EXAMINATION ANSWER KEY

Byron 2010 ILT Examination

1 **ID: BYLI-RC2-023** **Points: 1.00**

A spurious Phase 'A' Containment Isolation has occurred.

Which ONE of the following describes the effect of this isolation?

A. RCP seal leakoff will be isolated. The seal leakoff flow will be directed to the PRT via a relief valve.

B. Component Cooling to the RCP thermal barriers will be isolated. RCP seal injection must be maintained.

C. Component Cooling to the RCP motors will be isolated. The RCPs will have to be tripped.

D. RCP seal injection is isolated. CC flow to the thermal barriers must be maintained.

Answer: A

Answer Explanation:

Phase A closes 1CV8112 & 1CV8100 seal return valves. The upstream relief valve opens at 150# to allow seal return water to the PRT.
Seal injection flow is not affected by Phase A, nor is Component Cooling flow to the motor oil cooler or the thermal barrier. CC flow would be isolated by a Phase B isolation signal.

Question 1 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	6982
User-Defined ID:	BYLI-RC2-023
Cross Reference Number:	BY-SYS-QUEST #: SRC5032
Topic:	Phase 'A' Containment Isolation
Num Field 1:	2.8
Num Field 2:	3.1
Text Field:	003000K6.04
Comments:	Source: D.C. Cook 6/95 NRC exam Cognitive level: Memory Reference: 1BOA Pri-13, Rev 103, Recovery From Inadvertant Containment Phase A Isolation K/A: 003000 K6.04 Reactor Coolant Pump System: Knowledge of the effect of a loss or malfunction on the following will have on the RCPs: Containment isolation valves affecting RCP operation. This meets the KA of knowledge of the effect of a malfunction of containment isolation valves on RCP operation. The RCPs themselves may continue to operate in this situation, but the operation of the RCP's seal return flow has been affected by the spurious Phase A isolation.

Associated objective(s):

EXPLAIN the interrelationship between the following signal or actuation and the operation of the Reactor Coolant Pumps: Phase A Isolation Signal

DISCUSS the effects of an inadvertent Phase A Isolation on plant operation.

DRAW a sketch of the Reactor Coolant Pump Seal Area and DESCRIBE the seal flow paths, including the following: Sources of Injection Water to Each Seal, Leakoff Path(s) From Each Seal,
Flowrates Through Each Seal, Consequences of Losing Seal Water Injection, Effect of Changes in Leakoff Path Backpressure

2 **ID: BYLI-RC2-022** **Points: 1.00**

Given the following plant conditions:

- Annunciator 1-9-B2, VCT PRESS HIGH LOW is LIT.
- The Operator observes that VCT pressure is 13 psig.

In this condition, backpressure on the RCP Seal Package is...

A. low, and insufficient flow may be occurring through the #2 seal.

B. low, and may force excessive flow through the #3 RCP seal.

C. low, and insufficient flow may be occurring through the #1 seal.

D. high, and may force excessive flow through the #2 RCP seal.

Answer: A

Answer Explanation:

Low VCT pressure results in a low backpressure on the #1 seal, which causes #1 seal leakoff flow to preferentially go to the VCT rather than to the #2 seal.
#3 seal injection is from the standpipe and is not affected by VCT pressure.
A high backpressure at the #1 seal would force excessive flow through the #2 seal.

Question 2 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	9256
User-Defined ID:	BYLI-RC2-022
Cross Reference Number:	BY-SYS-QUEST #: SRC5031
Topic:	Low VCT pressure affect on RCP seals
Num Field 1:	4.2
Num Field 2:	4.2
Text Field:	003000G2.4.46
Comments:	Source: Byron exam bank (D.C. Cook 6/95 NRC exam) Cognitive Level: High Reference: BOP CV-1a, Rev 22, Startup of the CV system; BAR 1-9-B2 VCT PRESS HIGH LOW K/A: 003000 G2.4.46 Reactor Coolant Pump System: Ability to verify that the alarms are consistent with plant conditions. This meets the K/A in that the operator must compare the possible plant responses to the given alarm and evaluate the correct response.

Associated objective(s):

DESCRIBE the purpose of the Reactor Coolant Pump Seals, and EXPLAIN their operation

DESCRIBE the operational limitations, and the reasons for them, on the Reactor Coolant Pump regarding: The Minimum Required Differential Pressure Across the #1 Seal

DRAW a sketch of the Reactor Coolant Pump Seal Area and DESCRIBE the seal flow paths, including the following: Sources of Injection Water to Each Seal, Leakoff Path(s) From Each Seal,
Flowrates Through Each Seal, Consequences of Losing Seal Water Injection, Effect of Changes in Leakoff Path Backpressure

3 **ID: BYLI-CV1-199** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power, with all controls in normal alignment.
- 1CV459 (Letdown Isolation Valve) is to be stroked closed and then reopened as part of a post-maintenance test.

To MANUALLY close 1CV459, 1CV8149A, B and C (Letdown Orifice Isolation Valves) must be __(1)__ , and to REOPEN 1CV459, 1CV8149A, B and C must be __(2)__.

	__(1)__	__(2)__
A.	CLOSED	OPEN
B.	OPEN	OPEN
C.	CLOSED	CLOSED
D.	OPEN	CLOSED

Answer: C

Answer Explanation:

1CV459 is interlocked with 1CV8149A-C such that to manually open OR shut 1CV459, 1CV8149A-C must be closed. This prevents flashing and damage to the orifices.

Question 3 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	28112
User-Defined ID:	BYLI-CV1-199
Cross Reference Number:	
Topic:	Interlocks between Letdown Isolation Valves and Orifice Isolation Valves
Num Field 1:	3.2
Num Field 2:	3.5
Text Field:	004000K4.13
Comments:	Source: New 4/23/2010 by R. F. Peterson Cognitive level: Memory Reference: BOP CV-17, Establishing and securing normal and RH letdown flow. K/A 004000 K4.13 Chemical and Volume Control System: Knowledge of the CVCS design feature(s) and/or interlock(s) which provide for the following: Interlock between letdown isolation valve and flow control valve. This meets the K/A in that the candidate must know the interlock (with the orifice isolation valves) to open and close the letdown isolation valve.

Associated objective(s):

STATE and EXPLAIN the interlocks associated with the following: CV-459 AND CV-460

4 **ID: BYLI-RH1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 5 at 300 psig and 140°F.
- Train A RH is in Shutdown Cooling.
- Train B RH is aligned for Cold Leg Injection.

In the current alignment, assuming all RH components are OPERABLE,
(1) What is the MINIMUM number of Pressurizer PORVs that must be OPERABLE and in ARM LOW TEMP Mode?
(2) What is the reason for this minimum number?

A. (1) NO Pzr PORVs are needed to be in ARM LOW TEMP.
(2) ONE RH Suction Relief Valve is providing all required Low Temperature Overpressure Protection.

B. (1) ONE Pzr PORV must be in ARM LOW TEMP.
(2) The Pzr PORV and ONE RH Suction Relief Valve are providing all required Low Temperature Overpressure Protection.

C. (1) TWO Pzr PORVs must be in ARM LOW TEMP.
(2) The RH Suction and Discharge Relief Valves are not credited with providing Low Temperature Over Pressure Protection.

D. (1) NO Pzr PORVs are needed to be in ARM LOW TEMP.
(2) ONE RH Suction Relief Valve and ONE RH Discharge Relief Valve are providing all required Low Temperature Overpressure Protection.

Answer: B

Answer Explanation:

ONE Pzr PORV or RH Suction Relief Valve is sufficient to relieve an overpressure condition, but TWO are required (either 1 of each, or 2 of 1 type) for redundant protection.

This is high cognitive level because the candidate must analyze the stem and realize 1 RH train in SD cooling provides 1 of the required relief paths, and have the knowledge that 2 paths are required (knowing which valve are allowed to provide those paths).

Question 4 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	28115
User-Defined ID:	BYLI-RH1-099
Cross Reference Number:	
Topic:	COP methods
Num Field 1:	2.6
Num Field 2:	2.9
Text Field:	005000K5.01
Comments:	Source: New 4/27/2010 R. F. Peterson Cognitive level: High Reference: 1BGP 100-5, Plant Shutdown and Cooldown K/A 005000 K5.01 Residual Heat Removal System: Knowledge of the operational implications of the following concepts as they apply to the RHRS: Nil ductility transition temperature (brittle fracture). This meets the K/A because the candidate must know how the RHR (and Pzr PORV) system is operated to protect against cold overpressure. The purpose of the COP system is to protect the system from the effects of high pressure while at a low temperature; ie, below the Nil ductility transition temperature.

Associated objective(s):

DISCUSS operation of the RH system during: Plant Cooldown (Include method of Cooldown Rate Control)

5 **ID: BYLI-EC1-094** **Points: 1.00**

Given the following conditions:

- Unit 1 is in MODE 3
- RCS pressure = 2235 psig
- RCS temperature = 557°F

- Accumulator 1A level = 55%
- Accumulator 1A pressure = 642 psig
- Accumulator 1A Boron concentration = 2005 ppm

Which of the following describes the status of the 1A SI accumulator?

