transfer pumps
- D. Emergency Diesel Makeup Pump via hoses

REFERENCE:

AOP-38.0 Loss of Fuel Pool Cooling

SD-13 section 4.2.1

EXPLANATION: The preferred order of the makeup sources is from the normal fill, Demin water hose stations, Fire protection hose stations, and then other sources that are not service water. With a LOOP the demin pumps have no power so Fire protection must be used.

CHOICE "A" - Incorrect. although this is a makeup source it does not have power.

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. this is not a makeup source to the fuel pool, although it is to other systems.

CHOICE "D" - Incorrect. although this is a makeup source it is not the preferred source (last resort per the procedure).

233000 Fuel Pool Cooling / Cleanup

2.4.6 Knowledge of EOP mitigation strategies. (CFR: 41.10 / 43.5 / 45.13)

IMPORTANCE RO 3.7 SRO 4.7

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-13, Obj. 11. State the sources of makeup water for the Fuel Pool in order of preference.

COG LEVEL: Low

22. A reactor scram has occurred with the following plant conditions:

Reactor Pressure	1100 psig
Drywell Pressure	2.5 psig
EHC Pumps	Tripped

Which one of the following systems is available and allowed for use in accordance with RVCP to stabilize pressure below 1050 psig?

- A. HPCI
- B. RCIC
- C. Main Steam Line Drains
- D. Main Turbine Bypass Valves

REFERENCE:  
Level Power Control Procedure

EXPLANATION:  
With EHC tripped and the scram the bypass valves will not work, with Hi drywell pressure the HPCI system will be running and cannot be put in pressure control with an initiation signal present. RCIC will not be able to be put in pressure control because HPCI has an initiation signal which closes the redundant CST return valve.

- CHOICE "A" - Incorrect. With level hi drywell pressure HPCI cannot be placed in pressure control mode.
- CHOICE "B" - Incorrect. With level hi drywell pressure HPCI will be running and RCIC cannot be placed in pressure control mode
- CHOICE "C" - Correct Answer
- CHOICE "D" - Incorrect. With no EHC and the reactor scrammed bypass valves are not available

239001 Main and Reheat Steam

K3. Knowledge of the effect that a loss or malfunction of the MAIN AND REHEAT STEAM SYSTEM will have on following: (CFR: 41.7 / 45.4)

K3.09 Steam bypass capability . . . . . 3.6 / 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-300E, Obj. 11. Given plant conditions and the LPC procedure determine the operator actions required to stabilize or reduce reactor pressure.

COG LEVEL: High

23. Which one of the following describes the effect that a loss of E8 will have on the Unit Two Safety Relief Valve (SRV) system?

- A. Inability to manually operate SRV's from the RTGB
- B. Inability to manually operate SRV's from the RSDP
- C✓ Loss of SRV position indication on the RTGB
- D. Loss of SRV position indication on the RSDP

REFERENCE:

SD-20 Automatic Depressurization System, section 4.3.4/4.3.5

EXPLANATION:

SRV position indication on the RTGB is powered thru the acoustic sensors which are powered from E6/E8.

CHOICE "A" - Incorrect. powered from 125 VDC

CHOICE "B" - Incorrect. powered from 125 VDC

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. powered from 125 VDC

239002 SRVs

K6. Knowledge of the effect that a loss or malfunction of the following will have on the RELIEF/SAFETY VALVES : (CFR: 41.7 / 45.7)

K6.03 A.C. power: Plant-Specific ..... 2.7\* / 2.9\*

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-20, Obj. 15c. Given plant conditions, predict how ADS/SRVs will be affected by the following:  
Loss of AC power.

COG LEVEL: Low

24. Unit Two is in power ascension following a refueling outage.

Reactor power is currently 22%.

The generator has been synchronized with the grid.

Load Limit is set to 110%

GP-04, Increasing Turbine Load to Rated Power, directs increasing turbine Load Set to 100%.

(reference provided)

If the RO adjusts Turbine Load Set to 90%, which one of the following predicts how the plant will respond as reactor power is raised?

- A. When turbine load exceeds 90%, reactor pressure will increase and cause a reactor scram.
- B. When reactor power reaches 100% then turbine load will be 100%.
- C✓ When turbine load exceeds 90%, bypass valves will open to control turbine inlet pressure.
- D. When turbine load reaches 90%, bypass valves will open causing a Group I Isolation.

REFERENCE:

SD-26.3 EHC Electrical System

EXPLANATION:

Load Set is a reference signal set from the RTGB. When sensed turbine load reaches the Load Set setting, additional turbine load is restricted. Any additional steam produced as a result of continuing to raise reactor power is diverted to the condenser via bypass valves.

CHOICE "A" - Incorrect. Bypass valves will open and control reactor pressure.

CHOICE "B" - Incorrect. Load limit set is used to limit how far the turbine control valves could actually open, especially during abnormal operation and testing. Load Set will still control load.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. Incorrect will not reach the low pressure while in run scram signal because bypass valves are opening due to high pressure.

241000 Reactor/Turbine Pressure Regulator (EHC)

K5. Knowledge of the operational Implications of the following concepts as they apply to REACTOR/TURBINE PRESSURE REGULATING SYSTEM: (CFR: 41.5 / 45.3)

K5.05 Turbine inlet pressure vs. Turbine load . . . . . 2.8\* 2.9\*

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-26.3, Obj. 9a. Given plant conditions, including manipulation of one of the following EHC control or parameter changes, predict the expected response of the main turbine and/or reactor protection system: Load Limit Set potentiometer.

COG LEVEL: High

25. With Unit Two operated at rated power, the 2A Feedwater Heater level reaches the Hi Hi Level setpoint due to a failed Feedwater Heater level control valve.

Which one of the following choices completes the statement below?

The Moisture Removal Valves will open to drain the extraction steam lines to the \_\_\_\_\_ and final feedwater temperature to the reactor will \_\_\_\_\_.

- A. Condenser;  
Increase
- B.  Condenser;  
Decrease
- C. Heater Drain Deaerator;  
Increase
- D. Heater Drain Deaerator;  
Decrease

REFERENCE:  
SD-34 Extraction Steam, section 3.1.1

EXPLANATION:  
A high-high level condition in the 2A FW Heater will cause the associated MRVs to open, directing 11th stage extraction steam to the condenser, and allowing the extraction line check valves to close. Feedwater heating is lost for this heater causing overall feedwater temperature to decrease.

CHOICE "A" - Incorrect. FW temperature will decrease

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect. MRVs open to the condenser; other LP FW heaters direct flow to the HDD

CHOICE "D" - Incorrect. MRVs open to the condenser; other LP FW heaters direct flow to the HDD

256000 Reactor Condensate

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

A3.08 Feedwater temperature . . . . . 3.1 / 3.1

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-34, Obj. 6a. Describe the effects of the following on the feedwater heater operation and feedwater temperature: High feedwater heater level.

COG LEVEL: High

26. Reactor pressurization is in progress per OGP-02, Approach to Criticality and Pressurization of the Reactor.

The feedwater system is aligned as follows:

RFP A is in Service  
RFP A Recirc Valve (FW-FV-V46) is open  
Reactor Pressure is 400 psig  
SULCV (FW-LV-3269) in Auto  
Feedwater Heater 4A and 4B inlet isolation valves are closed  
FW-FV-177, Feedwater Recirc Valve, throttled open with 0.5 Mlbm/hr.

Which one of the following choices predicts the automatic response of the SULCV and also completes the caution statement in accordance with GP-02?

If the operator throttles FW-FV-177 in the open direction, the SULCV will automatically throttle in the \_\_\_\_\_ direction. Opening the FW-FV-177 more than the \_\_\_\_\_ may cause feedwater line depressurization and loss of flow to the reactor vessel.

- A. open  
RFP A Recirc Valve
- B. closed  
RFP A Recirc Valve
- C.  open  
SULCV
- D. closed  
SULCV

REFERENCE:

GP-02 Approach to Criticality and Pressurization of the Reactor  
SD-32 Condensate and Feedwater System

EXPLANATION:

Throttling open the FW-V177 will divert flow from the reactor back to the condenser. This will require the SULCV to open further to provide the needed flow to maintain set reactor water level. A Caution in GP-02 warns against opening FW-V117 more than the SULCV may cause depressurization of the feedwater line and loss of flow to the reactor vessel.

CHOICE "A" - Incorrect. concern is greater than the SULCV not the recirc valve

CHOICE "B" - Incorrect. SULCV will open to maintain level; concern is greater than the SULCV not the recirc valve

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. SULCV will open to maintain level;

259002 Reactor Water Level Control

A1. Ability to predict and/or monitor changes in parameters associated with operating the REACTOR WATER LEVEL CONTROL SYSTEM controls including:  
(CFR: 41.5 / 45.5)

A1.05 FWRV/startup level control position: Plant-Specific . . . . . 2.9 / 2.9

SOURCE: Bank LOI-CLS-LP-32\* (22B)

LESSON PLAN/OBJECTIVE:

CLS-LP-32, Obj. 29e. Given plant conditions predict the changes in the Condensate and FW system parameters associated with operating the following equipment or controls: FW recirc to condenser valve, FW-FV-177.

COG LEVEL: High

27. Unit Two is operating at rated power with the following containment parameters:

Drywell Pressure	0.8 psig
Torus Pressure	1.2 psig

Torus venting is placed in service per 2OP-10, Standby Gas Treatment System Operating Procedure.

Which one of the following identifies the SBGT alignment and also identifies how containment pressure will initially respond as the torus is being vented?

- A. Align flow through both SBGT trains;  
Drywell Pressure will lower at the same rate as Torus Pressure.
- B. Align flow through both SBGT trains;  
Drywell Pressure will remain steady.
- C. Align flow through one SBGT train only;  
Drywell Pressure will lower at the same rate as Torus Pressure.
- D. Align flow through one SBGT train only;  
Drywell Pressure will remain steady.

REFERENCE:  
2OP-10 Standby Gas Treatment System

EXPLANATION:  
This is an evolution that is periodically performed on shift. There are independent lineup's for venting the torus vs. the drywell air space. Venting the torus will have no effect on drywell air space pressure. there are two trains of SBGT, while performing this evolution both of the trains are aligned.

CHOICE "A" - Incorrect Drywell pressure will not lower

CHOICE "B" - Correct

CHOICE "C" - Incorrect, flow is aligned to both trains of SBGT and Drywell pressure will not lower.

CHOICE "D" - Incorrect, flow is aligned to both trains of SBGT.

261000 SGTS

A1. Ability to predict and/or monitor changes in parameters associated with operating the STANDBY GAS TREATMENT SYSTEM controls including:  
(CFR: 41.5 / 45.5)

A1.02 Primary containment pressure . . . . . 3.1 / 3.2

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-04, Obj. 8. Describe the operation of the Suppression Chamber to Drywell Vacuum breakers.

COG LEVEL: High

28. Unit Two is operating at rated power with UPS in its normal alignment. Subsequently, offsite power is lost. DG3 and DG4 are unavailable. No electrical buses have been cross-tied.

Which one of the following choices completes the statements below?

The UPS Primary Inverter is currently being fed from DC Switchboard \_\_\_\_\_.  
If the Primary Inverter fails, \_\_\_\_\_.

- A✓ 2A.  
UPS loads will be de-energized.
- B. 2B.  
UPS loads will be de-energized.
- C. 2A.  
UPS will auto transfer to an alternate source.
- D. 2B.  
UPS will auto transfer to an alternate source.

REFERENCE:  
SD-52 120 VAC Distribution and UPS

EXPLANATION:  
DC input to primary inverter is from Div. I DC (2A). With the STBY unit in Bypass Test (the normal alignment), if the primary inverter fails UPS loads will be de-energized. Multiple UPS lineups are available dependent upon plant condition, making any of the answer options plausible.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect

CHOICE "C" - Incorrect

CHOICE "D" - Incorrect

262001 AC Electrical Distribution

K3. Knowledge of the effect that a loss or malfunction of the A.C. ELECTRICAL DISTRIBUTION will have on following: (CFR: 41.7 / 45.4)

K3.04 Uninterruptible power supply ..... 3.1 / 3.3

SOURCE: Bank LOI-CLS-LP-052-B\*005 (1)

LESSON PLAN/OBJECTIVE:  
CLS-LP-52, Obj. 9. Describe the effect that a loss or malfunction of the following will have on the UPS system: AC / DC Electrical distribution.

COG LEVEL: High

29. Unit One is operating at full power with the following plant conditions:

Suppression Pool	96° F due to HPCI Surveillance
RHR	B Loop in SPC (B/D pumps running)
RHR SW	B Loop in service (B/D pumps running)

A Loss of Offsite Power (LOOP) occurs on both Units and DG2 fails to start.

Which one of the following identifies the impact of the LOOP on the 1-E11-F024B and the 1D RHR Pump and also identifies the required action in accordance with 0AOP-36.1, Loss of any 4160V Buses or 480V E-Buses, to support EOP actions?

- A. 1-E11-F024B Valve only has lost power.  
Crosstie E2 to E4.
- B. 1-E11-F024B Valve only has lost power.  
Crosstie E1 to E2.
- C. 1-E11-F024B Valve and the 1D RHR pump have lost power.  
Crosstie E2 to E4.
- D. 1-E11-F024B Valve and the 1D RHR pump have lost power.  
Crosstie E1 to E2.

REFERENCE:

0AOP-36.1 Loss of Any 4160V Buses or 480V E-Buses  
SD-43 Service Water  
SD-17 Residual Heat Removal  
SD-50.1 4KV Distribution

EXPLANATION: With DG2 under clearance it will de-energize on the loss of offsite power. both RHR and RHR SW pumps D lose power. B NSW pump loses power and the A pump will auto start. CSW pumps lose power due to the LOOP. The RHR Loop B (F024) valve loses power.

CHOICE "A" Incorrect. RHR pump has also lost power.

CHOICE "B" Incorrect. RHR pump has also lost power, E1 to E2 can't be crosstied under these conditions

CHOICE "C" correct answer.

CHOICE "D" Incorrect. E1 to E2 can not be crosstied under these conditions.

262001 AC 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)

A2.03 Loss of off-site power . . . . . 3.9 / 4.3\*

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-50.1, Obj. 9. List the major equipment/loads on each of the 4160 VAC buses.

COG LEVEL: High

30. Unit Two is operating at 30% reactor power when a complete loss of the Vital UPS System occurs.

Which one of the following describes how this loss will affect RFPT operation?

- A. RTGB trip pushbutton function is lost.
- B. overspeed trip circuit will lose power causing RFPT Trip.
- C. vibration instrumentation will lose power causing RFPT Trip.
- D. RFPT woodward control trip circuits will be powered from their redundant power supplies.

REFERENCE:  
AOP-12 Loss of UPS  
OI-50.5

EXPLANATION:  
RFPT woodward control trip circuits are powered from UPS with redundant power supplies from non-UPS 120VAC supplies (C and D busses). The RFPT trip pushbutton is powered from 125 VDC.

CHOICE "A" - Incorrect. RFPT rip pushbutton powered from 125 VDC

CHOICE "B" - Incorrect - Trip circuit will be powered from redundant source; no RFPT trip will occur

CHOICE "C" - Incorrect. Trip circuit will be powered from redundant source; no RFPT trip will occur

CHOICE "D" - Correct Answer

262002 UPS (AC/DC)

K1. Knowledge of the physical connections and/or cause effect relationships between UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) and the following:  
(CFR: 41.2 to 41.9 / 45.7 to 45.8)

K1.02 RFPT Control ..... 2.8 / 3.0

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-32.3, Obj. 2. State the electrical power supplies for the RFPT DCS.