A. All required parameters are within acceptable Tech Spec limits.

B. The boron concentration is below acceptable Tech Spec concentration.

C. The accumulator level is below acceptable Tech Spec level.

D. The accumulator Tech Spec is NOT applicable since the unit is in MODE 3.

Answer: B

Answer Explanation:

The SI Accumulator limits in MODES 1, 2 & 3 (with RCS pressure >1000psig) per TS 3.5.1 are:
Accumulator isolation valve open
Water level $\geq$31% and $\leq$63%
Nitrogen pressure $\geq$ 602 psig and $\leq$647 psig
Boron concentration $\geq$2200 ppm and $\leq$2400 ppm

Question 5 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	4.00
System ID:	805
User-Defined ID:	BYLI-EC1-094
Cross Reference Number:	BY-SYS-QUEST #: SCE0089
Topic:	determining accumulator inoperable due to low boron concentration
Num Field 1:	3.4
Num Field 2:	3.9
Text Field:	006000K6.01
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: T.S. 3.5.1, Accumulators K/A 006000 K6.01 Emergency Core Cooling System: Knowledge of the effect of a loss or malfunction of the following will have on the ECCS: BIT/borated water sources. This meets the K/A because the candidate must know that low boron concentration in the accumulator renders that part of the ECCS system INOPERABLE.

Associated objective(s):

DETERMINE from memory, applicable ECCS Tech Spec operability requirements

6 **ID: BYLI-RY1-124** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 5 with Tave at 185°F.
- 1D RCP is running.
- Normal charging and letdown are in service.
- The crew is in the process of drawing a bubble in the pressurizer.
- Pressurizer level has just started to come on scale.

A complete loss of instrument air to Containment occurs when 1IA065, CNMT Instrument Air Isolation Valve spuriously closes.

1) Which ONE of the following describes the plant response with NO operator action?
AND
2) What is the proper operator response to control this pressure response?

A. 1) RCS pressure and Pressurizer level will slowly LOWER.
2) Re-establish instrument air to containment, and raise charging flow to maintain RCS pressure and Pressurizer level.

B. 1) RCS pressure will remain STABLE.
2) Maintain charging flow and letdown flow stable.

C. 1) PRT temperature and pressure will RAISE because a Pressurizer Safety Valve will OPEN.
2) Establish Auxiliary Pressurizer Spray to maintain pressure below the Safety Valve lift setpoint.

D. 1) PRT temperature and pressure will RAISE because a Pressurizer PORV will OPEN.
2) Re-establish instrument air to containment, then restore charging and letdown flow.

Answer: D

Answer Explanation:

Loss of instrument air causes the letdown valves and spray valves to fail shut. Pressure will rise and a PZR PORV will open. The PORVs have accumulators that allow at least 50 cycles by design.
Restoring IA to CNMT and letdown flow will control the pressure response.
Stable or decreasing RCS pressure is plausible if the examinee does not know that letdown isolates.
A Safety opening is plausible if the examinee incorrectly determines that PORVs are rendered inoperable by a loss if IA.
Using aux spray is plausible because it would be a viable response to a failed normal spray valve except that aux spray is also affected by the loss of IA.

Question 6 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	16672
User-Defined ID:	BYLI-RY1-124
Cross Reference Number:	BY-SYS-QUEST #:
Topic:	Loss of IA while drawing Pzr bubble
Num Field 1:	2.6
Num Field 2:	2.8
Text Field:	007000A2.06
Comments:	Source: Modified from Millstone 1997 ILT NRC RO Exam Cognitive level: High Reference: BOP RY-5, Rev 10, Drawing a bubble in the Pressurizer; 1BOA Pri-13, Rev 103, Recovery from Inadvertant Containment Phase A Isolation; 1BOA Sec-4, Rev 106, Loss of Instrument Air K/A 007000 A2.06 Pressurizer Relief Tank/Quench Tank System: Ability to (a) predict the impacts of the folowing malfunctions or operations on the PRTS; and (b) based on those predictions, use procedures to corrrect, control or mitigate the consequences of those malfunctions or operations: Bubble formation in PZR. This meets the K/A because the candidate must know (predict) the impact of the malfunction, and choose a mitigation strategy. 1BOA Sec-4, Loss of Instrument Air, provides guidance to restore IA and control systems.

Associated objective(s):

DISCUSS the operation of the Pressurizer Spray and Auxiliary Spray Systems including: Capacity of Sprays and Bypass Flows in GPM
DISCUSS the operation of the Pressurizer Spray and Auxiliary Spray System including: Any Precautions or Limitations Associated With Use of the Spray System
DISCUSS the operation of both the Pressurizer Power Operated Relief Valves and Pressurizer Safety Valves, including: Capacity in LBm/hr of Each and Combine
DISCUSS the operation of both the Pressurizer Power Operated Relief Valves and Pressurizer Safety Valves, including: All Automatic Control Setpoints
DISCUSS how the Pressurizer System interrelates with other plant systems including: Reactor Coolant System
DISCUSS how the Pressurizer System interrelates with other plant systems including: Chemical and Volume Control System
Given plant conditions which indicate a change in plant load, EXPLAIN the response of the pressurizer as it functions to maintain pressure

7 **ID: BWLI-CC1-047** **Points: 1.00**

Both units are at full power with all applicable systems operating in automatic.

- Off-site power was lost to both units.
- Component Cooling Water pumps 1A, 1B, 0, and 2B started after the diesel generators re-energized the ESF buses.

Which BUS is the "0" Component Cooling Water pump being powered from?

A. Bus 141

B. Bus 142

C. Bus 241

D. Bus 242

Answer: C

Answer Explanation:

Since the U-0 pump autostarted on a loss of offsite power, it must be aligned in place of the 2A CC pump, aligned to bus 241 with the 2A CC pump control switch in PTL.. The U-0 CC pump can be manually started on any bus to which it is aligned, but will only auto-start if the normal CC pump on that bus is in PTL.

Question 7 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	8479
User-Defined ID:	BWLI-CC1-047
Cross Reference Number:	LXR19-CC #47
Topic:	Power supply to U-0 CC pump
Num Field 1:	3.0
Num Field 2:	3.2
Text Field:	008000K2.02
Comments:	Source: NRC Brwd 11/93 Cognitive level: High Reference: BOP CC-10, Rev 21, Alignment of the U-0 CC Pump and U-0 CC HX to a Unit K/A 008000 K2.02 Component Cooling Water System: Knowledge of bus power supplies to the following: CCW pump, including emergency backup. This meets the K/A in that the candidate must deduce the aligned power supply to the U-0 CC pump by evaluating the plant response to the loss of offsite power.

Associated objective(s):

DESCRIBE the power supply/breaker arrangement for the common '0' CC Pump

8 **ID: BWLI-AP1-108** **Points: 1.00**

Given the following plant conditions:

- A Unit 1 shutdown is in progress.
- Unit 1 P-7, Low Power Trips Blocked permissive light is ON.

Control system malfunctions result in the following conditions:

- Pressurizer level at 94%
- All Main Turbine Throttle Valves CLOSED
- RCS pressure at 2400 psig
- 1A SG NR level at 23%

Which one of the listed conditions on Unit 1 will result in an AUTOMATIC Unit 1 reactor trip?

A. Pressurizer level

B. Main Turbine Throttle Valves

C. RCS pressure

D. 1A SG NR level

Answer: C

Answer Explanation:

The High RCS Pressure trip at 2385 psig is not blocked when below P-7.
High Pressurizer Level trip is blocked below P-7.
Turbine TV closure Rx Trip is blocked below P-8 (30%)
SG NR level trip is at 18% on U-1 (36.3% on U-2) - not blocked, but the SG level is not below the trip setpoint.

Question 8 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	8133
User-Defined ID:	BWLI-AP1-108
Cross Reference Number:	LXR04-AC DIST #108
Topic:	High Pressure trip active below P-7
Num Field 1:	4.0
Num Field 2:	4.1
Text Field:	010000K3.02
Comments:	Source: Modified from Byron exam bank Cognitive level: High Reference: 1BEP-0, Reactor Trip or Safety Injection K/A 010000 K3.02 Pressurizer Pressure Control System: Knowledge of the effect of a loss or malfunction of the Pzr PCS will have on the following: RPS This meets the K/A because high RCS pressure (as could be caused by a malfunction of the Pzr PCS) will cause an RPS actuation.

Associated objective(s):

Given a set of plant conditions, ANALYZE those conditions and DETERMINE if conditions exist that demand a Reactor Trip, that would allow blocking (Permissives) and/or that would actuate any control systems/devices associated with RPS

9 **ID: BYLI-RP2-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power, with all control systems in normal alignment.
- The NSO turned the Master Pressurizer Pressure Controller (1PK-455A) potentiometer in the LOWER direction (counter-clockwise).

This caused the...

A. OPDT reactor trip setpoint to rise.

B. OTDT reactor trip setpoint to lower.

C. OTDT reactor trip setpoint to rise.

D. OPDT reactor trip setpoint to lower.

Answer: B

Answer Explanation:

Turning the potentiometer counter-clockwise (lower direction) lowers the pressure control setpoint and causes the spray valves to open, lowering RCS pressure. The OTDT setpoint is lowered by RCS pressure lowering. OPDT is not affected. Distractors are plausible if Examinee does not know the pressure response to this manipulation, if the Examinee confuses the pressure-sensitive response of the OTDT and OPDT variable setpoints, and if the Examinee confuses the direction of the change of the OTDT setpoint to decreasing pressure.

Question 9 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28113
User-Defined ID:	BYLI-RP2-099
Cross Reference Number:	
Topic:	OTDT reactor trip setpoint changes
Num Field 1:	2.9
Num Field 2:	3.4
Text Field:	012000A1.01
Comments:	Source: New 4/25/2010 by R. F. Peterson Cognitive level: High Reference: BAR 1-11-B4, OTDT Reactor Trip K/A 012000 A1.01 Reactor Protection System: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the RPS controls including: Trip Setpoint Adjustment This meets the K/A because the candidate must predict changes in the trip setpoint that is changed by RCS pressure changes.

Associated objective(s):

Given a set of plant conditions or parameters and RPS indications, DETERMINE if the RPS is responding correctly

DISCUSS the relationship between the Safety Limits and the following: OT Delta T Reactor Trip

10 **ID: BYLI-RC2-046** **Points: 1.00**

The reactor is operating at 15% power when a fault occurs on 6.9KV bus 159 resulting in a bus lockout.

Which one of the following describes the plant response?

With NO operator action, the RCP 1D breaker will trip on __(1)__, and the reactor will __(2)__ trip.

	___(1)___	___(2)___
A.	undervoltage	AUTOMATICALLY
B.	underfrequency	AUTOMATICALLY
C.	undervoltage	NOT
D.	underfrequency	NOT

Answer: C

Answer Explanation:

A UV on one RCP bus will trip its respective RCP, but a UV on 2/4 RCP buses is required for a Rx trip.
The UF relays require power to actuate.
No low flow Rx trip due to needing 2/4 loops with low flow when between 10-30% power (P-8).

Question 10 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	405
User-Defined ID:	BYLI-RC2-046
Cross Reference Number:	BY-SYS-QUEST #: SRC5062
Topic:	UV trip of RCP
Num Field 1:	3.7
Num Field 2:	3.7
Text Field:	012000A3.06
Comments:	Source: Byron exam bank Cognitive level: High Reference: 1BEP-0, Reactor Trip or Safety Injection K/A 012000 A3.06 Reactor Protection System: Ability to monitor automatic operation of the RPS including: Trip Logic This meets the K/A because the candidate must be able to interpret the trip logic as part of monitoring automatic operation of the RPS.

Associated objective(s):

ANALYZE and PREDICT the effect that a loss of (a) Reactor Coolant Pumps will have on the following: Reactor Protection System

EXPLAIN the interrelationship between the following signal or actuation and the operation of the Reactor Coolant Pumps: RCP Bus Undervoltage

EVALUATE the response of the 6.9 KV and 4 KV buses for the following condition: Bus undervoltage

11 **ID: BYLI-SYS-165** **Points: 1.00**

Given the following plant conditions:

- RCS pressure has been lowered to 1850 psig during a plant cooldown.
- P-11, Pzr Low Pressure SI Block Permissive bypass permissive is LIT and appropriate actions have been taken as required by the shutdown procedure.

Subsequently a steamline break occurs downstream of the MSIVs.

With NO operator action, what is the ESF response to this leak?

A. A steamline isolation will **ALWAYS** occur, but an SI will **ONLY** occur on a large break.

B. For a large size break, a steam line isolation will occur, however an SI will **NOT** occur.

C. An SI will **ALWAYS** occur, but a steamline isolation will **ONLY** occur on a large break.

D. For a large size break, **BOTH** a steamline isolation and an SI will occur.

Answer: B

Answer Explanation:

Steamline SI signal is procedurally blocked when below P-11, but a MSLI will occur with a large break.

Question 11 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6719
User-Defined ID:	BYLI-SYS-165
Cross Reference Number:	BY-FM-SIM-2220-00
Topic:	Steamline isolation or SI below P-11
Num Field 1:	3.4
Num Field 2:	3.6
Text Field:	013000A1.05
Comments:	Source: Braidwood 97 NRC Cognitive level: High Reference: 1BGP 100-5, Plant Shutdown and Cooldown K/A 013000 A1.05 Engineered Safety Features Actuation System: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ESFAS control including: Main Steam pressure This meets the K/A because the candidate predicts the response of the ESFAS with low main steam pressure.

Associated objective(s):

Given a set of plant conditions, DESCRIBE the system or component operational status as directed by GP 100-5, Plant Shutdown and Cooldown

LIST the setpoints and DESCRIBE coincidences, functions and EXPLAIN how to reset the following ESF Systems/Components following actuation: Safety Injection

LIST the setpoints and DESCRIBE coincidences, functions and EXPLAIN how to reset the following ESF Systems/Components following actuation: Steamline Isolation

12 **ID: BYLI-PC1-099** **Points: 1.00**

Given the following plant conditions:

- Containment pressure has risen to 10 psig.
- All systems have operated properly.

Which one of the following valves would be OPEN?

A. 1MS001A, 1A Main Steam Isolation Valve

B. 1CS019A, Eductor 1A Spray Add Valve

C. 1CC685, CC Return from RCP Thermal Barrier Isolation Valve

D. 1CV8105, Charging Line CNMT Isolation Valve

Answer: C

Answer Explanation:

1CC685 is normally open, closes on Phase B at 20 psig or on high CC return flow.
1CS019A is normally closed, opens on CS at 20 psig.
1MS001A is normally open, closes on CNMT Hi-2 at 8.2 psig.
1CV8105 is normally open, closes on SI at 3.4 psig.

Question 12 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28119
User-Defined ID:	BYLI-PC1-099
Cross Reference Number:	
Topic:	Actuated valve on high cnmt pressure
Num Field 1:	4.1
Num Field 2:	4.2
Text Field:	013000A3.02
Comments:	Source: New 4/30/2010 R. F. Peterson Cognitive level: High Reference: 1BEP-0, Reactor Trip or Safety Injection K/A 013000 A3.02 Engineered Safety Features Actuation System: Ability to monitor automatic operation of the ESFAS including: Operation of actuated equipment This meets the K/A because it tests the candidates' knowledge of the equipment that will operate on an ESF actuation.

Associated objective(s):

Given a set of plant conditions or parameters and ESFAS indications DETERMINE if the ESFAS is responding correctly.

LIST the setpoints for and alarm/interlock functions of the following signal: Phase A Isolation

13 **ID: BWLI-WO1-011** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power, normal alignment.
- 1B CNMT Chiller and Chilled Water WO pump are RUNNING.

(1) The 1B **WO Pump** will TRIP if which of the listed valve(s) is/are closed?

(2) To restore containment cooling, after reopening the necessary WO valve(s) and restarting the 1B CNMT Chiller, the 1SX147B Control Switch must be verified or placed in...

A. (1) Both 1WO006B AND 1WO056A
(2) AUTO.

B. (1) 1WO006B only
(2) OPEN until dual indication is present, then released.

C. (1) 1WO056B only
(2) OPEN.

D. (1) Both 1WO006A AND 1WO056A
(2) CLOSE.

Answer: A

Answer Explanation:

Requires a valve in both the A and B train to be isolated to trip the WO pump. After restarting a chiller, the 1SX147A/B C/S is taken to AUTO. Note that WO Pump is underlined and bolded so candidates do not confuse the chilled water pump with the chiller itself.

Question 13 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	9105
User-Defined ID:	BWLI-WO1-011
Cross Reference Number:	LXR43E-WO #11
Topic:	VP WO pump trip and control
Num Field 1:	2.8
Num Field 2:	3.2
Text Field:	022000A2.06
Comments:	Source: Modified from Byron exam bank 4/25/2010 R. F. Peterson Cognitive level: Memory Reference: BOP VP-1, Rev 22, RCFC Refrigeration Unit and Chilled Water System Startup K/A 022000 A2.06 Containment Cooling System: Ability to (a) predict the impacts of the following malfunctions or operations on the CCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCS Pump This meets the K/A because the candidates must know what trips the VP WO pump, and how to restart and control the VP chiller system.

Associated objective(s):

Given plant conditions, DETERMINE if the component starting interlock conditions or trip conditions exist for the following components: Containment Chilled Water Pumps

Given a set of plant conditions ANALYZE how those conditions are affected by any instrumentation, control circuit, or electrical power failure without the use of references

14 **ID: BWLI-VP1-020** **Points: 1.00**

The 2A, 2B, and 2D RCFCs are operating in high speed. The following indications are observed on the Unit 2 RCFC inlet temperatures.

- 2A RCFC Inlet Temperature - 119°F
- 2B RCFC Inlet Temperature - 118°F
- 2C RCFC Inlet Temperature - 127°F
- 2D RCFC Inlet Temperature - 121°F

Which ONE of the following selections describes the required action, if any, and reason for this action?