COG LEVEL: Low

31. Which one of the following choices completes the statements below regarding how a total loss of UPS will affect the Digital Feedwater Level Control System Controllers.

Level Setpoint adjustment is \_\_\_\_\_.

Level Setdown \_\_\_\_\_ occur following a reactor scram.

- A. available;  
will
- B. available;  
will not
- C. not available;  
will
- D✓ not available;  
will not

REFERENCE:  
SD-52 Section 4.2.1 Vital UPS Failure

EXPLANATION:  
A Loss of UPS will cause the RFPT controller screens to go blank. The backup DC power supplies will allow continued operation however, the operator will be unable to adjust level setpoint. Reactor Water level setdown will not occur in the event of a reactor scram.

CHOICE "A" - Incorrect. level setpoint adjustment is not available; level setdown will not occur

CHOICE "B" - Incorrect. level setpoint adjustment is not available;

CHOICE "C" - Incorrect. level setdown will not occur

CHOICE "D" - Correct Answer

262002 UPS (AC/DC)

K3. Knowledge of the effect that a loss or malfunction of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) will have on following:  
(CFR: 41.7 / 45.4)

K3.01 Water Level Control . . . . . 3.1 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-52, Obj. 8e. describe the effect that a loss or malfunction of the UPS system will have on plant operations, including the following: Feedwater level control.

COG LEVEL: Low

32. Which one of the following is the power supply to the Outboard MSIV's DC solenoids on Unit One?

- A. Div 1 Switchboard 21A.
- B. Div 2 Switchboard 22B.
- C. Div 1 Switchboard 1A.
- D✓ Div 2 Switchboard 1B.

REFERENCE:

OI-50.0 DC Load List, page 44

EXPLANATION:

Unit 1 Outboard MSIV DC solenoids are powered from Div.2 Switchboard 1B

CHOICE "A" - Incorrect. Wrong Division of DC

CHOICE "B" - Incorrect. Wrong switchboard, however 22B is a Unit 1 panel

CHOICE "C" - Incorrect. Wrong Division of DC

CHOICE "D" - Correct Answer

263000 DC Electrical Distribution

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

K2.01 Major D.C. loads ..... 3.1 / 3.4

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-25, Obj. 5. List the power supplies (division and voltage) for the MSIV solenoids.

COG LEVEL: Low

33. Unit Two experiences a Loss of Off-Site Power (LOOP) with DG4 under clearance.

Which one of the following predicts the NSW and CSW pump response when the DG3 ties to bus E3?

- A. NSW pump 2A and CSW pump 2A start immediately.
- B. NSW pump 2A and CSW pump 2A start after a 5 second time delay.
- C✓ NSW pump 2A starts immediately and CSW pump 2A does not start.
- D. NSW pump 2A starts after a 5 second time delay and CSW pump 2A does not start.

REFERENCE:

SD-43 Service Water, section 3.2.1 / 3.2.2

EXPLANATION:

2A NSW pump and 2A CSW pump are both powered from emergency bus E3. On a LOOP they will loss power until bus E3 is reenergized from DG3. Immediately following reenergization of E3, 2A NSW will start. With a concurrent LOCA, a 5 second time delay exists. 2A CSW will remain off.

CHOICE "A" - Incorrect. CSW pump remains OFF

CHOICE "B" - Incorrect. CSW pump remains OFF, NSW pump starts immediately

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect. NSW pump starts immediately

264000 EDGs

K5. Knowledge of the operational implications of the following concepts as they apply to EMERGENCY GENERATORS (DIESEL/JET) : (CFR: 41.5 / 45.3)

K5.06 Load sequencing . . . . . 3.4 / 3.5

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-39, Obj 8. Describe how an EBus will sequence load if the unit has a LOCA signal.

COG LEVEL: High

34. Unit Two is operating at rated power with the A SJAE train in service at Full Load.

A clearance tagging error results in the closure of the SJE-V15, Recombiner Preheater Steam Supply Valve followed by the following alarm:

RECOMBINER INLET TEMPERATURE LOW

Which one of the following describes the effect these conditions will have on Main Condenser vacuum and downstream Hydrogen concentrations?

Main Condenser vacuum will \_\_\_\_\_.

Hydrogen concentrations will \_\_\_\_\_.

A ✓ remain steady;  
increase

B. remain steady;  
decrease

C. degrade;  
increase

D. degrade;  
decrease

REFERENCE:

SD-30 Condenser Air Removal and Off-Gas Recombiner System, fig. 30-4  
APP-UA-44 (3-2) RECOMBINER INLET TEMP LOW

EXPLANATION:

The closure of SJE-V15 will have no effect on operation of the SJAEs and no effect on condenser vacuum. The loss of the recombinder Preheater steam source and resultant low recombinder temperature will cause recombinder efficiency to drop, causing downstream hydrogen concentrations to rise.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. H<sub>2</sub> concentrations will increase

CHOICE "C" - Incorrect. vacuum will remain steady

CHOICE "D" - Incorrect. vacuum will remain steady; H<sub>2</sub> concentrations will increase

271000 Offgas

K3. Knowledge of the effect that a loss or malfunction of the OFFGAS SYSTEM will have on following:  
(CFR: 41.5 / 45.3)

K3.01 Condenser vacuum . . . . . 3.5 / 3.5

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-30, Obj. 11. Given the necessary plant conditions, describe the effect that a malfunction or loss of the CAR/AOG system would have on the following: Main condenser Vacuum.

COG LEVEL: High

35. Which one of the following identifies the power supplies for the Electric Driven Fire Pump?

The normal power supply is from:

- A. E2, with an automatic transfer to E4 on loss of power
- B. E4, with an automatic transfer to E2 on loss of power
- C✓ E2, must be manually transferred to E4 on loss of power
- D. E4, must be manually transferred to E2 on loss of power

REFERENCE:

SD-41 Fire Protection System, section 2.1.3 Electric Fire Pump

EXPLANATION:

The electric fire pump is normal powered from E2 with a manual transfer capability to E4. the transfer was designed to be an automatic transfer, but is disabled so that it has to be performed manually.

CHOICE "A" - Incorrect, see explanation.

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect, see explanation.

286000 Fire Protection

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

K2.02 Pumps ..... 2.9 / 3.1

SOURCE: Bank LOI-CLS-LP-041\*11B

LESSON PLAN/OBJECTIVE:

CLS-LP-41, Obj. 11b. Identify the distribution system which supplies power for the following components: Motor driven fire pump.

COG LEVEL: Low

36. A plant transient and subsequent safety relief valve malfunction results in reactor steam dome pressure reaching 1300 psig.

Which one of the following choices completes the following statements?

Reactor vessel design pressure \_\_\_\_\_ been exceeded.

Tech Spec 2.1.2, Reactor Coolant System Pressure Safety Limit \_\_\_\_\_ been exceeded.

- A. has;  
has
- B. has;  
has not
- C. has not;  
has
- D. has not;  
has not

REFERENCE:  
Tech Spec bases for Safety Limits

EXPLANATION:  
Per TS Bases, the RCL pressure safety limit is 1325 psig steam dome pressure and the reactor vessel design pressure is 1250 psig. 1325 psig steam dome pressure corresponds to 1375 psig bottom head pressure which is 110% of the reactor design pressure. 110% of design pressure is the maximum pressure allowed by ASME standards.

CHOICE "A" - Incorrect, see explanation.

CHOICE "B" - Correct Answer

CHOICE "C" - Incorrect, see explanation.

CHOICE "D" - Incorrect, see explanation.

290002 Reactor Vessel Internals

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

K6.06 Relief/safety valves . . . . . 3.0 / 3.2

SOURCE: New

LESSON PLAN/OBJECTIVE:

COG LEVEL: Low

37. Unit Two is operating at 19% power with the turbine on the turning gear when the following indications are observed:

SJAE Trains	Both in half load
AOG System Outlet Flow	80 scfm and slowly rising
Condenser Vacuum	Slowly lowering
Steam Seal header pressure	0 psig

Which one of the following identifies the required operator action in accordance with 0AOP-37, Low Condenser Vacuum?

- A. Place B SJAE in full load
- B. Start the mechanical vacuum pump
- C. Throttle open MVD-S2, Steam Seal Bypass Valve
- D. Throttle open the SJAE Condensate Recirculation Valve, CO-FV-49

REFERENCE:  
SD-30 pages 28-29  
2APP-UA-48 5-3

EXPLANATION:  
Increase in off gas flow is an indication of a loss of vacuum condition. Normal pressure of the steam seal header is 1.5 to 4 psig. Increased flow is in through the seals so by opening the steam seal bypass valve more steam would be applied to the seals in order to provide sealing steam.

CHOICE "A" Incorrect, placing in full load would have no effect on steam seals.

CHOICE "B" Starting a mechanical vacuum pump would help in removing air from the condenser except it is not allowed to be put into service with the unit at power.

CHOICE "C" correct answer.

CHOICE "D" At low power this is an option to increase the efficiency, but would have no effect on steam seals.

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

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-30, Obj. 11. Given the necessary plant conditions, describe the effect that a malfunction or loss of the CAR/AOG system would have on the following: Main condenser Vacuum.

COG LEVEL: Higher order

38. A LOCA occurs on Unit One concurrent with a LOOP on both Units.

A DG3 lockout occurs due to a protective relay actuation.

Which one of the following is the response of the Unit One Low Pressure ECCS systems?

There will be injection from \_\_\_\_\_ of Core Spray.

There will be injection from two RHR pumps in \_\_\_\_\_.

- A.  both loops  
   only one loop
- B. only one loop  
   only one loop
- C. both loops  
   both loops
- D. only one loop  
   both loops

REFERENCE:  
Station Load Lists

EXPLANATION:  
4 KV Bus E3 supplies power to bus E7 which supplies power to RHR Loop A injection valve F017A. With this valve de-energized only loop B will inject. Both Core Spray loops are powered from Unit 1 buses E1 and E2.

CHOICE "A" Correct Answer

CHOICE "B" Is incorrect because both loops of core spray have power from buses E1 and E2. Possible distractor if the examinee is thinking Unit Two.

CHOICE "C" Is incorrect because both loops of core spray have power from buses E1 and E2 and the Unit 1 A side RHR injection valve is closed with a loss of power. Possible distractor if the examinee is thinking Unit Two and does not apply the power supply to the injection valve.

CHOICE "D" Is incorrect because both loops of core spray have power from buses E1 and E2 and the Unit 1 A side RHR injection valve is closed with a loss of power.

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)

AK1.03 Under voltage/degraded voltage effects on electrical loads..... 2.9 / 3.2

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-17 Obj. 18. Given plant conditions, determine how the following will affect the RHR system: Loss of AC Power.

COG LEVEL: High

39. Which one of the following is the effect of a loss of the 24 VDC power supply located in RPS Analog Trip Cabinet A1?

- A. A1 remains energized from B1
- B✓ A1 remains energizes from A2
- C. A1 loses power and trip functions occur
- D. A1 loses power and trip functions do not occur

REFERENCE:  
0AOP-39, Attachment 3.

EXPLANATION:  
RPS Analog Trip Cabinet A1 output failure would be auctioneered to the output of A2, no power loss or trip functions would occur.

CHOICE "A" redundant power source is not from B1, plausible since it may be thought of as same division xtie.

CHOICE "B" Correct answer.

CHOICE "C" Incorrect, plausible because if the input to the trip cabinet failed then both A1 and A2 would de-energize.

CHOICE "D" Incorrect but plausible because this is how ECCS trip cabinets would react to this type of failure.

295004 Partial or Complete Loss of D.C. Power

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

AK1.02 Redundant D.C. power supplies: Plant-Specific..... 3.2 / 3.4

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-302-G Obj. 2, List the automatic actions expected to occur in accordance with the following AOP's: 0AOP-39, Loss of DC Power.

COG LEVEL: Low

40. Which one of the following identifies the reason that the Turbine Bypass Valves will open following a main turbine trip from full power?

- A. Prevent overspeeding of the main turbine during the coastdown.
- B. Prevent over pressurization of the MSR cross-over piping.
- C✓ Prevent over pressurization of the reactor vessel.
- D. Prevent rupture of the LP Turbine rupture discs.

REFERENCE:  
SD-26

EXPLANATION:  
Bypass valves open to prevent overpressurization of the reactor when the turbine control valves close on a turbine trip signal.

CHOICE "A" The intermediate stop valves close on a turbine trip to prevent overspeeding the main turbine. Extraction steam will be lost following a turbine trip and bypass steam is directed to the main condenser.

CHOICE "B" over pressurization is a function of the cross over relief valves.

CHOICE "C" correct answer

CHOICE "D" No problem with the condenser (vacuum) which would cause pressurization of the LP turbine.  
295005 Main Turbine Trip

AK3. Knowledge of the reasons for the following responses as they apply to MAIN TURBINE GENERATOR TRIP: (CFR: 41.5 / 45.6)

AK3.07 Bypass valve operation..... 3.8 / 3.8

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-26 Obj. 4f, Describe the operation of the following Main Turbine related components: Bypass Valves.

COG LEVEL: low/Fund

41. Which one of the following Scram Immediate Operator actions has a different setpoint between Unit One and Unit Two?

- A. Tripping of the main turbine.
- B. Tripping of the first feed pump.
- C. Master level controller setpoint setdown.
- D. Placing the reactor mode switch to Shutdown.

REFERENCE:  
0EOP-01-UG (pg. 22)

EXPLANATION:  
The mode switch on Unit Two is not placed to shutdown until steam flow is less than 3 Mlbs/hr. This requirement does not exist on Unit One.

CHOICE "A" When APRM's are downscale (<2%) the main turbine is tripped. (Same on both units)

CHOICE "B" If two feed pumps are running, and reactor water level is above +160 inches, then trip one feed pump. (Same on both units)

CHOICE "C" Ensure the master reactor level controller setpoint is +170 inches. (Same on both units)

CHOICE "D" Unit One - Place the reactor mode switch to Shutdown. Unit Two - After steam flow is less than 3 Mlbs/hr, place the reactor mode switch to Shutdown. *(correct answer)*

295006 SCRAM

2.2.3 (multi-unit license) Knowledge of the design, procedural, and operational differences between units. (CFR: 41.5 / 41.6 / 41.7 / 41.10 / 45.12)

IMPORTANCE RO 3.8 SRO 3.9

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-300-C Obj. 2, List the immediate operator actions for a reactor scram.

COG LEVEL: fund

42. Unit One was operating at full power when a scram occurred due to a loss of drywell cooling with the following plant conditions.

Reactor water level	155 inches (slowly lowering)
Drywell pressure	2.1 psig (slowly rising)
High Level Trip A	Amber light extinguished
High Level Trip B	Amber light illuminated
High Level Trip C	Amber light illuminated

Which one of the following is the status of the reactor feed pumps and HPCI system?

The Reactor feed pump turbines:

- A. are running and HPCI is injecting to the vessel.
- B. are tripped, but HPCI is still injecting to the vessel.
- C. are running, but HPCI is tripped.
- D. and HPCI are both tripped.

REFERENCE:  
SD-19 page 33 / SD-32

EXPLANATION:  
The reactor feed pumps and HPCI will trip on a two out of three logic. The high water trip amber lights feed into the RFP trip logic and provide indication that a high level condition exists. With drywell pressure greater than 2 psig HPCI should have auto started, but it had tripped on high level and will not restart automatically until LL2, with level lowering is also an indication that it is tripped. These must be manually reset to restart the pumps with the exception of HPCI which will auto restart if level is below LL2.

CHOICE "A" Feed pumps and HPCI would be tripped on the two out of three logic. Hi DW pressure does not auto reset the trip logic, LL2 would.

CHOICE "B" HPCI would be tripped. Hi DW pressure does not auto reset the trip logic, LL2 would.

CHOICE "C" Reactor feed pumps would be tripped on the two out of three logic.

CHOICE "D" Correct answer.

295008 High Reactor Water Level

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

AK2.03 Reactor water level control..... 3.6 / 3.7

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-19 Obj 16a, Given plant conditions, determine if the following actions should occur: HPCI Turbine automatic trip.

COG LEVEL: Higher Order

43. Unit One is at rated power when a scram signal is received.

Reactor water level drops and RWCU isolates.

Which one of the following level indicators, if any, was indicating on scale and available for use when RWCU isolated?

- A. Fuel Zone (N036/N037) instruments only
- B. Wide range (N026A/B) instruments only
- C✓ Both Fuel Zone (N036/N037) and Wide Range (N026A/B) instruments
- D. Neither Fuel Zone (N036/N037) nor Wide Range (N026A/B) instruments were available.

REFERENCE:  
SD-01.2

EXPLANATION:  
RWCU isolates at LL2 (105 inches) with the Wide Range (N026A & B) indications from 0-210 inches and the Fuel Zone (N036 & 37) indicators onscale due to the Recirc pumps tripping at LL2.

CHOICE "A" Wide range indicators have a scale from 0-210.

CHOICE "B" Fuel Zone indicators are on scale since the Recirc pumps have tripped.

CHOICE "C" Correct answer.

CHOICE "D" both indicators are on scale.

295009 Low Reactor Water Level

AK2. Knowledge of the interrelations between LOW REACTOR WATER LEVEL and the following: (CFR: 41.7 / 45.8)

AK2.01 Reactor water level indication..... 3.9 / 4.0

SOURCE: Bank

LESSON PLAN/OBJECTIVE:  
CLS-LP-01.2 Obj. 4a, List the systems which receive input from the Vessel Instrumentation system for the following: Level signal.

COG LEVEL: Higher Order

44. Unit Two was operating at 100% power when a steam line break caused drywell pressure to rise.

Which one of the following identifies the normal temperature relationship between compensated and uncompensated level instrument legs and also identifies the level instruments that will first be affected as drywell temperature rises due to the steam leak?

- A✓ The compensated level instrument legs are at a higher temperature than the uncompensated legs, the compensated level instrument legs will boil first.
- B. The uncompensated level instrument legs are at a higher temperature than the compensated legs, the uncompensated level instrument legs will boil first.
- C. Both instrument legs are at the same temperature. The compensated level instrument legs will boil first.
- D. Both instrument legs are at the same temperature. The uncompensated level instrument legs will boil first.

REFERENCE:  
SD-01.2 page 11-12

EXPLANATION:

If an accident should occur that causes drywell temperature to increase and reactor pressure to decrease, boiling can take place in the level instrument legs. The question is; which arrangement, compensated or uncompensated, will boiling most likely occur in first? Since the compensated level instrument legs are at a higher temperature than the uncompensated legs, they will reach a higher temperature first. It should be pointed out that the legs do not heat up to drywell temperature immediately, as there is a thermal time constant that can be 4 to 6 minutes. A time constant is the amount of time required for a signal or a parameter to reach 63.21% of the final value. After 5 time constants the signal is > 99% of the final value. A 4 to 6 minute time constant means that it can take from 20 to 30 minutes for the reference legs to heat up to drywell temperature.

CHOICE "A" Correct answer.

CHOICE "B" The compensated legs are at a higher temperature than the uncompensated legs.

CHOICE "C" Both instrument legs are not at the same temperature.

CHOICE "D" Both instrument legs are not at the same temperature.

295010 High Drywell Pressure

AK1. Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : (CFR: 41.8 to 41.10)

AK1.03 Temperature increases..... 3.2 / 3.4

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-01.2 Obj. 5C, Explain the effect that the following will have on reactor vessel and/or pressure indications: High containment (primary and secondary) temperatures.

COG LEVEL: Fund

45. A turbine trip and reactor scram occurs on Unit One. The following indications are on the full core display:

Green Lights Lit	136 rods
Red lights Lit	one rod

Which one of the following choices completes the statements below?

RWM Shutdown Confirmation Screen will display \_\_\_\_\_.

The reactor \_\_\_\_\_ remain shutdown under all conditions without boron.

A.  Shutdown: NO  
will

B.  Shutdown: NO  
will not

C.  Shutdown: YES  
will

D.  Shutdown: YES  
will not

REFERENCE:

SD-07.1 page 53 Criteria for reactor shutdown is defined as: No rod is withdrawn beyond position N, where N is selectable as a set parameter variable. The value of N is defined in the current Cycle Management Report. (This value is 00). The criteria for remaining shutdown without boron is all rods in with the caveat that 10 rods may be at position 02, or all rods in with one control rod at position 48 (SDM).

EXPLANATION:

With the green lights lit for 136 rods this means that they are fully inserted. The last rod having a red light indicates that it is at position 48. The RWM will indicate All Rods In = NO, Shutdown = NO, and it can be determined that the reactor will remain shutdown under all conditions without boron.

CHOICE "A" Correct answer

CHOICE "B" Incorrect, This condition does meet the definition of SDM.

CHOICE "C" Incorrect, Shutdown would indicate NO.

CHOICE "D" Incorrect, Shutdown would indicate NO.

295015 Incomplete SCRAM

AA2. Ability to determine and/or interpret the following as they apply to INCOMPLETE SCRAM : (CFR: 41.10 / 43.5 / 45.13)

AA2.02 Control rod position..... 4.1\* / 4.2\*

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-07.1 Obj. 12, Describe the conditions necessary to cause the Shutdown Confirmation screen to display YES for All Rods In.

COG LEVEL: fund

46. While reducing reactor pressure to place Shutdown Cooling in service in accordance with 0AOP-32.0, Plant Shutdown from Outside Control Room, the following reactor pressure readings were recorded at the indicated times:

1200	1000 psig
1300	425 psig
1400	100 psig
1500	25 psig

(reference provided)

Which one of the following choices completes the following statement?

The reactor cooldown rate specified in 0AOP-32.0:

- A. has not been exceeded
- B. was exceeded between 1200 and 1300
- C.  was exceeded between 1300 and 1400
- D. was exceeded between 1400 and 1500

REFERENCE:

0AOP-32

Steam Tables can be used as reference.

EXPLANATION:

Tech Spec requires cooldown at <100 deg F , cooldown from 1000-425 is 95 deg, from 425-100 is 115 deg and 100-25 is 90 deg per RPV saturation curve of 0AOP-32.0.

CHOICE "A" The 100°F cooldown limit was exceeded between 1300 and 1400 hours.

CHOICE "B" The cooldown between this time period is 95°F.

CHOICE "C" The cooldown between this time period is 115°F. *(Correct answer)*

CHOICE "D" The cooldown between this time period is 90°F.

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)

AA1.08 Reactor pressure..... 4.0 / 4.0

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-302-E Obj. 4, Given plant conditions (past and present) and 0AOP-32, Plant Shutdown from Outside the Control Room, plot cooldown rate.

COG LEVEL: Higher order

47. Unit Two is operating at rated power when the TCC-TV-607, MG Set Oil Cooler 2A Temperature Control Valve, fails to the closed position.

Which one of the following describes how this loss of cooling will affect the Recirculation MG Sets?

When the high lube oil temperature in the fluid drive reaches:

- A. 190° F the scoop tube will lock and the drive motor breaker remains closed.
- B. 190° F the drive motor breaker will trip and the scoop tube will lock.
- C. 210° F the scoop tube will lock and the drive motor breaker remains closed.
- D. 210° F the drive motor breaker will trip and the scoop tube will lock.

REFERENCE:

SD-02 page 33-34 Breaker trip  
SD-02 page 35 scoop tube lock

EXPLANATION:

Loss of cooling to the Recirculation MG Set will cause the temperature to rise and the drive motor breaker to trip and the scoop tube will lock at 210° F. The 190° F is the hi temperature alarm setpoint.

CHOICE "A" The scoop tube will not lock until 210° F. 190° F is the hi temperature alarm setpoint.

CHOICE "B" The scoop tube will not lock and the drive motor will not trip until 210° F. 190° F is the hi temperature alarm setpoint.

CHOICE "C" At 210° F the drive motor breaker will also trip.

CHOICE "D" Correct answer.

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

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-44 Obj 8a, Describe the effects that a loss or malfunction to the TBCCW system would have on the following: Reactor Recirculation System.

COG LEVEL: memory

48. Which one of the following identifies the signal(s) that will initiate the Backup Nitrogen System, including the reason for the Backup Nitrogen System?
- A. Low Reactor Building Instrument Air header or Core Spray LOCA signal.  
Ensures operability of ADS valves and Inboard MSIV's.
  - B. Core Spray LOCA signal ONLY.  
Ensures operability of ADS valves and Inboard MSIV's.
  - C✓ Low Reactor Building Instrument Air header or Core Spray LOCA signal.  
Ensures operability of ADS valves and the Hardened Wetwell Vent Valves.
  - D. Core Spray LOCA signal ONLY.  
Ensures operability of ADS valves and the Hardened Wetwell Vent Valves.

REFERENCE:  
SD-46 page 8

EXPLANATION:  
Following a core Spray LOCA and containment isolation signal the PNS supply to the DW will be isolated. The Backup Nitrogen System would supply pneumatics to SRV Accumulators, the Reactor Building to Suppression Chamber Vacuum Breaker Isolation Valves, and the Hardened Wetwell Vent Isolation Valves

CHOICE "A" Incorrect - does not supply the inboard MSIV's

CHOICE "B" Incorrect - does not supply the inboard MSIV's and low pressure on the RB header would also cause initiation.

CHOICE "C" Correct answer.

CHOICE "D" Incorrect - low pressure on the RB header would also cause initiation.

295019 Partial or Complete Loss of Instrument Air

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

AK3.01 Backup air system supply: Plant-Specific..... 3.3 / 3.4

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-46 Obj. 6, List the pneumatic loads supplied by the Nitrogen Backup System.

COG LEVEL: memory

49. Unit One shutdown is in progress with the following plant conditions:

RWCU is in service.  
Recirc Pump B is running.  
SDC A Loop has been lost.  
Feed and bleed has been established.  
Reactor Coolant Temperature is 190° F and lowering slowly.

Given this condition in progress, which one of the following identifies the PREFERRED indication to use to determine vessel metal temperature response in accordance with 1PT-01.7, Heatup/Cooldown Monitoring, including the reason?

- A. Bottom head metal temperature;  
metal temperature response leads the coolant temperature response during a cooldown.
- B. Bottom head metal temperature;  
coolant temperature response leads the metal temperature response during a cooldown.
- C. Bottom drain coolant temperature;  
metal temperature response leads the coolant temperature response during a cooldown.
- D. Bottom drain coolant temperature;  
coolant temperature response leads the metal temperature response during a cooldown.

REFERENCE:  
1PT-01.7, Heatup/Cooldown Monitoring

EXPLANATION:  
During cooldown, Bottom Head coolant temperature is the preferred source due to coolant temperature response leading vessel metal temperature response. If RWCU flow exists then use vessel bottom drain coolant temperature. If RWCU does not exist and recirc pumps are running then use recirc pump suction temperature. If RWCU and Recirc are not running then use bottom head metal temperature. Steam dome temperature would be used to determine coolant temperature if psat >212° F. As stated in the procedure the coolant temperature will lead the metal temperatures.

CHOICE "A" Incorrect - Coolant temp should be used and Metal temps will not lead coolant temps.

CHOICE "B" Incorrect - Coolant temp should be used.

CHOICE "C" Incorrect - Metal temps will not lead coolant temps.

CHOICE "D" Correct answer

295021 Loss of Shutdown Cooling

AA2. Ability to determine and/or interpret the following as they apply to LOSS OF SHUTDOWN COOLING : (CFR: 41.10 / 43.5 / 45.13)

AA2.05 Reactor vessel metal temperature ..... 3.4 / 3.5

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-307-B, Obj. 1G - Given plant conditions, monitor cooldown rate per PT-01.7.

COG LEVEL: Higher Order

50. Which one of the following is the primary containment pressure limit and the required action before this limit is reached in accordance with PCCP?

- A. 62 psig  
Vent primary containment irrespective of offsite release rate
- B. 62 psig  
Vent primary containment only if offsite release rate do not exceed ODCM limits
- C✓ 70 psig  
Vent primary containment irrespective of offsite release rate
- D. 70 psig  
Vent primary containment only if offsite release rate do not exceed ODCM limits

REFERENCE:  
SD-04 page 7/8

EXPLANATION: The calculated peak containment pressure is 49.4 psig which is increased by 25% to establish the drywell design pressure of 62 psig. the PCPL-A graph shows this limit is 70 psig.

CHOICE "A" Incorrect. PCPL-A graph shows this limit is 70 psig.

CHOICE "B" Incorrect. PCPL-A graph shows this limit is 70 psig and venting irrespective is required.

CHOICE "C" Correct answer.

CHOICE "D" Incorrect. when PCPL-A is exceeded venting irrespective is required.  
295024 High Drywell Pressure

EK1. Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE : (CFR: 41.8 to 41.10)

EK1.01 Drywell integrity: Plant-Specific..... 4.1 / 4.2\*

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-04, Obj. 2. State the PC design bases, including temperature and pressure limits for the DE and Suppression Chamber, as given in the FSAR.

COG LEVEL: low

51. Unit Two is operating at rated power with EHC Pressure Regulator B out of service.

Pressure Regulator A output fails low.

(Reference provided)

Which one of the following identifies how reactor pressure will respond and also identifies the availability of the bypass valves following the reactor scram?

- A. Reactor pressure will decrease and a scram will occur on a Group I Isolation. Bypass valves are not available using the Bypass Valve Jack.
- B✓ Reactor pressure will increase and a scram will occur on high pressure. Bypass valves will still be available using the Bypass Valve Jack.
- C. Reactor pressure will decrease and a scram will occur on a Group I Isolation. Bypass valves will still be available using the Bypass Valve Jack.
- D. Reactor pressure will increase and a scram will occur on high pressure. Bypass valves are not available using the Bypass Valve Jack.

REFERENCE:

Reference to be provided is the logic diagram for EHC Electrical SD-26.3 page 38

EXPLANATION:

This will cause steam flow to be restricted, reactor pressure to increase, and reactor power to increase due to void concentration. The result will be a reactor scram on either high pressure or high flux.

CHOICE "A" Incorrect - This would be correct for a failure of Pressure Regulator A output fails high. Bypass valves would be available using the jack only.

CHOICE "B" Correct Answer.

CHOICE "C" Incorrect - This would be correct for a failure of Pressure Regulator A output fails high.

CHOICE "D" Incorrect - Bypass valves would be available using the jack only.

295025 High Reactor Pressure

EK2. Knowledge of the interrelations between HIGH REACTOR PRESSURE and the following: (CFR: 41.7 / 45.8)

EK2.08 Reactor/turbine pressure regulating system: Plant- Specific..... 3.7 / 3.7

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-26.3 Obj. 9b - Given plant conditions, including manipulation of one of the following EHC control or parameter changes, predict the expected response of the main turbine and/or reactor protection system: max Combined Flow Limit potentiometer.

COG LEVEL: Higher Order

52. Unit One failed to scram with the following plant conditions:

Reactor Power	3%
RPV Water Level	-55 inches (N036)
RPV Pressure	800 psig
Suppression Pool	115° F

Which one of the following actions, if any, is required to open suppression pool cooling valves (E11-F024 and E11-F028)?

- A. Place the Think Switch to Manual only.
- B. No overrides are necessary.
- C. Place the Think Switch to Manual first and then bypass the 2/3rd core height interlock.
- D. Bypass the 2/3rd core height interlock first and then place the Think Switch to Manual.