A. No action is necessary because the average temperature of all operating RCFCs is below the limit.

B. The action statement must be applied because the average of all the RCFC temperatures exceeds the limit.

C. The action statement must be applied because one of the operating RCFCs temperatures is above the limit.

D. No action is necessary because the average temperature of all RCFCs is below the limit.

Answer: A

Answer Explanation:

The inlet temperatures of the running RCFCs (only) are averaged together to find CNMT temperature. Distractors are plausible if Examinee is not aware that only running RCFCs are considered, and that all running RCFCs must be averaged to determine actual temperature. Also the provided temperatures result in an average temp very close to, but not above, the Tech Spec limit.

Question 14 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6102
User-Defined ID:	BWLI-VP1-020
Cross Reference Number:	LXR42-CNMT VENT #20
Topic:	Monitor cnmt temp and apply TS
Num Field 1:	3.8
Num Field 2:	3.8
Text Field:	022000A4.05
Comments:	Source: Byron exam bank Cognitive level: High Reference: TS 3.6.5.1 surveillence requirement K/A 022000 A4.05 Containment Cooling System: Ability to manually operate and/or monitor in the control room: Containment readings of temperature, pressure and humidity system. This meets the K/A because the candidate must know which RCFCs must be monitored to calculate the CNMT temperature.

Associated objective(s):

DISCUSS the normal operating parameters and Tech Spec limits for Primary Containment

Given a set of plant conditions, DETERMINE, from memory, applicable Containment Ventilation Tech Spec/TRM operability requirements

15 **ID: BWLI-CS1-003** **Points: 1.00**

Which valve from the list below must be closed to allow opening 1CS001A, CS Pump RWST Suction Isolation Valve ?

A. Containment Recirculation Sump Isolation Valve 1SI8811A

B. RHR Pump Suction from RWST Isolation Valve 1SI8812A

C. CS Pump Recirculation Sump Suction Isolation Valve 1CS009A

D. CS Pump Discharge Header Isolation Valve 1CS007A

Answer: C

Answer Explanation:

1CS009A must be closed to allow 1CS001 to be opened to prevent draining the RWST to the CNMT sump. Distractors are plausible because these valves have interlocks with each other and with other CS functions that are easily confused with the interlock being asked in this question.

Question 15 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	8873
User-Defined ID:	BWLI-CS1-003
Cross Reference Number:	LXR59-CS #3
Topic:	CS valve interlock
Num Field 1:	4.2
Num Field 2:	4.2
Text Field:	026000K1.01
Comments:	Source: NRC Diablo Canyon 2/90 Cognitive level: Memory Reference: 1BGP 100-1A2, MCB Valve interlocks K/A 026000 K1.01 Containment Spray System: Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems: ECCS This meets the K/A since the candidate must know the cause-effect relationship in the CS and ECCS systems for valve manipulations, ie, the effect on valves in the CS system caused by the position of other valves in the ECCS and CS systems.

Associated objective(s):

DESCRIBE all controls and indications available on the main control boards for remote operation of the CS System

DESCRIBE the interlocks associated with the CS pumps and the following valves: CS-009 Containment Sump Suction Isolation Valves

DESCRIBE the interlocks associated with the CS pumps and the following valves: CS-001 RWST Suction Isolation Valves

16 **ID: BYLI-CS1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 experienced a large break LOCA.
- All systems responded as designed.

The following annunciators are LIT:

- 1-3-A4, "CS Actuation"
- 1-3-B3, "Spray Add Tank Level LO-2"
- 1-3-C3, "Spray Add Tank Level High Low"

- The "CS010A OPEN" and "CS010B OPEN" monitor lights are LIT.

The procedurally directed response to these alarms is to...

A. close 1CS019A and B, CS Eductor Spray Add Valves only.

B. close 1CS010A and B, CS Eductor Inlet Flow Control Valves only.

C. reset the Containment Spray signal and close 1CS010A and B, CS Eductor Inlet Flow Control Valves.

D. reset the Containment Spray signal and close 1CS019A and B, CS Eductor Spray Add Valves.

Answer: D

Answer Explanation:

"Spray Add Tank Level LO-2" alarm indicates that sufficient NaOH has been injected and that this flowpath should be isolated by closing 1CS019A and B. This requires the CS Actuation signal to be reset.

Closing 1CS019 A and B without resetting the CS Actuation signal first is a plausible distractor, but is incorrect because this would cause the valves to reopen automatically as soon as they were closed.

The 1CS010 distractors are plausible because these valves are in the eductor motive force flowpath, and would have an impact on NaOH flow, even though they are not in the actual NaOH flowpath and are not the valves designated in the procedure.

Question 16 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28114
User-Defined ID:	BYLI-CS1-099
Cross Reference Number:	
Topic:	Closing 1CS019 on spray add tank lo-2 level
Num Field 1:	4.2
Num Field 2:	4.1
Text Field:	026000G2.4.31
Comments:	Source: New 4/27/2010 R. F. Peterson Cognitive level: High Reference: BAR 1-3-A3 K/A 026000 G2.4.31 Containment Spray System: Knowledge of annunciator alarms, indications or response procedures. This meets the K/A because the candidate must know the annunciator response procedure, and understand how to determine if the CS actuation system has been reset.

Associated objective(s):

DISCUSS the lineup and operation of the CS System during the following modes of operation: CS Pump and Manual Valve Tests.

17 **ID: BYLC3CDU01C006** **Points: 1.00**

Given the following plant conditions on Unit 1:

- The reactor was at full power with all systems in a normal lineup.
- The reactor tripped on LO-2 S/G NR level condition.
- Reactor Trip Breaker A (RTA) is open.
- Reactor Trip Breaker B (RTB) is closed (did NOT open on Rx Trip).

With NO operator action, the steam dumps will open on a signal from the ___(1)___ controller and will maintain T_{AVE} at ___(2)___.

	___(1)___	___(2)___
A.	plant trip	557°F
B.	load reject	557°F
C.	load reject	560°F
D.	plant trip	560°F

Answer: C

Answer Explanation:

With RTB cl;osed, the dumps stay in load reject mode, which has a 3 degree deadband before control, which causes Tave to be three degrees higher than no-load Tave of 557°. The plant trip controller would be controlling if RTB had opened normally, and Tave would be controlled at 557°.

Question 17 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	20590
User-Defined ID:	BYLC3CDU01C006
Cross Reference Number:	
Topic:	Steam dump temp control with RTB closed
Num Field 1:	3.1
Num Field 2:	3.0
Text Field:	039000K1.06
Comments:	Source: Byron exam bank Cognitive level: High Reference: 6E-1-4030MS09 K/A 039000 K1.06 Main and Reheat Steam System: Knowledge of the physical connections and/or cause-effect relationships between the MRSS and the following systems: Condenser steam dump This meets the K/A because it requires knowledge of the cause and effect relationship between the Main Steam System response to a trip and the response of the steam dumps.

Associated objective(s):

ANALYZE a set of plant conditions involving the Steam Dump System pertaining to the RCS temperature control and DETERMINE the proper system response.

ANALYZE a set of plant conditions involving the Steam Dump System pertaining to the RCS temperature control and DETERMINE the proper operator action.

18 **ID: BYLI-FW2-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 80% power, with all controls systems in normal alignment.
- 1PT-508, Feedwater Header Pressure transmitter failed to 900 psig.

Unit 1 SG levels will...

A. initially lower, then stabilize at normal levels.

B. stabilize at higher than normal levels.

C. stabilize at lower than normal levels.

D. initially rise, then stabilize at normal levels.

Answer: D

Answer Explanation:

When 1PT-508 fails downward to 900 psig, the Feed Pump Speed Control DP initially lowers, causing the control system to raise feedwater pump speed, causing more feed flow. As SG level rises, the Feedwater Reg Valves close to control level and return level to normal. The distractors are plausible because a change in PT 508 in the opposite direction would cause level to initially lower, and because the student must remember that the FW flow control scheme is level-dominant, and any initial perturbation would eventually result in level being restored to normal. Additionally, Byron has a variable SG level program that, although normally left at a constant setpoint, could lead a student to believe that the transient caused this setpoint to be affected.

Question 18 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28120
User-Defined ID:	BYLI-FW2-099
Cross Reference Number:	
Topic:	FW hdr press failure effect on SG levels
Num Field 1:	3.5
Num Field 2:	3.7
Text Field:	059000K3.03
Comments:	Source: New 4/30/2010 R. F. Peterson Cognitive level: High Reference: C&ID M-2036, sheet 3 K/A 059000 K3.03 Main Feedwater System: Knowledge of the effect that a loss or malfunction of the MFW will have on the following: S/Gs This meets the K/A because the candidates must describe the effect on the SGs of a malfunction of the MFW system.

Associated objective(s):

For each of the controlling inputs to the system: EXPLAIN How Each Signal is Generated

19 **ID: BYLI-FRH-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 tripped from 100% power due to a loss of feedwater.
- Neither Unit 1 AF Pump could be started.
- 1BFR H.1, Response to Loss of Secondary Heat Sink is in progress.
- Bleed and Feed was NOT initiated.
- ALL SG feedlines are VOIDED.

- The 1B AF Pump has been restored and is ready to be started.

- 1A and 1B SGs are DRY.
- 1C and 1D SGs are NOT dry.

Feedwater must be initiated to...

A. 1A and 1B SGs at 60 to 80 GPM, and 1C and 1D SGs at sufficient rate to raise Wide Range level.

B. ALL SGs at 60 to 80 GPM.

C. ALL SGs at sufficient rate to raise Wide Range level.

D. 1C and 1D SGs at sufficient rate to raise Wide Range level, but NOT to 1A and 1B SGs.

Answer: D

Answer Explanation:

When SG feed lines are voided, per Att B, step 2, do NOT feed dry SGs, and feed non-dry SG at sufficient rate to raise WR level.
If ALL SGs are not dry, feed 2 SGs at sufficient rate, and other non-dry SG at 60 to 80 GPM. Distractors are plausible because they are other feed rate options under different conditions of Hot Dry SGs and Bleed and Feed.

Question 19 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	4.00
System ID:	28116
User-Defined ID:	BYLI-FRH-099
Cross Reference Number:	
Topic:	SG feed criteria on loss of heat sink
Num Field 1:	2.7
Num Field 2:	3.2
Text Field:	061000K5.05
Comments:	Source: New 4/27/2010 R. F. Peterson Cognitive level: High Reference: 1BFR H.1, Response to Loss of Secondary Heat Sink K/A 061000 K5.05 Auxiliary/Emergency Feedwater System: Knowledge of the operational implications of the following concepts as they apply to the AFW: Feed line voiding and water hammer This meets the K/A because the candidate must know and apply the feedwater limits because of the feed line voiding.

Associated objective(s):

Without the use of the H-Series Procedure, DESCRIBE the steps required to restore the critical safety function to within specifications

20 **ID: BYLI-AP1-099** **Points: 1.00**

A loss of Bus 143 will de-energize...

A. 1A SAC and Startup Feed Pump.

B. 0A WS Pump and 1B SAC.

C. 1C HD Pump and 1A CW Pump.

D. 1C CW Pump and 1A VP Chiller.

Answer: D

Answer Explanation:

Powered from Bus 143: 1A and 1C CW Pump, 1A VP Chiller, 1A SAC, 0A WS Pump
Bus 157: 1C HD Pump
Bus 159: Startup Feed Pump
Bus 144: 1B SAC

Question 20 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	299
User-Defined ID:	BYLI-AP1-099
Cross Reference Number:	
Topic:	Bus power supplies
Num Field 1:	3.3
Num Field 2:	3.4
Text Field:	062K2.01
Comments:	Source: New 5/12/2010 R. F. Peterson Cognitive level: Memory Reference: 6E-1-4006C, Station One Line Diagram K/A 062000 K2.01 A.C. Electrical Distribution: Knowledge of bus power supplies to the following: Major system loads This meets the K/A because it tests knowledge of the bus power supplies to major loads.

Associated objective(s):

SKETCH and LABEL a one line diagram of the Main Power (MP) System and the 345kV Switchyard/Transmission System including the Main Generator, Transformers ((MPT, UAT, SAT), and Switchyard Buses, Breakers, Disconnects and Transmission Lines

SKETCH and LABEL a one line diagram of the 6900 volt (6.9Kv) and 4160 volt (4Kv) Electrical Distribution System including Transformers (UAT, SAT), Diesel Generators, Buses, and Feeder Breakers

STATE which feeder breakers to the 6.9 KV AND 4 KV Buses are normally shut/open in a shutdown and power operation configuration

LIST the loads supplied by the following buses: 156, 157, 158, 159, 256, 257, 258, and 259

21 **ID: BYLI-ELE30100** **Points: 1.00**

In accordance with the procedures, which of the following breakers has NO required synchrocheck to manually close?

A. ACB 1414, Reserve feed

B. ACB 1412, SAT feed

C. ACB 1411, Non-ESF bus tie

D. ACB 1413, 1A DG output

Answer: C

Answer Explanation:

ACB 1411 is closed only on a dead bus, so does not require a synchrocheck. All the other breakers are capable of being paralleled, so do require a synchrocheck.

Question 21 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	17867
User-Defined ID:	BYLI-ELE30100
Cross Reference Number:	
Topic:	breaker control
Num Field 1:	4.6
Num Field 2:	4.6
Text Field:	062000G2.1.20
Comments:	Source: New 7/27/2010 R. F. Peterson Cognitive level: Low Reference: 1BOA Elec-4, Loss of Offsite Power K/A 062000 G2.1.20 A.C. Electrical Distribution: Ability to interpret and execute procedure steps This meets the K/A because it requires the candidate to know the interlocks and procedural requirements to close breakers.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE the required actions to:
Crosstie an ESF Bus to the Other Unit's ESF Bus

22 **ID: BYLI-DG1-024** **Points: 1.00**

Given the following plant conditions:

- A diesel generator is currently running.
- A complete loss of DC power to the diesel generator occurs.

Which ONE of the following is the result of the loss of DC?

The diesel engine will...

A. remain running.

B. trip, ONLY if running in the test mode.

C. trip, ONLY if running in the emergency mode.

D. trip regardless of operating mode.

Answer: D

Answer Explanation:

With no DC control power, the Engine Shutdown Relays de-energize, tripping the DG. Distractors are plausible because the student may think the purpose of DC is only to provide field flash during DG startup, and because of the different DG tripping schemes in effect during TEST and EMERGENCY modes.

Question 22 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6807
User-Defined ID:	BYLI-DG1-024
Cross Reference Number:	BY-SYS-QUEST #: SDG0029
Topic:	Loss of DC to DG
Num Field 1:	3.7
Num Field 2:	4.1
Text Field:	063000K3.01
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BOA Elec-1, 1BOA Elec-3 K/A 063000 K3.01 D. C Electrical Distribution: Knowledge of the effect that a loss or malfunction of the DC electrical system will have on the following: ED/G This meets the K/A because the candidate must know the effects of a loss of DC on the DG.

Associated objective(s):

DISCUSS the operation of the generator and exciter including: Construction and Power Supplies

STATE the conditions for starting the diesel generator

23 **ID: BWLI-ELE1001** **Points: 1.00**

According to 1BOA ELEC-1, Loss of DC Bus, which of the following would indicate that the ONLY affected bus is a Division 12 Non-ESF DC Bus?

125 VDC BUS 112/114 VOLT LOW alarm is...

A. LIT, and MCB DC Bus 112 voltage indicates 125 VDC.

B. NOT lit, and MCB DC Bus 112 voltage indicates 125 VDC.

C. NOT lit, and MCB DC Bus 112 voltage indicates 0 VDC.

D. LIT, and MCB DC Bus 112 voltage indicates 0 VDC.

Answer: A

Answer Explanation:

The combination of alarm status and voltage indication is used to diagnose the affected DC bus. The alarm is from the non-vital bus, and the voltage meter is from the vital bus (connected to the battery) so if the alarm is LIT and voltage is normal, only the non-vital DC bus is de-energized.

Question 23 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	11283
User-Defined ID:	BWLI-ELE1001
Cross Reference Number:	LXROA ELEC #3
Topic:	Diagnosing loss of DC bus
Num Field 1:	2.8
Num Field 2:	2.9
Text Field:	063000A4.02
Comments:	Source: Byron exam bank Cognitive level: High Reference: 1BOA Elec-1 K/A 063000 A4.02 D. C. Electrical Distribution: Ability to manually operator and/or monitor in the control room: Battery voltage indicator This meets the K/A because monitoring the battery voltage is the discriminatory method of diagnosing the loss of non-vital DC bus.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE if the bus lost was an ESF or Non-ESF bus

24 **ID: BYLI-DG1-099** **Points: 1.00**

Given the following plant conditions:

- Both 1A and 1B Diesel Generators were in normal standby mode, with all controls normally aligned.
- The 1A DG's 1A Fuel Oil Transfer Pump is selected as the lead pump.

Unit 1 experienced a loss of offsite power 10 minutes ago.

What is the status of the 1A DG Fuel Oil Transfer Pumps?

A. Both Fuel Oil Transfer Pumps are cycling on and off to maintain 1A DG Day Tank level above 14".

B. Both Fuel Oil Transfer Pumps are running continuously, to supply the 1A DG Day Tank.

C. Only the 1A Fuel Oil Transfer Pump is cycling on and off to maintain 1A DG Day Tank level above 14".

D. Both Fuel Oil Transfer Pumps are running continuously, to supply the 1A DG Head Tank.

Answer: B

Answer Explanation:

When the DG speed is >280 RPM, both FOTP will start and run continuously. With the DG NOT running, the lead FOTP will cycle to maintain Day Tank level above 14". Distractors are plausible because the of the difference in cycling around a 14” level during normal operation as opposed to the continuous pump operation while the DG is running, because of the uncertainty if BOTH pumps run or if just the designated LEAD PUMP RUNS, and because the of the uncertainty of the discharge point for the FOTPs to the Day Tank or the Head Tank, which is downstream of the day tank.

Question 24 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28117
User-Defined ID:	BYLI-DG1-099
Cross Reference Number:	
Topic:	DG FOTP control scheme
Num Field 1:	3.6
Num Field 2:	4.0
Text Field:	064000K1.03
Comments:	Source: New 4/28/2010 R. F. Peterson Cognitive level: Memory Reference: 6E-1-4030DO2 K/A 064000 K1.03 Emergency Diesel Generator: Knowledge of the physical connections and/or cause-effect relationships between the ED/G system and the following systems: Diesel fuel oil supply system This meets the K/A because the candidate must understand the different starting methods of the DG FO transfer pumps.