REFERENCE:

SD-17 page 53 and figure 12 (page 112)

EXPLANATION:

LOCA signal is sealed in due to being less than LL3 (45 inches) RPV water level is less than 2/3rd core height (-47 inches) therefore the keylock switch and then the Think switch is required (sequencing is essential). The RHR SW pumps tripped on LL3 and can be overridden anytime (no sequence required).

CHOICE "A" The 2/3rd core height must also be overridden.

CHOICE "B" The Think Switch must also be placed in Manual.

CHOICE "C" The sequence of the Think switch has to be after the 2/3rd core height interlock.

CHOICE "D" Correct answer.

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

SOURCE: bank

LESSON PLAN/OBJECTIVE:

CLS-LP-17 Obj 9, Given an RHR pump or valve, list the interlocks, permissives and/or automatic actions associated with the RHR pump or valve, including setpoints.

COG LEVEL: higher order

53. Unit Two is operating at power with a leaking SRV. The ERFIS indication for the Suppression Pool Temperature has just turned RED.

Which one of the following identifies the temperature when ERFIS first turns RED and also identifies which procedure that must be entered?

- A✓ 95° F  
PCCP
- B. 105° F  
PCCP
- C. 95° F  
0AOP-14.0, Abnormal Primary Containment Conditions
- D. 105° F  
0AOP-14.0, Abnormal Primary Containment Conditions

REFERENCE:  
SD-60 pg 20 / 101

EXPLANATION:  
SPDS display will typically be green, when the temperature is >92 and <95 the indication will turn yellow and when it is >95 it will turn red which is an entry condition to PCCP. AOP-14 must be exited under these conditions, 95 and no testing being performed.

CHOICE "A" Correct answer. (SD-60 page 101)

CHOICE "B" 105 would be correct if testing was being performed.

CHOICE "C" AOP-14 must be exited under these conditions

CHOICE "D" 105 would be correct if testing was being performed and AOP-14 must be exited under these conditions.

295027 High Containment Temperature (Mark III Containment Only)

EK2. Knowledge of the interrelations between HIGH CONTAINMENT TEMPERATURE (MARK III CONTAINMENT ONLY) and the following: (CFR: 41.7 / 45.8)

EK2.04 SPDS/ERIS/CRIDS/GDS: Mark-III..... 2.6 / 3.2

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-60 Obj. 4a, Describe the methods used to do the following on the ERFIS/SPDS Computer:  
Evaluate EOP entry conditions.

COG LEVEL: memory

54. Conditions on Unit Two have degraded to where the Drywell Air Temperature is 340° F.

Which one of the following identifies the components whose environmental qualification is affected by this temperature in accordance with 00I-37.8, Primary Containment Control Procedure Basis Document?

- A. Inboard MSIV solenoids
- B✓ SRV solenoids
- C. Torus to Drywell Vacuum Breakers
- D. CAC 4409 and 4410 Hydrogen Analyzers

REFERENCE:  
00I-37.8 page 22

EXPLANATION:  
From the Bases document: Temperature should not be allowed to exceed the SRV maximum qualification temperature of 340° F.

CHOICE "A" MSIV's solenoids are not identified in the procedure.

CHOICE "B" Correct answer

CHOICE "C" these are not identified in the procedure.

CHOICE "D" these are not identified in the procedure.

295028 High Drywell Temperature

EK1. Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE : (CFR: 41.8 to 41.10)

EK1.02 Equipment environmental qualification..... 2.9 / 3.1

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-302L Obj. 4h, State the effect on Primary Containment if the following limits are exceeded:  
Drywell Design Temperature Limit.

COG LEVEL: Low

55. Which one of the following is the suppression pool level when a manual reactor scram is first required including the required action in accordance with PCCP?

A. -5.5 feet  
Anticipation of Emergency Depressurization is required.

B. -5.5 feet  
Emergency Depressurization is required

C. -6.5 feet  
Anticipation of Emergency Depressurization is required.

D. -6.5 feet  
Emergency Depressurization is required

REFERENCE:  
OI-37.8 page 46

EXPLANATION:  
A manual scram has to be inserted before level drops below the downcomer vent openings.  
The reactor is not permitted to remain at pressure if suppression of steam discharged from the reactor cannot be assured.

CHOICE "A" Once -5.5 feet has been achieved it is no longer an option to consider anticipation of ED.

CHOICE "B" correct answer

CHOICE "C" wrong level (HPCI Exhaust) and once -5.5 feet has been achieved it is no longer an option to consider anticipation of ED.

CHOICE "D" wrong level (HPCI Exhaust).

295030 Low Suppression Pool Water Level

2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.  
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

IMPORTANCE RO 4.4 SRO 4.7

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-300L Obj 8a, Given the PCCP and plant conditions, determine if the following actions are required: Manual Reactor Scram

COG LEVEL: memory

56. During a low reactor water level emergency on Unit One, the Reactor Vessel Control Procedure directs the operator to enter the Steam Cooling Procedure.

Which one of the following describes the reason Steam Cooling Procedure is performed?

The Steam Cooling Procedure utilizes steam cooling heat transfer \_\_\_\_\_ injection to maximize the time peak clad temperatures in the uncovered portion of the core do not exceed \_\_\_\_\_ °F.

- A. with  
1500
- B. with  
1800
- C. without  
1500
- D  without  
1800

Reference: 00I-37.7 Section 2.0 overview and step 017 basis

Explanation: Steam Cooling is entered when level drops below the minimum steam cooling reactor water level (LL4) and no injection sources are available. LL4 calculations are based on peak clad temperature of 1500°F. Steam cooling is meant to delay emergency depressurization with no injection sources until peak clad temperature reaches 1800°F, the basis for the minimum zero injection reactor water level or LL5. Note that if entry into steam cooling is required, peak clad temperature has already reached 1500°F by definition of LL4

Choice A is incorrect but plausible since this would be correct for LL4 providing adequate core cooling. LL4 is defined as steam cooling with injection

Choice B is incorrect because steam cooling is without injection but plausible since LL5 allows peak clad temperature to rise to 1800°F

Choice C is incorrect because peak clad temperature can rise to 1800°F but plausible since LL5 calculations are based on zero injection sources

Choice D is correct

295031 Reactor Low Water Level

EK3. Knowledge of the reasons for the following responses as they apply to REACTOR LOW WATER LEVEL : (CFR: 41.5 / 45.6)

EK3.04 Steam cooling..... 4.0 / 4.3\*

SOURCE: 08 NRC Exam

LESSON PLAN/OBJECTIVE:  
CLS-LP-300-G /Objective 1,11

COG LEVEL: LOW

57. Which one of the following statements identifies the reason SCCP directs emergency depressurization based on temperature in accordance with OOI-37.9, Secondary Containment Control Procedure Basis Document?

The reason the emergency depressurization is performed due to secondary containment temperature is to:

- A. preserve personnel access into the reactor building.
- B. ensure ODCM site boundary dose limits are not exceeded.
- C✓ prevent damage to equipment required for safe shutdown.
- D. prevent an unmonitored release.

REFERENCE:  
OOI-37.9 page 6, 37

EXPLANATION:  
The MSOT values are the area temperatures above which equipment necessary for the safe shutdown of the plant will fail. These area temperatures are utilized in establishing the conditions which reactor depressurization is required. The criteria of more than one area specified in this step identifies the rise in reactor building parameters as a wide spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in the RB, and continued safe operation of the plant.

CHOICE "A" Incorrect but plausible because this is the reason for Rad.

CHOICE "B" Incorrect other things, RRCP, deal with rad release concerns.

CHOICE "C" Correct answer

CHOICE "D" Incorrect not mitigating rad release.

295032 High Secondary Containment Area Temperature

EK3. Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE : (CFR: 41.5 / 45.6)

EK3.01 Emergency/normal depressurization..... 3.5 / 3.8

SOURCE: bank

LESSON PLAN/OBJECTIVE:  
CLS-LP-300-M Obj. 13a, Given plant conditions and the SCCP, determine the required actions if the following limits are exceeded: Maximum Safe operating values with a primary system discharging into secondary containment.

COG LEVEL: memory

58. During the execution of emergency operating procedures, the operator has restarted Reactor Building HVAC per 0EOP-01-SEP-04, Reactor Building HVAC Restart Procedure.

Which one of the following subsequent conditions would cause the Reactor Building Supply and Exhaust Isolation Dampers to reclose?

- A. Reactor water level lowers below LL2.
- B. Drywell pressure rises above 1.7 psig.
- C. PROCESS OFF-GAS VENT PIPE RAD HI-HI alarm is received.
- D. REACTOR BUILDING VENT EXHAUST TEMP HI alarm is received.

REFERENCE:  
SEP-04, SD-37.1 Section 2.3

EXPLANATION:  
Secondary containment will isolate on:  
1. LL2  
2. 1.7 psig in DW  
3. Main stack HI-HI  
4. RB Vent Rad HI-HI  
5. RB Vent Hi temp

SEP-04 installs jumpers or operates switches to override all but temperature

CHOICE "A" Incorrect but plausible since it normally would isolate on LL2.

CHOICE "B" Incorrect but plausible since it normally would isolate on Hi DW pressure..

CHOICE "C" Incorrect but plausible since it normally would isolate on Main Stack hi rad.

CHOICE "D" correct answer.

295034 Secondary Containment Ventilation High Radiation

EA1. Ability to operate and/or monitor the following as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION : (CFR: 41.7 / 45.6)

EA1.03 Secondary containment ventilation..... 4.0 / 3.9

SOURCE: bank

LESSON PLAN/OBJECTIVE:  
CLS-LP-37.1 Obj. 8h, State how the RB Ventilation is affected by the following: High Area Radiation.

COG LEVEL: higher order

59. The unit is in an ATWS with the following conditions:

SLC Tank	30% and lowering
Reactor Water Level	Being maintained 60 to 90 inches
Reactor Power	APRMs downscale

Which one of the following choices completes the statement below in accordance with LPC?

Hot Shutdown Boron Injection Weight \_\_\_\_\_ been injected and RPV water level \_\_\_\_\_ required to be raised at this tank level.

- A✓ has  
is
- B. has  
is not
- C. has not  
is
- D. has not  
is not

REFERENCE:  
1OP-05 Section 8.6, Manual Volume Determination

EXPLANATION:  
HSBW is 32% in the SLC tank. with level at 30% it has been injected. The flowcharts have you wait until HSBW has been injected and then directs level to be raised to provide mixing.

CHOICE "A" correct answer

CHOICE "B" see explanation.

CHOICE "C" see explanation.

CHOICE "D" see explanation

295037 SCRAM Condition Present and Reactor Power Above APRM Downscale or unknown

EA2. Ability to determine and/or interpret the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN : (CFR: 41.10 / 43.5 / 45.13)

EA2.03 SBLC tank level..... 4.3\* / 4.4\*

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-05 Obj 8g, Given plant conditions determine the effect that the following will have on the SLC System: Loss of plant air system.

COG LEVEL: higher order

60. Unit Two is operating under accident conditions with the following plant conditions due to a steam leak on HPCI:

Reactor Water Level	-20 inches
Reactor Pressure	900 psig
Injection sources available	HPCI only
Offsite Release	Alert declared
HPCI Room Temperatures	140° F
Suppression Pool Temperature	130° F

Which one of the following identifies the required HPCI operation action in accordance with RRCP and also identifies the reason for taking the action?

- A✓ HPCI should be left running  
It is required to be operated by the EOP's
- B. HPCI should be isolated  
It should have isolated on room high temperature
- C. HPCI should be left running  
Steam leak detection was overridden per RVCP
- D. HPCI should be isolated  
To prevent damage to the HPCI pump due to high suppression pool temperatures

REFERENCE:  
OOI-37.10 page16

EXPLANATION:  
RRCP normally has the operators isolate a primary system discharging except if it is needed to maintain adequate core cooling, with level below top of active fuel and required for EOP's this is the case. If there was a valid PCIS signal then this should not prevent the operator from making sure that the isolation occurs.

CHOICE "A" correct answer

CHOICE "B" area temperature isolation would be at 165° F

CHOICE "C" may consider that if the system is running then there would be less steam available to leak out into secondary containment.

CHOICE "D" pump damage could occur at greater than 140° F

295038 High Off-Site Release Rate

EK3. Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE: (CFR: 41.5 / 45.6)

EK3.02 System isolations..... 3.9 / 4.2

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-300N, Obj. 3. describe the conditions under which a system that is the source of a radioactive release is not permitted to be isolated.

COG LEVEL: high

61. During normal full power operation of Unit Two the following alarms and indications are noted:

SERVICE AIR PRESS LOW alarm	Sealed In
RB INSTR AIR RECEIVER 2A PRESS LOW	Not in Alarm
RB INSTR AIR RECEIVER 2B PRESS LOW	Not in Alarm
Instrument Air header pressure	100 psig
Service Air header pressure	100 psig

Which one of the following actions is required in accordance with 0AOP-20, Pneumatic System Failures?

- A. Start SBTG.
- B. Close the manual Noninterruptible Isolation Valves.
- C. Close the Service Air isolation valves, PV-706-1 and PV-706-2.
- D. Close the Reactor Building Isolation Dampers.

REFERENCE:  
AOP-20 Pneumatic System Failures

EXPLANATION:  
As service/instrument air pressures lower, a series of actions are required per the AOP. 105# SA - Service Air Isolation Vlvs 706-1&2 are ensured closed. with these conditions Service air alarm would come in at 107# and should have isolated at 105#. with indication on the service air header still at 100# indicates that this action has not occurred. and the action should be taken.

CHOICE "A" - Incorrect, an action to take at 95#.

CHOICE "B" - Incorrect, an action to take at 95#

CHOICE "C" - Correct Answer.

CHOICE "D" - Incorrect, an action to take at 95#

300000 Instrument Air

2.1.20 Ability to interpret and execute procedure steps. (CFR: 41.10 / 43.5 / 45.12)

IMPORTANCE RO 4.6 SRO 4.6

SOURCE: Bank LOI-CLS-LP-046.0\*08A

LESSON PLAN/OBJECTIVE:  
CLS-LP-302K, Obj. 4. Given plant conditions and AOP-20, determine the required supplementary actions.

COG LEVEL: High

62. Which one of the following identifies the exact location of the RBCCW liquid process radiation detector (D12-RM-K606) and the function(s) it provides?

- A✓ RBCCW pump suction header;  
alarm function only
- B. RBCCW pump suction header;  
alarm and isolation function
- C. Upstream of RCC-V28, Drywell Cooling Water Header Isolation Valve;  
alarm function only
- D. Upstream of RCC-V28, Drywell Cooling Water Header Isolation Valve;  
alarm and isolation function

REFERENCE:  
SD-21 RBCCW System

EXPLANATION:  
The RBCCW system is continuously monitored by a process radiation monitor.  
The monitor is located in the RBCCW return header. The monitor provides indication and alarm response. No isolation functions are provided.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. No isolation function provided. Other plant rad monitors (ie Radwaste Effluent) do provide isolation functions.

CHOICE "C" - Incorrect. wrong location.

CHOICE "D" - Incorrect. wrong location and No isolation function provided.

400000 Component Cooling Water

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

K1.03 Radiation monitoring systems ..... 2.7 / 3.0

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-11, Obj. 4g. Describe the interrelationship between the PRM and the following systems: Closed Cooling Water.

COG LEVEL: Low

63. The SS has determined that the control room personnel must don SCBAs (Scott AP50) due to smoke in the control room from a plant fire on site.

Which one of the following is an indication that a SCBA is low on air?

- A. Air regulator bypass valve fails open.
- B. Air regulator bypass valve fails closed.
- C. Audible high pitched beep emitting from face piece.
- D✓ Vibralert alarm in the regulator that vibrates the face piece.

REFERENCE:  
vendors webpage

EXPLANATION:  
Low pressure will activate Vibralert, heads up display and bell if installed.

CHOICE "A" this is a manual action for failure of a regulator

CHOICE "B" this is indication of an improper seal of the face piece

CHOICE "C" Some of the SCBA's have an audible bell but do not have a beeping device. the bell is not mounted in the face piece.

CHOICE "D" correct answer, some also have a HUD (heads up display) with indicating lights for tank pressure.

600000 Plant Fire On Site

AA1 Ability to operate and/or monitor the following as they apply to PLANT FIRE ON SITE:

AA1.01 Respirator air pack ..... 3.0 / 2.9

SOURCE: new

LESSON PLAN/OBJECTIVE:

COG LEVEL: Memory

64. Generator MVARs are indicating 0 MVARs.

Which one of the following identifies the actions required to restore MVARs to the limits specified in OP-27, Generator and Excitation System Operating Procedure?

Coordinate with the Load Dispatcher to either:

- A. Raise the auto voltage regulator or place a capacitor bank in service
- B. Lower the auto voltage regulator or place a capacitor bank in service
- C✓ Raise the auto voltage regulator or remove a capacitor bank from service
- D. Lower the auto voltage regulator or remove a capacitor bank from service

REFERENCE:  
SD-27

EXPLANATION:

Co-ordination with the LD would be appropriate and raising the voltage regulator or removing a capacitor bank would be the action required.

CHOICE "A" placing a capacitor bank in service would provide the opposite reaction for the given conditions.

CHOICE "B" lowering voltage regulator or placing a capacitor bank in service would provide the opposite reaction for the given conditions.

CHOICE "C" correct answer

CHOICE "D" lowering voltage regulator would provide the opposite reaction for the given conditions.

700000 Generator Voltage and Electric Grid Disturbances

AK1. Knowledge of the operational implications of the following concepts as they apply to GENERATOR VOLTAGE AND ELECTRIC GRID DISTURBANCES:  
(CFR: 41.4, 41.5, 41.7, 41.10 / 45.8)

AK1.03 Under-excitation . . . . . 3.3 / 3.4

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-27, Obj. 11f. Given plant conditions, describe the effect that a loss or malfunction of the following may have on the Main Generator: Voltage Regulation (including Under and Over excitation).

COG LEVEL: High

65. A grid disturbance occurs with the following Unit Two plant parameters:

Generator Load	980 MWe
Generator Reactive Load	160 MVARs, out
Generator Gas Pressure	50 psig

(Reference provided)

Which one of the following identifies all of the available options that will place the Unit within the Estimated Capability Curve?

- A✓ Raise Gas Pressure or lower MWe.
- B. Raise Gas Pressure or raise MVARs.
- C. Raise Gas Pressure only.
- D. Lower MWe only.

REFERENCE:  
1OP-27 Figure 1 (provided to the examinee)

EXPLANATION:  
Based on the conditions the student should plot the current location on the graph. Plot MWe along the bottom and MVARs up the side. Where these two points intersect, based on 50 psig gas pressure line is outside of the safe area. (Must be inside the curve to be safe) Lowering MWe or raising gas pressure are the only options. Lowering or raising MVARs would still be outside the curve.

CHOICE "A" Correct Answer.

CHOICE "B" See explanation

CHOICE "C" See explanation

CHOICE "D" See explanation

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)

AA2.04 VARs outside capability curve . . . . . 3.6 3/ .6

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-27, Obj. 9. Given the Generator estimated capability curves, hydrogen pressure and either MVARs, MW, or power factor, determine the limit for MW and MVARs.

COG LEVEL: High

66. Which one of the following identifies two activities when two-handed operations are allowed, without prior SCO approval, in accordance 00I-01.02, Shift Routines and Operating Practices?

- A. Continuous rod movement  
Inserting a manual scram.
- B. Dual purge fan start is desired for primary containment ventilation for personnel entry  
Placing RHR in suppression pool cooling.
- C✓ Synchronizing the DG to its bus  
Continuous rod movement.
- D. Dual purge fan start is desired for primary containment ventilation for personnel entry  
Inserting a manual scram.

REFERENCE:  
00I-01.02 page 27

EXPLANATION:  
manipulations of control switches by the use of both hands at the same time is normally not permitted because it challenges the operators ability to effectively perform STAR or Touch STAR. However, two-handed switch operation is sometimes necessary for proper operation or time constraints associated with multiple switch operations. Therefore, two-handed switch operation should only be used in the following circumstances: 1) As directed by procedure. 2) When required for proper system operation. 3) As directed by the SCO.

CHOICE "A" Incorrect. Not permitted for manual scram.

CHOICE "B" Incorrect. not permitted for placing SPC in service.

CHOICE "C" Correct.

CHOICE "D" Incorrect. Not permitted for manual scram.

2.1.1 Knowledge of conduct of operations requirements. (CFR: 41.10 / 45.13)

IMPORTANCE RO 3.8 SRO 4.2

SOURCE:  
new

LESSON PLAN/OBJECTIVE:  
GNF0001B, Obj. 3. Identify Error prevention tools.

COG LEVEL:  
memory

67. Initial reactor power is at 80%.

Which one of the following identifies two situations that require a PA announcement in accordance with OAP-50, Site Command, Control, and Communications Procedure, or OOI-01.02, Shift Routines and Operating Practices?

- A. Placing Hydrogen Water Chemistry in service  
Fire in the Service Water Building
- B. Power reduction to 76%  
Fire in the DG2 cell
- C✓ AOP-22, Grid Instability entry  
Starting 2B Condensate Pump
- D. Power increase to 90%  
Opening the Reactor Feed Pump recirc valve

REFERENCE:

AP-50 Section 6.3.2 page 16

EXPLANATION:

PA announcements are required for major pieces of equipment, power manipulations of greater than 5%, AOP entry or exits, or fires.

CHOICE "A" not required for placing HWC in service

CHOICE "B" not required for a 4% power manipulation.

CHOICE "C" correct answer

CHOICE "D" not required for valve manipulations.

2.1.17 Ability to make accurate, clear, and concise verbal reports.  
(CFR: 41.10 / 45.12 / 45.13)

IMPORTANCE RO 3.9 SRO 4.0

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-401-A Obj 8e, State the AP-50 guidelines for: Face to face communications.

COG LEVEL: memory

68. While reviewing Display 820, Powerplex Heat Bal/Core Mon Results, the Reactor Operator notes that one of the Feedwater flow values is cyan (blue).

Which one of the following identifies the meaning of this color coding in accordance with OOI-72, Plant Process Computer System Operating System?

The process parameter:

- A. is displaying bad data.
- B. is displaying expired data.
- C. is exceeding a high alarm limit.
- D✓ has a substitute value inserted.

REFERENCE:  
OI-72 page 59/68

EXPLANATION:  
If inputs to a composed or calculated value are substituted, the computer point for the value may appear in Cyan. This will indicate to the operator that an input has been substituted to that point.

CHOICE "A" Bad data is displayed in magenta.

CHOICE "B" expired data is displayed in pink.

CHOICE "C" alarm or unsafe conditions are displayed in red.

CHOICE "D" correct answer.  
2.1.19 Ability to use plant computers to evaluate system or component status.  
(CFR: 41.10 / 45.12)

IMPORTANCE RO 3.9 SRO 3.8

SOURCE: Bank

LESSON PLAN/OBJECTIVE:  
CLS-LP-055 Obj 2e, Describe the basic operation of the Process Computer, including the use of the following: Monitor Display Color Code.

COG LEVEL: Memory

69. An ATWS has occurred on Unit One with the following plant conditions:

Reactor Water Level	130 inches (stable)
Injection Systems	CRD
Reactor Power	APRM downscale lights are illuminated
Control Rods	19 rods failed to insert
SRVs	All closed
Suppression Pool Temp.	92° F

Which one of the following choices completes the statement below in accordance with LPC?

Reactor Recirculation pumps \_\_\_\_\_ required to be tripped and the SLC Pumps \_\_\_\_\_ required to be started.

A. are not  
are not

B. are not  
are

C. are  
are not

D. are  
are

REFERENCE:

LPC (Q Leg)

OI-37.5 defines of 2% power.

EXPLANATION:

Per the Q leg of LPC, If power is > than 2% then both recirc pumps are tripped, If the reactor cannot be shutdown before the torus reaches 110° then SLC is initiated.

CHOICE "A" correct answer

CHOICE "B" SLC is not injected per the Q leg if torus will not reach 110° F.

CHOICE "C" Recirc pumps are only tripped if power is >2% (APRM downscales)

CHOICE "D" Recirc pumps are only tripped if power is >2% (APRM downscales) and SLC is not injected per the Q leg if torus will not reach 110° F.

2.4.9 Knowledge of low power/shutdown implications in accident (e.g., loss of coolant accident or loss of residual heat removal) mitigation strategies.  
(CFR: 41.10 / 43.5 / 45.13)

IMPORTANCE RO 3.8 SRO 4.2

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-300E, Obj. 19. Given plant conditions and a copy of the LPC procedure determine the required operator actions.

COG LEVEL: High

70. Given the following alarm criteria:

- a trip setpoint that is important to reactor safety, or
- a condition requiring prompt action by the operator, or
- a condition that requires additional manning at the control panels

Which one of the following identifies the annunciator window designation for this criteria in accordance with 00I-01.08, Control of Equipment and System Status?

- A. Red background with blue bar
- B. Red Background with red bar
- C. Red Background with yellow bar
- D. Amber background with yellow bar

REFERENCE:

2APP-UA-03 5-5 Service Wtr Effluent Rad High  
2APP-A-03 2-10 RHR Hx B Outlet Hi Conductivity

EXPLANATION:

red background with blue bar is EOP entry.  
red background with red bar requires prompt action  
red background with yellow bar does not exist  
amber background with yellow bar requires increased attention

CHOICE "A" See explanation

CHOICE "B" correct answer

CHOICE "C" See explanation

CHOICE "D" See explanation

2.4.45 Ability to prioritize and interpret the significance of each annunciator or alarm.  
(CFR: 41.10 / 43.5 / 45.3 / 45.12)

IMPORTANCE RO 4.1 SRO 4.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-300N, Obj 19. Given plant conditions and RRCP, determine the following: Release path.

COG LEVEL: Low

71. Which one of the following identifies the Unit differences for the CREV system control and indications at the RTGB?

- A. Unit One has indication and controls  
Unit Two has no indication or control
- B✓ Unit One has indication only  
Unit Two has indication and controls
- C. Unit One has no indication or control  
Unit Two has indication and controls
- D. Unit One has indication and controls  
Unit Two has indication only

REFERENCE:

0EOP-01-LEP-02 Section 4 page 19/20

EXPLANATION:

Unit 1 has indication only while Unit 2 has both indication and controls

CHOICE "A" U1 does not have controls, U2 has indications and controls.

CHOICE "B" correct answer.

CHOICE "C" U1 does have indications.

CHOICE "D" U1 has indications, U2 has controls.

2.2.4 (multi-unit license) Ability to explain the variations in control board/control room layouts, systems, instrumentation, and procedural actions between units at a facility.  
(CFR: 41.6 / 41.7 / 41.10 / 45.1 / 45.13)

IMPORTANCE RO 3.6 SRO 3.6

SOURCE: new

LESSON PLAN/OBJECTIVE:

COG LEVEL: Memory

72. Considering a 31 day surveillance frequency, which one of the following is last day that the surveillance can be performed and still meet the requirements of Technical Specifications?

The last day the surveillance must be performed by is within \_\_\_\_\_ of the previous performance of the surveillance.

A. 32 days

B✓ 38 days

C. 45 days

D. 62 days

REFERENCE:

TS SR 3.0.2, Surv. is met if performed within 1.25 times the interval specified in the frequency

EXPLANATION:

Have to know that a monthly surveillance is 31 days (TS 5.5.6) and then from SR 3.0.2 that the surv. requirement times 1.25 is when the surveillance has to be performed. This equals 38.75 days.

CHOICE "A" This is 31 days plus 24 hours (some may think that it gives 24 hours or double the action statement)

CHOICE "B" correct answer.

CHOICE "C" this uses a 1.5 times the 31 days

CHOICE "D" This is double the 31 days, (some may think that it gives 24 hours or double the action statement).

2.2.12 Knowledge of surveillance procedures. (CFR: 41.10 / 45.13)

IMPORTANCE RO 3.7 SRO 4.1

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-200B, Obj. 8. Explain the frequency rules for periodic actions and apply these rules to determine when a periodic action must be performed.

COG LEVEL: Low

73. During performance of 2OI-03.02, Control Operator Daily Surveillance Report, the following SJAE Off-Gas Radiation Monitor readings are recorded:

D12-RM-K601A	110 mr/hr
D12-RM-K601B	50 mr/hr

A local survey instrument positioned at the alternate channel check survey point for SJAE Radiation Monitor B Reads 80 mr/hr.

(reference provided)

Which one of the following characterizes this deviation and also identifies the required action, if any, in accordance with 2OI-03.02.

- A. The deviation is conservative  
The channel check criteria is met and no other actions are required.
- B. The deviation is conservative  
Initiate a W/R to evaluate the deviation.
- C. The deviation is non-conservative  
Declare SJAE Radiation Monitor A inoperable.
- D. The deviation is non-conservative  
Declare SJAE Radiation Monitor B inoperable.

REFERENCE:

2OI-03.02 (Attachment 1 page provided to the students)

EXPLANATION:

Using Attachment 1 determines non conservative because half of A is greater than that of B and B is less than .75 times the local reading. this Also makes it inop.

CHOICE "A" could be correct if B was reading higher or local reading was lower.

CHOICE "B" would be correct if B was reading higher than half of A.

CHOICE "C" plausible since some instruments that read higher are declared inop vs the lower reading. for example recirc flow.

CHOICE "D" Correct.

2.2.42 Ability to recognize system parameters that are entry conditions for TS.  
(CFR: 41.7 / 41.10 / 43.2 / 43.3 / 45.3)

IMPORTANCE RO 3.9 SRO 4.6

SOURCE: BANK

LESSON PLAN/OBJECTIVE:

COG LEVEL: High

74. A valve lineup is to be performed in an area that has the following conditions:

Area temperature	115° F
Area radiation	40 mr/hr

Independent verification of this valve lineup is expected to take 0.5 hour.

Which one of the following choices completes the statement below in accordance with OPS-NGGC-1303, Independent Verification?

Independent verification of this lineup, based on the above conditions, may be waived because of \_\_\_\_\_.

- A. both extreme temperature and excessive dose
- B.  excessive dose only
- C. extreme temperature only
- D. either extreme temperature or excessive dose

REFERENCE:  
NGGC-1303

EXPLANATION:

IV may be waived if the dose will be excessive (as a guideline 10 mrem is excessive) or if personnel safety issues exists (e.g. temperature is above 120° F). IV of this lineup would result in a dose of 20 mrem.

CHOICE "A" Incorrect. Would be allowed to be waived based on dose only.

CHOICE "B" Correct answer.

CHOICE "C" Incorrect. Would be allowed to be waived based on dose not temperature.

CHOICE "D" Incorrect. Would be allowed to be waived based on dose only.

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)

IMPORTANCE RO 3.2 SRO 3.7

SOURCE: Bank

LESSON PLAN/OBJECTIVE:

CLS-LP-201C, Obj. 10b. Describe the following regarding OPS-NGGC-1303: Exemptions from Independent Verification.

COG LEVEL: High

75. Which one of the following requires Health Physics Window notification prior to starting the evolution in accordance with 1OP-14.0, Reactor Water Cleanup System Operating Procedure?