Associated objective(s):

DISCUSS the function and operation of the following Diesel Generator Auxiliary Support System: Fuel Oil

25 **ID: BWLC3CWX1001** **Points: 1.00**

Given the following plant conditions:

- A low flow liquid release is in progress through 0WX896, Release Tank Outlet Valve.
- 0PR001 Liquid Radwaste Effluent Rad Monitor is in HIGH ALARM for the Release Tank discharge header.
- After 30 seconds, the discharge header high radiation condition cleared.

An operator was observing 0WX896 during the transient. With NO operator action, the 0WX896 valve...

A. immediately closed, then 0WX896 reopened when the high radiation condition cleared.

B. closed after a 15 second time delay, then 0WX896 reopened when the high radiation condition cleared.

C. immediately closed, and operator action is required to reopen 0WX896.

D. closed after a 15 second time delay, and operator action is required to reopen 0WX896.

Answer: C

Answer Explanation:

0RE-PR001 closes 0WX353 and 0WX896 will autoclose on high radioactivity or low blowdown flow. When the condition clears, the CW blowdown reset PB is depressed at 0PL01J to allow the valves to be reopened. Distractors are plausible because some automatic actions self-restore after the initiating signal has cleared, and because a time delay is a common practice to prevent spurious short-duration perturbations in a signal from needlessly affecting system operation.

Question 25 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	10575
User-Defined ID:	BWLC3CWX1001
Cross Reference Number:	SECTION A
Topic:	WX valve autoclosure
Num Field 1:	4.0
Num Field 2:	4.3
Text Field:	073000K4.01
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: BOP WX-120, 6E-0-4030WX179 K/A 073000 K4.01 Process Radiation Monitoring System: Knowledge of PRM system design feature(s) and/or interlock(s) which provide for the following: Release termination when radiation exceeds setpoint. This meets the K/A because the candidate must know the interlock design for high radiation in a release.

Associated objective(s):

Given the appropriate procedure and plant parameters, DESCRIBE the "Operating Section" for a Liquid Release

26 **ID: BYLI-SX1-106** **Points: 1.00**

Given the following plant conditions:

- A Safety Injection occurred on Unit 1 and BOTH DGs are running.
- 1B SX pump failed to start.

Which of the following describes the effect this failure will have on the 1B DG, assuming that NO operator action is taken?

A. If the 1B SX pump is NOT restored, the 1B DG will automatically trip on high jacket water temperature.

B. The 1B DG will be unaffected since the SX system is crosstied with the other Unit.

C. The 1B DG will be unaffected since the SX system is crosstied between trains.

D. If the 1B SX pump is NOT restored, the 1B DG will experience high main bearing temperatures.

Answer: C

Answer Explanation:

The SX system has a variety of cross-tie options between trains and units. SX train crosstie valves _SX033 and _SX034 are normally open, so 1A SX pump will supply B train loads. The Units are not normally crosstied; they can be by opening 1SX005 and 2SX005. The distractors are plausible because they would be the impact of this transient if other crosstie options were aligned, because they describe a crosstie configuration not supported by the stem, and because of the possibility that limited or no SX flow might not PREVENT DG operation, but could cause elevated temperatures.

Question 26 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	16565
User-Defined ID:	BYLI-SX1-106
Cross Reference Number:	BY-SYS-QUEST #: CH20LP
Topic:	SX supply to DG
Num Field 1:	3.7
Num Field 2:	3.7
Text Field:	076000A3.02
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: BOP SX-M1 K/A 076000 A3.02 Service Water System: Ability to monitor automatic operation of the SWS, including: Emergency heat loads This meets the K/A because the candidate must how the heat loads are provided with SX.

Associated objective(s):

STATE the flowpath of water through the Essential Service Water System

LIST the load cooled by Essential Service Water

PREDICT the effect on plant systems of an SX component or system failure

27 **ID: BYLI-SA1-099** **Points: 1.00**

Instrument Air to Containment is normally supplied...

A. from the Auxiliary Building Instrument Air ring header, which is supplied from the Turbine Building Instrument Air ring header.

B. directly from the Instrument Air Dryers.

C. from the Service Air header in the Auxiliary Building through Instrument Air Dryers.

D. directly from the Turbine Building Instrument Air ring header.

Answer: A

Answer Explanation:

IA is supplied from the SA header in the Turbine Building through dryers to a TB IA header, which supplies the Aux Bldg IA header, which then supplies IA to CNMT. Distractors are plausible because these would all be viable designs of the IA system.

Question 27 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	28118
User-Defined ID:	BYLI-SA1-099
Cross Reference Number:	
Topic:	IA supply system
Num Field 1:	3.2
Num Field 2:	3.5
Text Field:	078000K4.02
Comments:	Source: New 4/28/2010 R. F. Peterson Cognitive level: Memory Reference: P&ID M-55 K/A 078000 K4.02 Instrument Air System: Knowledge of IAS design feature(s) and/or interlock(s) which provide for the the following: Cross-over to other air systems This meets the K/A of knowing the design of the IA system that supplies CNMT IA.

Associated objective(s):

STATE the purpose and DISCUSS the operation of the following major component:
Instrument Air Distribution Headers

28 **ID: BWLI-CS1-049** **Points: 1.00**

Given the following plant conditions:

- A steam break has occurred inside the Unit 1 Containment.
- Unit 1 Containment pressure indicates 10 psig on 1PI-CS934 through 937.

With the above indications, which of the following Containment Pressure bistables are LIT?

A. ONLY 1PB-934B/935B/936B (CNMT PRESS HI) are LIT.

B. ONLY 1PB-934C/935C/936C (CNMT PRESS HI-2) are LIT.

C. 1PB-934B/935B/936B (CNMT PRESS HI), AND
1PB-934C/935C/936C (CNMT PRESS HI-2) are LIT.

D. 1PB-934B/935B/936B (CNMT PRESS HI), AND
1PB-934C/935C/936C (CNMT PRESS HI-2), AND
1PB-934A/935A/936A/937A (CNMT PRESS HI-3) are LIT.

Answer: C

Answer Explanation:

With Ctmt pressure above 8.2 psig, but below 20 psig, the listed lights will be lit.
HI = 3.4 psig (B)
HI-2 = 8.2 psig (C)
HI-3 = 20 psig (A)
Distractors are plausible because they would be correct under different HI-1, HI-2, and HI-3 setpoints, or if the student believes that the HI-1 b/s indication extinguishes when the HI-2 b/s becomes the current signal.

Question 28 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	9171
User-Defined ID:	BWLI-CS1-049
Cross Reference Number:	LXR59-CS #49
Topic:	Cnmt pressure determination
Num Field 1:	3.7
Num Field 2:	4.1
Text Field:	103000A1.01
Comments:	Source: Modified from Byron exam bank Cognitive level: High Reference: BARs 1-3-D4, CNMT PRESS HIGH, 1-3-C4, CNMT PRESS HI-2, 1-3-B4, CNMT PRESS HI-3 K/A 103000 A1.01 Containment System: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the containment system controls including: Containment pressure, temperature and humidity. This meets the K/A because the candidate must monitor containment pressure indication and know the relevant pressure associated with the control system bistable.

Associated objective(s):

DESCRIBE all controls and indications available on the main control boards for remote operation of the CS System

29 **ID: BYLI-RD1-103** **Points: 1.00**

Given the following conditions:

- The Unit is stable at 75% power with equilibrium Xenon.
- Rod control is in automatic.
- Rod height is 180 steps on Bank D.

- Power range channel N-44 fails high.

Which ONE of the following describes the response of the rod control system?

The control rods will...

A. step in until the power mismatch circuit output decays away.

B. NOT move.

C. step in until a Tave-Tref error develops which will result in the rods stepping out.

D. continuously step in unless stopped by operator intervention.

Answer: A

Answer Explanation:

The rise in High Auc PR will create a negative T-error signal, driving control rods inward. The same PR channel will bring in a High Flux Rod Stop at 103%, preventing the automatic withdrawal of rods based on the lowered Tave (below Tref). Distractors are plausible because the rod stop could be misinterpreted to affect inward AND outward rod motion, the student could misunderstand that a rod stop will be generated, and the student could misunderstand that the transient affect of the false NI signal that drives rods IN will soon be overridden by the temperature mismatch.

Question 29 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	1065
User-Defined ID:	BYLI-RD1-103
Cross Reference Number:	BY-SYS-QUEST #: SRD1XXX
Topic:	PR channel failure effect on RD
Num Field 1:	4.1
Num Field 2:	4.0
Text Field:	001000A3.01
Comments:	Source: Millstone 1997 ILT NRC RO Exam Cognitive level: High Reference: 1BOA Rod-1, Uncontrolled Rod Motion K/A 001000 A3.01 Control Rod Drive System: Ability to monitor automatic operation of the CRDS, including: Reactor power. This meets the K/A because the candidate must recognize the effect of a change in indicated reactor power on the automatic operation of the CRDS.