- A. RWCU Reject Operation For Vessel Chemistry to radwaste
- B. Precoat of a RWCU filter
- C. Backwash of a RWCU filter only
- D. Transfer of the Backwash Receiving Tank to radwaste only

REFERENCE:  
op-14

EXPLANATION:  
Backwashing, precoating, or rejecting do not have steps in the procedure for the operator to notify HPW prior to starting the task. Transfer of resins through the building will change dose rates considerably.

CHOICE "A" see explanation

CHOICE "B" see explanation

CHOICE "C" see explanation

CHOICE "D" Correct

2.3.12 Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. (CFR: 41.12 / 43.4 / 45.10)

IMPORTANCE RO 3.4 SRO 3.8

SOURCE: Bank

LESSON PLAN/OBJECTIVE:  
CLS-LP-300M, Obj. 4c. Define the following: Maximum safe operating.

COG LEVEL: mem

76. Unit Two is at rated power with the following plant conditions:

All control rods are OPERABLE  
Rod select power is OFF  
Control rod 10-27 scrams  
ROD DRIFT alarm is received

Which one of the following identifies the status of the ROD OUT BLOCK annunciator and also identifies the procedure that contains the action for the operator to reduce core flow to 65 Mlbs/hr?

- A. ROD OUT BLOCK Annunciator is alarming;  
2APP-A-05, 3-2 ROD DRIFT.
- B. ROD OUT BLOCK Annunciator is alarming;  
0AOP-02.0, Control Rod Malfunction/Misposition.
- C. ROD OUT BLOCK Annunciator is NOT alarming;  
2APP-A-05, 3-2 ROD DRIFT.
- D✓ ROD OUT BLOCK Annunciator is NOT alarming;  
0AOP-02.0, Control Rod Malfunction/Misposition.

REFERENCE:

APP A-5 (2-2) Rod Out Block, (3-2) Rod Drift and (5-2) Rod Block RWM/RMCS Trouble  
AOP-2.0 Control Rod Malfunction/Misposition

EXPLANATION:

A Rod Drift alarm is generated if an odd numbered reed switch is picked up with no "rod selected and driving" signal present. An inadvertant rod scram will cause a rod drift alarm. Below the LPAP, a rod drift/scram can cause a rod insert/withdraw from the RWM. This error will cause a Rod Block RWM alarm on A-5 (5-2) The given plant conditions are above the LPAP. No Rod Out Block alarm or Rod Block RWM alarm will be received. Per the direction of AOP-2.0, supplementary action 3.2.2, "IF greater than 25% RTP and the sum of scrammed and inoperable control rods is no more than eight, then REDUCE core flow to 65 mlbs/hr.

CHOICE "A" - Incorrect. No Rod Out Block alarm will be received. The APP does not contain the guidance for reducing flow.

CHOICE "B" - Incorrect. No Rod Out Block alarm will be received.

CHOICE "C" - Incorrect. The APP does not contain the guidance for reducing flow.

CHOICE "D" - Correct Answer

201002 RMCS

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)

A2.02 Rod drift alarm . . . . . 3.2 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-07, Obj. 11b - describe the possible causes and required operator actions for the following alarms: A-5 3-2, Control Rod Drift.

COG LEVEL: Low

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

77. During a LOCA with a LOOP the following plant conditions exist:

2B RHR pump	Injecting and operating at its NPSH Limit
2B CS pump	Injecting and approaching its NPSH Limits
All other ECCS Pumps	Unavailable
Reactor Water Level	2/3 core height and steady

Which one of the following is the consequence of continued RHR operation outside its NPSH limit in accordance with 0OI-37.4, Reactor Vessel Control Procedure Basis Document, and also identifies the required procedure to maintain adequate core cooling in accordance with RVCP?

- A. Long term operation is expected to cause RHR pump damage;  
Line up CS to the CST per OP-18, Core Spray System Operating Procedure.
- B. Immediate RHR pump damage is expected to occur;  
Line up Alternate Coolant Injection per 0EOP-01-LEP-01.
- C. Long term operation is expected to cause RHR pump damage;  
Line up Alternate Coolant Injection per 0EOP-01-LEP-01.
- D. Immediate RHR pump damage is expected to occur;  
Line up CS to the CST per OP-18, Core Spray System Operating Procedure.

REFERENCE:

0OI-37.4, REACTOR VESSEL CONTROL PROCEDURE BASIS DOCUMENT

EXPLANATION:

From OI-37.4, Immediate and catastrophic failure is not expected if a pump is operated beyond the NPSH or vortex limit. The undesirable consequences of uncovering the reactor core could thus outweigh the risk of equipment damage.

CHOICE "A" - Incorrect. with level at 2/3 core height the CS pump can not be secured to transfer the suction to the CST, or adequate core cooling would not be assured.

CHOICE "B" - Incorrect. Per the OI immediate pump damage is not expected to occur.

CHOICE "C" - Correct Answer.

CHOICE "D" - Incorrect. Per the OI immediate pump damage is not expected to occur. with level at 2/3 core height the CS pump can not be secured to transfer the suction to the CST, or adequate core cooling would not be assured.

203000 RHR/LPCI: Injection Mode

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)

A2.01 Inadequate net positive suction head . . . . . 3.2 / 3.4

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-18, Obj. 20. Given plant conditions, determine if indications of a clogged suction strainer exist.

COG LEVEL: High

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

78. Unit Two is operating at rated power.

While performing 0PT-07.2.4A, Core Spray Loop A Operability, Core Spray Room Cooler A fails to start when Core Spray Pump A is started.

The Reactor Building AO reports that the Room Cooler breaker has tripped on thermal overload.

Which one of the following choices completes the statements below per 0AP-13, Plant Equipment Control, and 0OI-01.08, Control of Equipment and System Status?

The breaker \_\_\_\_\_ allowed to be reset once.

The room cooler \_\_\_\_\_ required for Core Spray Loop A operability.

A. is  
is NOT

B. is  
is

C. is NOT  
is NOT

D. is NOT  
is

REFERENCE:

NPSH graphs to be provided to examinee.

0OI-01.08 Control of Equipment and System Status, section 5.1.2.4 ECCS Rm Clrs

AP-13 Plant Equipment Control

EXPLANATION:

Per the direction of 0I-01.08, when any room cooler is determined to be inoperable, then the ECCS equipment associated with that room cooler must be declared INOP per the applicable TS.

CHOICE "A" - Incorrect - Per AP-13 a tripped breaker should not be reset until an investigation has been performed, except in case of an emergency. when room cooler is determined to be inoperable, then the ECCS equipment associated with that room cooler must be declared INOP per the applicable TS

CHOICE "B" - Incorrect - Per AP-13 a tripped breaker should not be reset until an investigation has been performed, except in case of an emergency.

CHOICE "C" - Incorrect. when room cooler is determined to be inoperable, then the ECCS equipment associated with that room cooler must be declared INOP per the applicable TS.

CHOICE "D" - Correct Answer.

209001 Low Pressure Core Spray

2.2.22 Knowledge of limiting conditions for operations and safety limits.  
(CFR: 41.5 / 43.2 / 45.2)

IMPORTANCE RO 4.0 SRO 4.7

SOURCE: Bank - LOI-CLS-LP-018-A\*017

LESSON PLAN/OBJECTIVE:

CLS-LP-18, Obj. 18. Given plant conditions and TS, including bases, TRM, ODCM, and COLR, determine the required actions to be taken in accordance the TS associated with the Core Spray System. (SRO/STA only)

COG LEVEL: High

SRO Only - Facility operating limitations in the TS and their bases (43(b)(2))

79. The unit is operating at full power when the following plant conditions occur:

Load Reject Signal has occurred  
Line 31 (Whiteville Line) PCBs red lights are lit  
Line 31 (Whiteville Line) white VOLT lights are not lit  
All other line PCBs green lights are lit  
230 KV BUS 1A BUS POT UNDERVOLTAGE is in alarm  
230 KV BUS 1B BUS POT UNDERVOLTAGE is in alarm

Which one of the following identifies the initial RPS trip signal and the procedure which contains the guidance to trip the Whiteville Line PCBs?

- A✓ Control Valve Fast Closure;  
0AOP-36.1, Loss of Any 4160V Buses or 480V E-Buses.
- B. Stop Valve Closure;  
0AOP-36.1, Loss of Any 4160V Buses or 480V E-Buses.
- C. Control Valve Fast Closure;  
0AOP-22, Grid Instability.
- D. Stop Valve Closure;  
0AOP-22, Grid Instability.

REFERENCE:

SD-03 Reactor Protection System, section 3.1 RPS Trips  
AOP-22 Grid Instability, step 3.2.4

EXPLANATION:

A load reject signal at any reactor power level will cause a turbine control valve fast closure scram. The load reject signal does not input into the turbine stop valve closure scram logic. During a loss of offsite power, if the grid is lost all PCBs are opened per 0AOP-36.1.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect Load reject initiates a TCV fast closure scram not a TSV. A misconception of the difference between TCV and TSV scrams may cause a student to select this answer.

CHOICE "C" - Incorrect. 0AOP-22 does not have an action for loss of grid only for degraded.

CHOICE "D" - Incorrect. Load reject initiates a TCV fast closure scram not a TSV. A misconception of the difference between TCV and TSV scrams may cause a student to select this answer. 0AOP-22 does not have an action for loss of grid only for degraded.

212000 RPS

A2. Ability to (a) predict the impacts of the following on the REACTOR PROTECTION 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)

A2.15 Load rejection . . . . . 3.7 / 3.8

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-03, Obj. 8. List the RPS trip signals, including setpoints and how/when each signal is bypassed.

COG LEVEL: High

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

80. A steam line break in primary containment has caused a reactor scram. Twelve control rods are not full in. Reactor water level was 150 inches when erratic level indication was observed on all available level indications during depressurization.

Which one of the following predicts the response of the available level indication as the reactor depressurizes and also identifies the required procedures when reactor water level cannot be determined?

Level indication will eventually fail \_\_\_\_\_.

The SCO is required to \_\_\_\_\_.

- A. downscale;  
completely exit LPC flowchart and enter RxFP flowchart for power, pressure and level control.
- B. downscale;  
execute only the power leg of the LPC flowchart and the RxFP flowchart concurrently.
- C. upscale;  
completely exit LPC flowchart and enter RxFP flowchart for power, pressure and level control.
- D.  upscale;  
execute only the power leg of the LPC flowchart and the RxFP flowchart concurrently.

REFERENCE:

SD-01.2 Reactor Vessel Instrumentation, section 4.2.1

EXPLANATION:

Instrument leg flashing causes pressure transients within the lines which can cause indications to fluctuate widely from high to low. If reactor water level indication can not be determined, the Reactor Flood Procedure is entered. The power leg of LPC is executed with RxFP, level and pressure legs of LPC are exited.

CHOICE "A" - Incorrect. There are malfunctions that can occur to an instrument reference leg that will cause the instrument indication to fail downscale. (plausible) You do not completely exit LPC.

CHOICE "B" - Incorrect. There are malfunctions that can occur to an instrument reference leg that will cause the instrument indication to fail downscale. (plausible)

CHOICE "C" - Incorrect. You do not completely exit LPC.

CHOICE "D" - Correct Answer

216000 Nuclear Boiler Instrumentation

A2. Ability to (a) predict the impacts of the following on the NUCLEAR BOILER INSTRUMENTATION ; 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)

A2.07 Reference leg flashing . . . . . 3.4 / 3.5

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-1.2, Obj. 5d. Explain the effect that the following will have on reactor vessel level and/or pressure indications: reference/variable leg flashing.

COG LEVEL: High

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

81. Unit Two is operating at full power when a loss of DC distribution panel 4B occurs.

Which one of the following identifies the effect this will have on the RCIC system and what action is required to be taken per Tech Spec 3.5.3, RCIC System?

RCIC is \_\_\_\_\_ for injection from the RTGB;

Examine logs or other information, to determine if the HPCI system is out of service, HPCI Operability PT \_\_\_\_\_ required to be performed.

A. unavailable  
is not

B. unavailable  
is

C. available  
is not

D. available  
is

REFERENCE:

SD-16 Reactor Core Isolation Cooling, section 3.0  
RVCP

EXPLANATION:

The primary power source for the RCIC system is Div. II 125/250 VDC.

A loss of 2-XDB causes a loss of power to the majority of the RCIC system valves.

With a loss of RCIC TS have you verify HPCI operable by administrative means. This is defined as looking at the logs or other information does not require a PT to be performed.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect. HPCI PT is not required

CHOICE "C" - Incorrect. A loss of outboard isolation logic only, still available.

CHOICE "D" - Incorrect. A loss of outboard isolation logic only. HPCI PT is not required

217000 RCIC

A2. Ability to (a) predict the impacts of the following on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC) ; 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)

A2.05 D.C. power loss . . . . . 3.3 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-16, Obj. 8. Identify the power supply (bus and voltage) for the following RCIC components: Valves, Logic, flow controller, Vacuum pump, and condensate pump.

COG LEVEL: High

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2)

82. The following sequence of events have occurred:

1130	Offsite power is lost to both units.
1130	All EDGs start and tie to their associated E-Buses.
1135	DG3 trips on low lube oil pressure
1145	DG4 trips on differential overcurrent
1200	E1 is crosstied to E3
1205	Current Time

(reference provided)

Which one of the following identifies the highest emergency classification reached during the event AND the maximum amount of time allowed to make initial notification to State and local governments once formal declaration of the event is made?

- A. Alert;  
15 minutes
- B. Alert;  
30 minutes
- C. Site Area Emergency;  
15 minutes
- D. Site Area Emergency;  
30 minutes

REFERENCE:

EALs to be provided to the examinee only.

PEP-2.1 Initial Emergency Actions, 6.0 Electrical and Power Failures

EXPLANATION:

The inability to power wither 4KV bus from off-site power AND loss of all on-site AC power capability indicated by failure of diesel generators to start or synchronize AND lasting more than 15 minutes = Site Area Emergency. After declaration of event 15 minutes is the requirement to notify State and local govt.

CHOICE "A" - Incorrect

CHOICE "B" - Incorrect

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect

264000 EDGs

2.4.41 Knowledge of the emergency action level thresholds and classifications.  
(CFR: 41.10 / 43.5 / 45.11) |

IMPORTANCE RO 2.9 SRO 4.6

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-301, Obj. 4c. Given PEP-02.1, discuss/perform the following actions: Classify emergency events  
(SRO Only)

COG LEVEL: Low

SRO Only - Fuel Handling facilities and procedures 43(b)(7) Emergency classifications.

83. During normal full power operation I&C has requested removing annunciator card AOG SYSTEM DISCH RAD HIGH from service for trouble shooting of the annunciator. This annunciator is listed on OOI-01.08, Control of Equipment and System Status, Attachment 11, Technical Specification/TRM/ODCM Identified Annunciators.

The trouble shooting activity will take place early in the shift and last 2 hours.

Which one of the following identifies whether ODCM Radioactive Gaseous Effluent Monitoring Instrumentation 7.3.2 action statement entry is required and also identifies whether OOI-01.08, Attachment 10, Annunciator Removal From Service Form, is required to be completed for this activity?

- A.  action statement entry is required; Attachment 10 must be completed.
- B.  action statement entry is required; Attachment 10 is not required.
- C.  action statement entry is not required; Attachment 10 must be completed.
- D.  action statement entry is not required; Attachment 10 is not required.

REFERENCE:

OI-01.08 Section 5.2.5 "Disabling Annunciators"

EXPLANATION:

Per OI-01.08, ODCM annunciators may be removed from service for up to 30 minutes without entering the associated spec. Also, if an annunciator is to be disabled for a period of time not to exceed shift turnover then the Removal from Service form can be waived.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Incorrect, see explanation.

CHOICE "D" - Incorrect, see explanation.

272000 Radiation Monitoring

2.2.14 Knowledge of the process for controlling equipment configuration or status.  
(CFR: 41.10 / 43.3 / 45.13)

IMPORTANCE RO 3.9 SRO 4.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-201-D, Obj. 10d. Explain the following regarding annunciator status per OOI-1.08: disabling an annunciator.

COG LEVEL: High

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2)

84. During power operation the 1A Recirc pump has been removed from service due to a failed recirc pump seal.

Core Flow Recorder B21-R613 indicates 38 Mlb/hr core flow  
Process computer point WTCF indicates 40.5 Mlb/hr core flow

Which one of the following choices completes the following statements correctly?

For the given conditions, the most accurate total core flow indication is \_\_\_\_\_.

In order for the requirements of LCO 3.4.1 Recirculation Loops Operating to be met, and no shutdown action statements to be entered, the appropriate Single Loop Operating Limits must be applied within \_\_\_\_\_ hours.

- A.  40.5 Mlb/hr  
6 hours.
- B. 40.5 Mlb/hr  
12 hours.
- C. 38 Mlb/hr  
6 hours.
- D. 38 Mlb/hr  
12 hours.

REFERENCE:  
1OP-02 Attachment 1 Rev. 74 / 1AOP-4.0 Rev. 21

EXPLANATION:  
If WTCF is unavailable then the operator will have to use the graph to determine the total core flow per 1AOP-04. Tech Spec give you 6 hours to perform SLO limits. then 12 hours to mode 3.

CHOICE "A" Correct Answer.

CHOICE "B" Incorrect - 12 hours is the LCO statement not the limit to implement SLO limits.

CHOICE "C" Incorrect - The preferred number is from WTCF.

CHOICE "D" Incorrect - The preferred number is from WTCF. 12 hours is the LCO statement not the limit to implement SLO limits.

295001 Partial or Complete Loss of Forced Core Flow Circulation

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

AA2.03 Actual core flow..... 3.3 / 3.3

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-302-C, Recirculation System Related AOPs.

Obj. 12. Describe the methods to determine core flow using core plate d/p.

COG LEVEL: Higher order.

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2)

85. Unit Two is operating at rated power when the following alarms are received:

DG-4 CTL POWER SUPPLY LOST  
DG-4 LO START AIR PRESS  
DG4/E4 ESS LOSS OF NORM POWER  
DG-2 CTL POWER SUPPLY LOST

Subsequently, DG4 control power was transferred to its alternate DC source.

Which one of the following identifies the DC panel that was lost and the impact on the operability of DG4 in accordance with LCO 3.8.1, AC Sources Operating and LCO 3.8.7, Distribution Systems - Operating?

- A. 125V DC Distribution Panel 1B;  
DG4 is operable on its alternate source for up to 7 days.
- B. 125V DC Distribution Panel 1B;  
DG4 must be declared inoperable the entire time it is on its alternate source.
- C✓ 125V DC Distribution Panel 2B;  
DG4 is operable on its alternate source for up to 7 days.
- D. 125V DC Distribution Panel 2B;  
DG4 must be declared inoperable the entire time it is on its alternate source.

REFERENCE:  
0AOP-39

EXPLANATION:

Alarms on DG4 indicate that loss is from 2B. Alarm on DG2 is from alternate supply being lost. Tech specs give you 7 days to fix while you are on alternate, during this time it is operable.

CHOICE "A" The DC panel that is lost is not 1B, lo starting air alarm would not be recieved along with the loss of norm power.

CHOICE "B" The DC panel that is lost is not 1B, lo starting air alarm would not be recieved along with the loss of norm power and you have 7 days on alternate before declaring inop.

CHOICE "C" Correct answer.

CHOICE "D" Incorrect - you have 7 days on alternate before declaring inop.

295004 Partial or Complete Loss of D.C. Power

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

AA2.01 Cause of partial or complete loss of D.C. power..... 3.2 / 3.6

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-302-G Obj. 4, Given plant conditions an any of the following AOP's, determine the required supplemental actions: 0AOP-39, Loss of DC Power.

COG LEVEL: Higher Order

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2)

86. Unit One is operating at 100% power with the following conditions:

All control rods and control rod scram accumulators are operable  
All control rod scram times are within TS Limits

Subsequently, one control rod scram accumulator has depressurized and cannot be repaired for two days.

Which one of the following identifies the required actions in accordance with Tech Spec 3.1.5, Control Rod Scram Accumulators?

The affected control rod must be declared:

- A. slow only.
- B. inoperable only.
- C.  either slow or inoperable.
- D. both slow and inoperable.

REFERENCE:  
TS 3.1.5

EXPLANATION:

Control rod scram accumulators shall be operable in Modes 1 and 2.

One control rod scram accumulator inoperable with reactor steam dome pressure >950 psig the required action is to declare the associated control rod scram time slow (only applicable if it was within the limits of Table 3.1.4-1 during the last scram time surv.) or declare the associated control rod inoperable within 8 hours.

CHOICE "A" Incorrect, the control rod may be declared inoperable.

CHOICE "B" Incorrect the control rod may be declared slow.

CHOICE "C" Correct answer.

CHOICE "D" Incorrect, it may be one or the other but not both in accordance with the TS.

295006 SCRAM

2.2.37 Ability to determine operability and/or availability of safety related equipment.  
(CFR: 41.7 / 43.5 / 45.12)

IMPORTANCE RO 3.6 SRO 4.6

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-08, Obj. 18. given plant conditions and TS, including the bases, TRM, ODCM, and COLR, determine the required actions to be taken in accordance with TS associated with CRD system.  
(SRO/STA Only)

COG LEVEL: Low/fund.

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2))

87. During accident conditions on Unit Two the following plant conditions are:

IRMs	On scale / range 4 and lowering
Period meter	-80 seconds
Control Rods	15 rods not full in
Current Reactor Pressure	850 psig and lowering
Peak Reactor Pressure	1145 psig
SRV G	Red light lit
All other SRVs	Green lights lit
All SRV Switches	In Auto/Close

(reference provided)

Which one of the following is the status of the SRV's and what is the highest emergency action level classification that is required to be declared in accordance with OPEP-02.1, Initial Emergency Actions?

- A. Only 7 SRV's memory lights are lit.  
Alert
- B. Only 7 SRV's memory lights are lit.  
Unusual Event
- C. 8 SRV's memory lights are lit.  
Alert
- D. 8 SRV's memory lights are lit.  
Unusual Event

REFERENCE:

EALs to be given to examinee

EXPLANATION: SRVs are designed to lift at 1130, 1140 and 1150 psig. At 1130 4 SRVs open, at 1140 another 4 SRVs open and at 1150 the remaining 3 SRVs open. Based on the highest pressure reading of 1145 then 8 SRVs should have opened. ARI should have auto initiated because of reactor pressure being greater than 1137.8 psig, which would have tripped the pumps. Since the auto action has not occurred then it should be made to happen.

The correct declaration to make is an Unusual Event based on the failed open SRV. Some people may jump on the Alert for a ATWS, but with the negative period and downscapes this does not meet the EP definition.

CHOICE "A" Incorrect, 7 SRVs is the number of ADS valves. Not at an Alert.

CHOICE "B" Incorrect, 7 SRVs is the number of ADS valves.

CHOICE "C" Incorrect, Not at an Alert.

CHOICE "D" Correct answer.

295007 High Reactor Pressure

2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.  
(CFR: 41.5 / 43.5 / 45.12 / 45.13)

IMPORTANCE RO 4.4 SRO 4.7

SOURCE: New

LESSON PLAN/OBJECTIVE:  
CLS-LP-20, Obj. 9. List the SRV pressure relief setpoints.

COG LEVEL: Higher Order

SRO Only - Fuel Handling facilities and procedures 43(b)(7) Emergency classifications.

88. With Unit Two operating at full power, an inadvertent initiation of Core Spray A occurs and cannot be reset.

Which one of the following identifies the status of the RBCCW system and also identifies the procedure that contains the guidance for restoring RBCCW system cooling?

- A✓ SW-V106, RBCCW HXS SW INLET VLV, has shut;  
0AOP-18, Nuclear Service Water System Failure.
- B. SW-V106, RBCCW HXS SW INLET VLV, has shut;  
0AOP-19, Conventional Service Water System Failure.
- C. All RBCCW pumps have tripped;  
0AOP-18, Nuclear Service Water System Failure.
- D. All RBCCW pumps have tripped;  
0AOP-19, Conventional Service Water System Failure.

REFERENCE:  
0AOP-17

EXPLANATION:  
Cooling has been lost due to the CS signal closing the 106 valve. To restore cooling RCC would need to be put on CSW. This is accomplished in AOP-18.

CHOICE "A" correct answer.

CHOICE "B" AOP-19 does not give the guidance for the valve manipulations for the 106 or the CSW-V146 valve.

CHOICE "C" The pumps have not tripped they would need a LOCA signal concurrent with a LOOP to trip.

CHOICE "D" The pumps have not tripped they would need a LOCA signal concurrent with a LOOP to trip. AOP-19 does not give the guidance for the valve manipulations for the 106 or the CSW-V146 valve.

295018 Partial or Complete Loss of Component Cooling Water

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

AA2.03 Cause for partial or complete loss..... 3.2 / 3.5

SOURCE: new

LESSON PLAN/OBJECTIVE:  
CLS-LP-302H, Obj. 1a. Given plant conditions, determine if the following AOPs should be entered:  
0AOP-17, TBCCW System Failures.

COG LEVEL: Higher Order

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

89. Unit One is at full power when all offsite power was lost. The following is the status of the Emergency Diesel Generators:

DG1	Locked out on fault
DG2	Running and loaded
DG3	Running and loaded
DG4	Running and loaded

Which one of the following identifies the required action to re-establish the CRD system per 0AOP-36.1, Loss of Any 4160V Buses or 480V E-Buses, and also identifies the procedure that contains the step for placing the CRD Flow Control, C11-FC-R600, in manual with manual potentiometer at minimum setting?

- A. The 1A CRD Pump must be started;  
1OP-08, Control Rod Hydraulic System Operating Procedure.
- B. The 1A CRD Pump must be started;  
0AOP-02, Control Rod Malfunction/Misposition.
- C. The 1B CRD Pump must be started;  
1OP-08, Control Rod Hydraulic System Operating Procedure.
- D. The 1B CRD Pump must be started;  
0AOP-02, Control Rod Malfunction/Misposition.

REFERENCE:  
0AOP-36.1  
1OP-08 page 71

EXPLANATION:  
with a loss of all offsite power the E-Buses will strip the loads (CRD Pumps), there are no auto starts for these pumps, so both CRD pumps will be off. DG1 is lost which means E1 is lost and A CRD pump will not be able to be started. The guidance for restart is in the OP.

CHOICE "A" A CRD has no power.

CHOICE "B" A pump has no power. AOP does not give guidance for this step.

CHOICE "C" correct answer

CHOICE "D" AOP does not give guidance for this step.

295022 Loss of Control Rod Drive Pumps

AA2. Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS : (CFR: 41.10 / 43.5 / 45.13)

AA2.02 CRD system status..... 3.3 3.4

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-302G, Obj. 4c. given plant conditions and any of the following AOP's, determine the required supplementary actions: AOP-36.1.

COG LEVEL: Higher Order

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

90. A fuel bundle was dropped in the spent fuel pool and 0AOP-5.0, Radioactive Spills, High Radiation, and Airborne Activity, has been entered.

The following alarms are received:

AREA RAD REFUEL FLOOR HIGH (UA-03 3-7)  
PROCESS RX BLDG VENT RAD HI (UA-03 4-5)  
RX BLDG ROOF VENT RAD HIGH (UA-03 2-3)

Which one of the following predicts the plant response and also identifies the required procedure implementation?

- A. Secondary Containment has automatically isolated;  
Execute 0AOP-5.0 and RRCP concurrently.
- B. Secondary Containment has automatically isolated;  
Execute RRCP and Exit 0AOP-5.0.
- C✓ Secondary Containment has NOT automatically isolated;  
Execute 0AOP-5.0 and RRCP concurrently.
- D. Secondary Containment has NOT automatically isolated;  
Execute RRCP and Exit 0AOP-5.0.

REFERENCE:  
0AOP-5.0 / EOP-RRCP

EXPLANATION:

All three of these alarms are symptoms for the AOP and the last one is an entry condition for the EOP. Unlike 0AOP-14 when an entry condition exists for the EOP you do not exit the AOP, instead it is completed concurrently with the EOP. If turbine building hi rad conditions exist or if an alert or higher on rad conditions exist then Once thru is placed in recirc (recent mod). conditions do not exist for SCI (SBGT start, Group VI, and RBV isolation). CREV should be manually started, no auto start signal exists. An action from the EOP is to do a 3.4.7 calculation.

CHOICE "A" AOP-5.0 should be executed, but also EOP-RRCP should be entered. SCI signal does not exist.

CHOICE "B" SCI signal does not exist. If RB Vent Hi Hi was in this would be a correct answer.

CHOICE "C" correct answer.

CHOICE "D" do not exit AOP-5.

295023 Refueling Accidents

2.4.8 Knowledge of how abnormal operating procedures are used in conjunction with EOPs. (CFR: 41.10 / 43.5 / 45.13)

IMPORTANCE RO 3.8 SRO 4.5

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-302J, Obj. 1. Given plant conditions, determine if the AOP-5.0 should be entered.

COG LEVEL: Higher Order

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

91. An event on Unit One has resulted in the following plant conditions:

Reactor pressure:	1000 psig
Reactor Water Level	120 inches
Control Rods	All unknown
APRMs	Downscale
Drywell pressure:	3 psig
Supp. Pool pressure:	2 psig
Supp. Pool water temp:	150° F
Supp. Pool water level:	-4 feet

(Reference Provided)

Which one of the following identifies the status of the Heat Capacity Temperature Limit (HCTL) and also identifies the required procedure for reactor pressure control?

- A. HCTL has been exceeded;  
RVCP pressure control leg.
- B. HCTL has been exceeded;  
LPC pressure control leg.
- C. HCTL has NOT been exceeded;  
RVCP pressure control leg.
- D. HCTL has NOT been exceeded;  
LPC pressure control leg.

REFERENCE:

Heat Capacity Temperature Graph only is given to examinee PCCP.

EXPLANATION:

the HCTL has been exceeded. With rods unknown the operator would be in LPC.

CHOICE "A" rods are unknown, would be in LPC.

CHOICE "B" correct answer.

CHOICE "C" HCTL has been exceeded. rods are unknown, would be in LPC

CHOICE "D" HCTL has been exceeded.

295026 Suppression Pool High Water Temperature

EA2. Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: (CFR: 41.10 / 43.5 / 45.13)

EA2.03 Reactor pressure..... 3.9 / 4.0

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-300L, Obj. 5a, Given the PCCP, determine the appropriate actions if any of the following limits are approached or exceeded: Heat Capacity Temperature Limit.

COG LEVEL: higher order

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

92. 0MST-PCIS21Q, PCIS Rx Water LL2 and LL3 Div I Trip Unit Chan Cal and Func Test, was performed and the following is the as left trip setpoint data:

<u>Instrument</u>	<u>Calibration Current</u>
B21-LT-N024A-1-1	11.59 mAdc
B21-LT-N024A-1-2	7.40 mAdc
B21-LT-N025A-1-1	11.64 mAdc
B21-LT-N025A-1-2	7.43 mAdc

(Reference provided)

Based on the above information which one of the following is the status of the Div I trip system and the required action?

- A. LL2 function is inoperable.  
Enter TS 3.3.6.1 Condition A only.
- B✓ LL2 function is inoperable.  
Enter TS 3.3.6.1 Condition A and Condition B.
- C. LL3 function is inoperable.  
Enter TS 3.3.6.1 Condition A only.
- D. LL3 function is inoperable.  
Enter TS 3.3.6.1 Condition A and Condition B.