Associated objective(s):

DRAW a block diagram of the Reactor Control Unit; and EXPLAIN the function of the: Power Mismatch Unit

DESCRIBE all major instrumentation and controls associated with the Rod Control System and their functions

30 **ID: BYLI-CV1-090** **Points: 1.00**

What is the result of manual operation of 1CV182, the Charging Header Back Pressure Control Valve?

If 1CV182 is throttled...

A. open, then seal injection flow rises and charging flow lowers.

B. open, then seal injection flow lowers and charging flow lowers.

C. closed, then seal injection flow rises and charging flow lowers.

D. closed, then seal injection flow lowers and charging flow rises.

Answer: C

Answer Explanation:

1CV182 controls seal injection flow by adjusting the backpressure . As the valve is opened, backpressure decreases. This results in raising charging flow and concurrently lowering seal injection flow. As the valve is throttled close, charging flow will lower and seal injection flow is raised. Distractors are plausible because they describe how the system would operate if 1CV182 was not a backpressure control valve, but rather a “normal” throttle valve.

Question 30 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	16828
User-Defined ID:	BYLI-CV1-090
Cross Reference Number:	BY-SYS-QUEST #: SCV1081
Topic:	Relationship of seal injection and charging flow
Num Field 1:	2.9
Num Field 2:	3.2
Text Field:	011000K5.06
Comments:	Source: Vogtle 1990 Cognitive level: High Reference: BOP CV-1a, Startup of the CV System K/A 011000 K5.06 Pressurizer Level Control System: Knowledge of the operational implications of the following concepts as they apply to the PZR LCS: Indicated charging flow: seal flow plus actual charging flow. This meets the K/A because the candidate applies operational knowledge of the change in control valve position to the combination of seal injection and charging flowrates.

Associated objective(s):

PREDICT how CVCS/plant parameters will respond to manipulation of the following CVCS local/remote controls: CV-182

31 **ID: BYLC3CPI02A003** **Points: 1.00**

Unit 1 is ramping down from 100% power when the following annunciators and indications are noted:

- Reactor power is 75%
- Annunciator 1-10-C6, ROD CONTROL URGENT FAILURE is LIT
- SER pt. # 2151 ROD CONTROL (DRPI) URGENT FAILURE is printed
- DRPI DATA A FAILURE (1, 2 and 3) is LIT
- DRPI DATA B FAILURE (1, 2 and 3) is LIT
- The DRPI GENERAL WARNING LED is Flashing for rod H-8 ONLY
- The Main Control Board step counter for the bank containing rod H-8 reads 185 steps.

What Tech Spec action requirement, if any, is required?

A. No LCOAR entry is required because DRPI has shifted to half accuracy for rod H-8.

B. LCOAR for TS 3.1.7, Rod Position Indication because DRPI has completely failed for rod H-8.

C. LCOAR for TS 3.1.7, Rod Position Indication because the demand position indication has failed.

D. LCOAR for TS 3.0.3 because the LCO for TS 3.1.7, Rod Position Indication can NOT be met.

Answer: B

Answer Explanation:

If SER point 2151 for Urgent Failure were NOT printed then DRPI would be at half accuracy; the given indication that there is a DATA A failure and a DATA B failure) also indicates that DRPI for rod H-8 has failed completely. The GW light for rod F-2 indicates the loss is limited to rod F-2.
The distractors are plausible because the list alternate actions that would be taken for different, but similar failures for a loss of rod step counters or loss of DRPI for all rods.

Question 31 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18361
User-Defined ID:	BYLC3CPI02A003
Cross Reference Number:	BY FM NO. 869 NRC BANK
Topic:	DRPI LCOAR
Num Field 1:	3.4
Num Field 2:	4.7
Text Field:	014000G2.2.40
Comments:	Source: Modified from Byron exam bank Cognitive level: High Reference: Tech Spec 3.1.7, BAR 1-10-C6 K/A 014000 G2.2.40 Rod Position Indication: Ability to apply Technical Specifications for a system. This meets the K/A because the candidates must evaluate the given situation and know whether to apply the relevant TS LCOAR.

Associated objective(s):

Given the appropriate section of Tech Specs and a set of plant conditions or parameters indicating a possible LCO violation involving DRPI vs. Bank Demand Systems, DETERMINE Tech Spec compliance and required actions

32 **ID: BWLI-RS1-026** **Points: 1.00**

Which of the following sets of Unit 1 indications contains ONLY indications that are available on the Unit 1 Remote Shutdown Panel?

A. Main feedwater flow
Letdown flow
Charging line pressure

B. Reactor trip breaker position
Steam generator pressure
Pressurizer level

C. Emergency boration flow
Steam generator level
Auxiliary feedwater flow

D. Containment pressure
Charging flow
RCS wide range temperature

Answer: C

Answer Explanation:

Ctmt pressure, RTB positions, Letdown flow, and MFW flow are not on the RSDP. Distractors are plausible because they list indications that could have readily been included in the design of the RSP.

Question 32 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	13562
User-Defined ID:	BWLI-RS1-026
Cross Reference Number:	LXR62-RSDP #26
Topic:	RSDP instrumentation
Num Field 1:	2.8
Num Field 2:	2.9
Text Field:	016000K4.01
Comments:	Source: NRC DC Cook 1/90 Cognitive level: Memory Reference: 1BOA Pri-5 K/A 016000 K4.01 Non-Nuclear Instrumentation System: Knowledge of NNIS design features(s) and/or interlock(s) which provide for the following: Reading of NNIS channel values outside control room. This meets the K/A because it requires the candidates to know what NNIS channels are available on the RSDP outside the control room.

Associated objective(s):

DISCUSS the controls and indications available on the Remote Shutdown Panel

33 **ID: BYLI-VP1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 3 at Normal Operating Temperature and Pressure, in preparation for a refueling outage.
- 1A Containment Charcoal Filter Fan, 1VP05FA was running to lower containment radioactivity levels before containment entry was made.

Ten minutes ago, the following alarms annunciated:

- Annunciator UNIT 1 AREA FIRE (0-37-A4) is LIT.
- Annunciator 1VP05FA (1S-11), 1PM09J B-11, is LIT.

Five minutes ago, the following alarms annunciated:

- Annunciator CNMT PRESS HIGH SI/RX TRIP (1-11-E1) is LIT

- Annunciator 0-33-A3, "CNMT CHAR FLTR UNIT 1A FAN TRIP DP LOW" is LIT.
- Annunciator 0-33-C3, "CNMT CHAR FLTR UNIT TEMP HIGH" is LIT.

All automatic actuations have occurred as designed, and an operator has opened the filter deluge valve.

The 1A Containment Charcoal Filter Fan is...

A. tripped from the manual actuation of the charcoal filter deluge valve.

B. tripped from the Safety Injection Signal.

C. running, to remove the products of combustion from the fire.

D. running, but the inlet and outlet dampers closed from the Phase A Isolation Signal.

Answer: A

Answer Explanation:

The charcoal filter fan trips when the deluge valve is manually opened. The valve does not automatically open, and the fan is not affected by SI or Phase A. Distractors are plausible because the SI or Phase A signal could have these effects on the VA system, and because the provided information could be interpreted as not having tripped the running fan, but simply caused DP to go low.

Question 33 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28121
User-Defined ID:	BYLI-VP1-099
Cross Reference Number:	
Topic:	Operation of the CNMT charcoal filter units
Num Field 1:	2.8
Num Field 2:	3.0
Text Field:	027000A4.02
Comments:	Source: New 5/3/2010 R. F. Peterson Cognitive level: High Reference: BOP FP-1, BARs 0-33-A3, "CNMT CHAR FLTR UNIT 1A FAN TRIP DP LOW"and 0-33-C3, "CNMT CHAR FLTR UNIT TEMP HIGH" K/A 027000 A4.02 Containment Iodine Removal System: Ability to manually operate and/or monitor in the control room: Remote operation and handling of iodine filters. This meets the K/A because the candidate is monitoring proper operation of the CNMT charcoal filters, based on alarms in the control room.

Associated objective(s):

DESCRIBE the purpose of the Containment Charcoal Filter Units

34 **ID: BYLC3DOA41A002** **Points: 1.00**

Given the following plant conditions:

- Both Unit 1 and Unit 2 are in MODE 1.

- Bus 144 experienced an overcurrent fault and is deenergized.
- No equipment that is normally supplied by Bus 144 is damaged.
- All Unit 1 plant conditions have been stabilized following the loss of Bus 144.

Then, FIVE minutes ago the Unit 2 Spent Fuel Pool Pump tripped, and the EO has reported a smoky smell from the pump motor.

The NEXT alarm that will be received is __(1)__, and the event will be mitigated by __(2)__.

A. (1) SPENT FUEL PIT LEVEL HIGH LOW
(2) refilling the Spent Fuel Pool with borated water per BOP FC-11, SPENT FUEL POOL AND REFUELING CAVITY LEVEL ADJUSTMENT.

B. (1) AREA HIGH RADIATION
(2) evacuate the Fuel Handling Building.

C. (1) SPENT FUEL PIT TEMP HIGH
(2) running the Unit 1 Spent Fuel Pool Pump powered from Bus 133X via power jumpers.

D. (1) REFUELING CAVITY LVL HIGH LOW
(2) aligning the Refueling Water Purification Pumps through the Spent Fuel Pit Heat Exchanger.