REFERENCE:

Given the acceptance criteria of 0MST-PCIS21Q pages 5/6  
Given OOI-18 page 13  
Given TS 3.3.6.1 (values whited out)

EXPLANATION:

From the acceptance criteria, LL2 must have a current reading of greater than 11.7 mAdc and LL3 must have a current reading of greater than 4.99 mAdc.  
Tech spec - LL2 function is outside of its allowable isolation setpoint so it is not operable. From the bases isolation functions are considered to be maintaining isolation capability when sufficient channels are operable or in trip, such that one trip system will generate a trip signal from the given function on a valid signal. For functions 1a. (LL3) this would require both trip systems to have a total of three channels. For function 5g. (LL2) this would require one trip system to have two channels, each operable or in trip.  
From OI-18 A1 and A2 are the affected instruments.  
The LL3 trip logic is A1 or A2 and B1 or B2. (which still would work)  
The LL2 trip logic is A1 and B1 for half and A2 and B2 for the other half of the isolation.  
Based on this the LL2 function is inoperable and unable to provide isolation capability on a valid signal.

CHOICE "A" Incorrect - see explanation.

CHOICE "B" Correct

CHOICE "C" Incorrect - see explanation.

CHOICE "D" Incorrect - see explanation.

295031 Reactor Low Water Level

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)

IMPORTANCE RO 3.9 SRO 4.5

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-1.2, Obj. 13. Given plant conditions and TS, including the bases, TRM, ODCM, and COLR, determine the required actions to be taken in accordance with TS associated with Reactor Vessel Instrumentation system. (SRO/STA Only)

COG LEVEL: High

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2))

93. Unit Two has a line break with the following annunciators in alarm:

SOUTH CS RM FLOOD LEVEL HI  
SOUTH RHR RM FLOOD LEVEL HI  
SOUTH CS RM FLOOD LEVEL HI-HI  
SOUTH RHR RM FLOOD LEVEL HI-HI

Which one of the following identifies the leak location and also identifies whether or not the Technical Specifications (TS) cooldown rate is required to be maintained?

Pipe break on the \_\_\_\_\_.

TS cooldown rate \_\_\_\_\_ required to be maintained.

- A. HPCI Turbine Steam Supply Line in the Steam Tunnel.  
is
- B. HPCI Turbine Steam Supply Line in the Steam Tunnel.  
is not
- C✓ RHR Service Water line above the RSDP.  
is
- D. RHR Service Water line above the RSDP.  
is not

REFERENCE:  
System knowledge/location  
0EOP-01-SCCP

EXPLANATION:  
First have to determine that the leak has to be from the RHR and this is not a primary system. Then based on having two areas at max safe the operator should NOT ED cooldown would be within the TS limit.

CHOICE "A" Incorrect. Pipe break would be in the HPCI room which has submarine doors to maintain the leak within that room. ED would not be required so the cooldown rate cannot be exceeded.

CHOICE "B" Incorrect. Pipe break would be in the HPCI room which has submarine doors to maintain the leak within that room.

CHOICE "C" correct.

CHOICE "D" Incorrect. ED would not be required so the cooldown rate cannot be exceeded.

295036 Secondary Containment High Sump / Area Water Level

EA2. Ability to determine and/or interpret the following as they apply to SECONDARY CONTAINMENT HIGH SUMP/AREA WATER LEVEL : (CFR: 41.10 / 43.5 / 45.13)

EA2.03 Cause of the high water level..... 3.4 / 3.8

SOURCE: new

LESSON PLAN/OBJECTIVE:

CLS-LP-300M, Obj. 8b. Given plant conditions and the SCCP, determine if any of the following are required: Consider anticipation of emergency depressurization.

COG LEVEL: Higher Order

SRO Only - Facility operating limitations in the TS and their bases. (43(b)(2)

94. Which one of the following identifies the earliest point in a reactor startup that the requirement for two Control Operators in the affected unit's Main Control Room can be relaxed in accordance with OOI-01.02, Shift Routines and Operating Practices.

- A. As soon as rated reactor pressure is achieved
- B. As soon as the point of adding heat is achieved
- C. As soon as the second Reactor Feed Pump is in service
- D. As soon as the Main Generator is synchronized to the grid

REFERENCE:

OOI-01.02 Shift Routines and Operating Practices, section 5.1.5

EXPLANATION:

OI-01.02 states that Two Control operators are required until the Main Generator is synchronized to the grid. All the other answer options are plant milestones for a reactor startup and plausible responses.

CHOICE "A" - Incorrect, see explanation.

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Incorrect, see explanation.

CHOICE "D" - Correct Answer

2.1.4 Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, "no-solo" operation, maintenance of active license status, 10CFR55, etc.  
(CFR: 41.10 / 43.2)

IMPORTANCE RO 3.3 SRO 3.8

SOURCE: Bank LOI-CLS-LP-201-D\*01C (1)

LESSON PLAN/OBJECTIVE:

COG LEVEL: Low

SRO Only - Conditions and limitations in the facility license 43(b)(1)

95. Unit One is in an accident condition and is executing RVCP with the following conditions:

Reactor Water Level	-60 inches
Reactor Pressure	800 psig
Reference Leg Temperature	208° F
Injection sources available	None

(reference provided)

Which one of the following identifies the required procedure(s) that is/are required to maintain adequate core cooling?

- A✓ Below the minimum steam cooling water level  
Enter STCP. Do not perform Emergency Depressurization.
- B. Below the minimum steam cooling water level  
Enter STCP and perform Emergency Depressurization.
- C. Above the minimum steam cooling water level  
Remain in RVCP. Do not perform Emergency Depressurization.
- D. Above the minimum steam cooling water level  
Remain in RVCP and perform Emergency Depressurization.

REFERENCE:

Reactor Flooding Procedure (Step 60)  
LL4 and LL5 graphs provided to students.

EXPLANATION:

Determines that level is less than LL4 and no injection sources, so STCP must be entered.  
When leaving RVCP only the pressure leg is exited and the level leg is executed concurrently with STCP.

CHOICE "A" - Correct Answer.

CHOICE "B" - Incorrect. ED would not be required until LL5.

CHOICE "C" - Incorrect. Not above LL4.

CHOICE "D" - Incorrect. Not above LL4 and ED would not be required until LL5.

2.1.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (CFR: 41.5 / 43.5 / 45.12 / 45.13)

IMPORTANCE RO 4.4 SRO 4.7

SOURCE: Bank LOI-CLS-LP-300-F\*12C (5)

LESSON PLAN/OBJECTIVE:  
CLS-LP-300-F Objective 8

COG LEVEL: High

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

96. A fire in the control building fire area requires entry into 0PFP-013, General Fire Plan, and 0ASSD-01, Alternative Safe Shutdown Procedure Index. The SCO has determined that alternate safe shutdown actions are required.

Which one of the following identifies the next action that is required in accordance with ASSD-01 after a manual scram of both units and also identifies what procedure(s) are performed following these actions?

- A✓ Place MSIV control switches in close;  
Perform 0ASSD-02, Control Building, only.
- B. Trip both Reactor Recirc pumps;  
Perform 0ASSD-02, Control Building, only.
- C. Trip both Reactor Recirc pumps;  
Perform 0AOP-32, Plant Shutdown From Outside the Control Room, concurrently with 0ASSD-02, Control Building.
- D. Place MSIV control switches in close;  
Perform 0AOP-32, Plant Shutdown From Outside the Control Room, concurrently with 0ASSD-02, Control Building.

REFERENCE:

0ASSD-01 Alternate Safe Shutdown Procedure, section 3.5.2

EXPLANATION:

All of the available responses are actions required for AOP-32 Plant Shutdown from Outside the Control Room, therefore plausible options. Of these actions, the only one directed from the applicable section of ASSD-01 is to place the MSIV control switches to close. If there is a fire AOP states to exit this procedure.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Incorrect, see explanation.

CHOICE "D" - Incorrect, see explanation.

2.4.27 Knowledge of "fire in the plant" procedures.  
(CFR: 41.10 / 43.5 / 45.13)

IMPORTANCE RO 3.4 SRO 3.9

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-304, Obj. 12. Given plant conditions with an ASSD fire and the ASSD procedures, determine the appropriate operator actions to be performed for the fire.

COG LEVEL: High

SRO Only - Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations (43(b)(5))

97. In accordance with 0AI-147, Systematic Approach to Troubleshooting, which one of the following identifies the trouble shooting activities that must be approved by the Plant General Manager (PGM)?

- A. ONLY high risk activities.
- B. ONLY those high risk activities that are performed during max/safe/gen periods of operation.
- C✓ ALL medium and high risk activities that are performed during max/safe/gen periods of operation.
- D. ALL high risk activities (anytime) and ONLY those medium risk activities that are performed during max/safe/gen periods of operation.

REFERENCE:

0AI-147 "Systematic Response to Troubleshooting"

EXPLANATION:

Per AI-147, the Plant General Manager is required to approve troubleshooting activities classified as medium or high risk which are performed during max/safe/gen periods.

Each of the available choices present options that a student may conclude reasonable, therefore plausible.

CHOICE "A" - Incorrect, see explanation.

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Correct Answer

CHOICE "D" - Incorrect, see explanation.

2.2.20 Knowledge of the process for managing troubleshooting activities.  
(CFR: 41.10 / 43.5 / 45.13)

IMPORTANCE RO 2.6 SRO 3.8

SOURCE: New

LESSON PLAN/OBJECTIVE:

COG LEVEL: Low

SRO Only - Facility licensee procedures required to obtain authority for design and operating in the facility 43(b)(3)

98. During the performance of 1OP-30, Condenser Air Removal and Off-Gas Recombiner System, an error is identified in the procedure and a temporary procedure change is being performed.

Which one of the following identifies how this type of temporary change is required to be categorized and the maximum duration allowed in accordance with PRO-NGGC-0204, Procedure Review and Approval?

- A. One-Time-Use-Only,  
not to exceed 21 days from interim approval date
- B. Permanent Revision to Follow,  
not to exceed 21 days from interim approval date
- C. One-Time-Use-Only,  
not to exceed 4 months from interim approval date
- D. Permanent Revision to Follow,  
not to exceed 4 months from interim approval date

REFERENCE:

PRO-NGGC-0204 Procedure Review and Approval, section 9.3 TC Process

EXPLANATION:

Temporary changes can be classified as either "One Time Use" or "Permanent Revision to Follow". A revision to correct a mistake in a procedure is classified as "Permanent Revision to Follow". The required expiration date for a Brunswick TC is "not to exceed 4 months from interim approval". For a TC at Robinson, the time frame would be 21 days. Both time frames are specified in the common procedure.

CHOICE "A" - Incorrect, see explanation.

CHOICE "B" - Incorrect, see explanation.

CHOICE "C" - Incorrect, see explanation.

CHOICE "D" - Correct Answer

2.2.6 Knowledge of the process for making changes to procedures.  
(CFR: 41.10 / 43.3 / 45.13)

IMPORTANCE RO 3.0 SRO 3.6

SOURCE: New

LESSON PLAN/OBJECTIVE:

CLS-LP-201C , Obj. 5b. State the definition of the following in accordance with PRO-NGGC-0204, as they apply to temporary changes: Permanent revision to follow.

COG LEVEL: Low

SRO Only - Facility licensee procedures required to obtain authority for design and operating in the facility 43(b)(3)

99. A steam leak at the MSR manway exists with the following conditions:

AREA RAD TURBINE BLDG HI	In alarm
Turbine Rotor Wash Down Area ARM	Increase from 2 mr/hr to 300 mr/hr
Turbine Building CAMs	Alarming
Turbine Building WRGM	Increasing trend
Turbine Building Evacuation	Has been directed

(reference provided)

Which one of the following choices completes the statements below in accordance with 0AOP-05.0 Radiactive Spills, High Radiation, and Airborne Activity, and 0PEP-02.1, Initial Emergency Actions?

Ensure Turbine Building HVAC is operating in the \_\_\_\_\_ mode of operation.

The highest emergency action level classification that is required for these conditions is \_\_\_\_\_.

- A✓ Recirc  
Unusual Event
- B. Recirc  
Alert
- C. Once through  
Unusual Event
- D. Once through  
Alert

REFERENCE:  
SD-37 page 37  
TS Bases 3.3.7.1 / 3.7.3

EXPLANATION:  
System knowledge that it goes into recirc mode of operation. Based on rad conditions once through ventilation is required to isolated. An evacuation based on confirmed rad conditions is an unusual event notification.

CHOICE "A" - Correct Answer

CHOICE "B" - Incorrect.

CHOICE "C" - Incorrect.

CHOICE "D" - Incorrect, .

2.3.15 Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. (CFR: 41.12 / 43.4 / 45.9)

IMPORTANCE RO 2.9 SRO 3.1

SOURCE: New

LESSON PLAN/OBJECTIVE:

COG LEVEL: High

SRO Only - Radiation hazards and contamination conditions that may occur during normal and abnormal situations, including maintenance activities and various contamination conditions. 43(b)(4) Analysis and interpretation of radiation and activity readings as they pertain to selection of administrative, normal, abnormal, and emergency procedures.

100. The Unit One Salt Water Release Tank (U/1 SWRT) is nearing capacity and is scheduled to be released. The tank has been recirculated per OOP-06.4, Discharging Radioactive Liquid Effluents to the Discharge Canal.

A radioactive liquid release permit has been prepared with the following data:

Tank Level	83%
Tank Volume	30,087.5 gallons
Required Recirc Time	332 minutes
Recirc Start Date/Time	10/23/08, 2230 hours
Sample Valve Opened Date/Time	10/24/08, 0410 hours
Sample Taken Date/Time	10/24/08, 0420 hours

(Reference provided)

Which one of the following identifies whether or not the time requirements for recirculation and sampling of the U/1 SWRT have been met in accordance with OOP-06.4?

The requirements of OOP-06.4 for recirculation and sampling of the U/1 SWRT:

- A.  have been met.  
The recirculation and sample times are satisfied.
- B.  have NOT been met.  
The recirculation time was incorrectly calculated.
- C.  have NOT been met.  
The recirculation time was calculated correctly; however, the tank was not recirculated long enough.
- D.  have NOT been met.  
The recirculation time was calculated correctly; however, the sample valve was not open long enough before obtaining the sample.

**REFERENCE:**

1OP-6.4 Discharging Radioactive Liquid Effluents the Discharge Canal, (only section 5.7 provided to examinee)

**EXPLANATION:**

The student must evaluate the data and determine that all of the criteria are met. First determines that 83 times 4 does equal 332 minutes, second that 332 minutes correlates to the start of recirc until the sample is taken and that the sample valve was open for greater than 5 minutes before the sample was taken.

CHOICE "A" - Correct answer

CHOICE "B" - Incorrect. May determine to be correct if miscalculation is performed.

CHOICE "C" Incorrect. may determine to be correct if misapplies the time (based on going past midnight)

CHOICE "D" - Incorrect the allowable time has passed.

2.3.6 Ability to approve release permits. (CFR: 41.13 / 43.4 / 45.10)

IMPORTANCE RO 2.0 SRO 3.8

SOURCE: Bank

**LESSON PLAN/OBJECTIVE:**

CLS-LP-6.3, Obj. 5. Given a level in one of the Radwaste Release Tanks, calculate the minimum time required for recirculation.

COG LEVEL: Low

SRO Only - Radiation hazards and contamination conditions that may occur during normal and abnormal situations, including maintenance activities and various contamination conditions. 43(b)(4) Process for gaseous/liquid release approvals, i.e. release permits.