Answer: C

Answer Explanation:

Unit 1 SFP Cooling pump is normally powered from Bus 144. U-2 SFP Pump has tripped, so it it not available.
The SFP will heat up, and the Temperature High alarm will come in. Cooling will be restored by aligning U-1 SFP Pump from the alternate power supply-Bus 133X-specified in the procedure.
If no action were to be taken, eventually the SFP level will lower from increased evaporation, and level restoration is accomplished by BOP FC-11. The Temperature High alarm would come in before that occurred.
The Area High Radiation alarm will come in if SFP lowers too much, and in that case, FHB evacuation is needed.
If U-1 is being refueled, then an alternate method of cooling specified in 0BOA REFUEL-3 is to align the RW Purification pumps through the SFP Heat Exchanger. U-1 is in MODE 1 in this example so the level instrument is valved OUT with the alarm defeated. This is plausible in that the candidates must know this alarm is defeated in this mode of operation.

This is high cognitive level knowledge because the candidate must recognize the loss of power to U-1 SFP pump, deduce the high temperature alarm is the next expected alarm, and determine that restoration of power to U-1 SFP is the proper action.

Question 34 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	0.00
System ID:	20027
User-Defined ID:	BYLC3DOA41A002
Cross Reference Number:	BY FM NO. 2068 NEW Q BANK
Topic:	Effect of SFP trip and restoration
Num Field 1:	2.7
Num Field 2:	3.0
Text Field:	033000A2.02
Comments:	Source: Modified from Byron exam bank Cognitive level: High Reference: 0BOA REFUEL-3, Step 5, and MA-BY-726-001, TEMP POWER TO THE FC PUMP AND CUBICLE COOLERS K/A 033000 A2.02 Spent Fuel Pool Cooling System: Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based on those predictions,, use procedures to correct, control, or mitigate the consequences of those malfunctions or operation: Loss of SFPCS This meets the K/A because the candidate must predict the next alarm to be received because of the pump trip, and know the correct method to mitigate the problem.

Associated objective(s):

DESCRIBE the actions required for a Loss of Spent Fuel Pit Cooling

35 **ID: BYLI-SG1-099** **Points: 1.00**

At 50% power, the main steam pressure of Unit 1 will be approximately __(1)__, and of Unit 2 will be approximately __(2)__.

	__(1)__	__(2)__
A.	990 psig	990 psig
B.	990 psig	1050 psig
C.	1050 psig	1050 psig
D.	1050 psig	990 psig

Answer: D

Answer Explanation:

Per BCB-1 Figure 33, Psat for main steam is about 1050 psig at 50% for U-1
Per BCB-2 Figure 33, Psat for main steam is about 990 psig at 50% for U-2
Distractors are plausible because they would be the correct answer if the unit difference was misapplied by the student, and if the student neglects to account for the changes in steam pressure between NOP/NOT and full load.

Question 35 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28122
User-Defined ID:	BYLI-SG1-099
Cross Reference Number:	
Topic:	SG pressures at 50%
Num Field 1:	3.5
Num Field 2:	3.8
Text Field:	035000 A1.02
Comments:	Source: New 5/3/2010 R. F. Peterson Cognitive level: High Reference: Byron ILT System LPs: Steam Generating, Main Steam System K/A 035000 A1.02 Steam Generating System: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the S/GS controls including: S/G pressure. This meets the K/A since the student must predict changes in S/G pressure as power is changed.

Associated objective(s):

STATE the differences between the Unit 1 and Unit 2 Steam Generators including: Heat Transfer

36 **ID: BYLI-WX1-100** **Points: 1.00**

Given the following plant conditions:

- Both Units are normally aligned at 100% power.
- 0A and 0B SG Blowdown Demineralizers are treating blowdown water from Unit 1, directed to the Unit 1 condenser.
- 0C and 0D SG Blowdown Demineralizers are treating blowdown water from Unit 2, directed to the Unit 2 condenser.

Radiation Monitor 0PR-016J, 0A BLDN FTR OUT, detector fails to the HIGH ALARM setpoint.

The effect, if any, on the SG Blowdown system is...

A. 0A, 0B, 0C AND 0D Blowdown Demineralizers output are redirected to Blowdown Monitor Tanks.

B. NO Blowdown Demineralizer outputs will be redirected UNLESS a second radiation monitor also reaches the HIGH ALARM setpoint.

C. only the 0A Blowdown Demineralizer output is redirected to a Blowdown Monitor Tank.

D. both 0A AND 0B Blowdown Demineralizers output are redirected to Blowdown Monitor Tanks.

Answer: C

Answer Explanation:

0PR-016J will cause the output of the 0A blowdown demineralizer ONLY to be directed from the condenser to a blowdown monitor tank.
Distractors are plausible because they would be the system response if the rad monitor actuations were not restricted to a single blowdown demin effluent, or if if a two out of two logic were required, as in other rad monitor systems (e.g. VC)

Question 36 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28123
User-Defined ID:	BYLI-WX1-100
Cross Reference Number:	
Topic:	SG blowdown swap on PR malfunction
Num Field 1:	2.5
Num Field 2:	2.9
Text Field:	068000K6.10
Comments:	Source: New 5/3/2010 R. F. Peterson Cognitive level: Memory Reference: BOP WX-100-2, Blowdown Mixed-bed Demineralizer System Overview K/A 068000 K6.10 Liquid Radwaste System: Knowledge of the effect of a loss or malfunction on the following will have on the Liquid Radwaste System: Radiation monitor This meets the K/A because the candidate must know the effect of a process radiation monitor failure on the SG blowdown system section of the radwaste system.

Associated objective(s):

Given the appropriate procedure and plant parameters, DESCRIBE the "Operating Section" for a Liquid Release

37 **ID: BYLC3CGW01B001** **Points: 1.00**

During a release of the 0A Gas Decay Tank, high alarms are received from radiation detectors that are monitoring the release.

Which of the following describes the Gaseous Radwaste system response, if any, for this situation?

0GW014, Waste Gas Discharge Valve, will...

A. be closed by an automatic close signal generated by 0RE-PR002, Gas Decay Tank Monitor.

B. remain open until manually closed by the Radwaste Operator at the Radwaste Panel.

C. be closed by an automatic close signal generated by 0RE-PR028, Aux Bldg Vent Stack Monitor.

D. remain open until manually closed by the NSO in the Main Control Room.

Answer: A

Answer Explanation:

0GW014 is closed by an interlock with 0RE-PR002. The vent stack monitor does not interlock with it, and it cannot be closed from the MCR or Radwaste Panel. Local control is on 0GW02J, the waste gas control panel.
Distractors are plausible because some rad monitor hi rad signals require Operator action to terminate release (e.g station blowdown monitor 0PR10J), because the 0PR28j monitor is in the release flowpath and measures the amount of radioactivity in the station gaseous effluent, and because the indications for the Gas decay Tank rad monitor are primarly displayed in the MCR at the NSO workstations, but the 0GW014 controls are located at the Radwaste Panel.

Question 37 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18303
User-Defined ID:	BYLC3CGW01B001
Cross Reference Number:	BY FM NO. 217 QUIZ BANK
Topic:	Gas decay tank release termination
Num Field 1:	3.1
Num Field 2:	3.1
Text Field:	071000K1.06
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: BAR RM11-3-0PR02J, BOP GW-9, BCP 400-TWASTE GAS K/A 071000 K1.06 Waste Gas Disposal System: Knowledge of the physical connections and/or cause-effect relationships between the Waste Gas Disposal System and the following systems: ARM and PRM systems. This meets the K/A because the candidate must know the effect on the WGDS of changes in the rad monitoring system.

Associated objective(s):

Given the appropriate procedure and plant parameters, DESCRIBE the "Operating Section" for a Gas Decay Tank Release

38 **ID: BYLI-SX1-099** **Points: 1.00**

Given the following plant conditions:

- A tornado damaged the Byron Switchyard causing a loss of all AC power to both Units' SAT's.
- The 2B DG is the ONLY emergency diesel that started and automatically loaded.
- NONE of the other DG's can be started.

Bus 242 will...

A. NOT be crosstied to Bus 142. The 2B SX pump is the ONLY SX pump that will be run, with Unit 1 and Unit 2 SX systems NOT crosstied.

B. be crosstied to Bus 142. BOTH the 1B and 2B SX pumps will be run.

C. be crosstied to Bus 142. The 2B SX pump is the ONLY SX pump that will be run, with Unit 1 and Unit 2 SX systems crosstied.

D. NOT be crosstied to Bus 142. The 2B SX pump is the ONLY SX pump that will be run, with Unit 1 and Unit 2 SX systems crosstied.

Answer: C

Answer Explanation:

2B DG will supply both busses 142 and 242, but will only power 1 SX pump (2B) which supplies SX to both units.
Distractors are plausible because each describes a possible lineup for the AC and SX systems and the unit crosstie capabilities of each.

Question 38 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	2.00
System ID:	28124
User-Defined ID:	BYLI-SX1-099
Cross Reference Number:	
Topic:	SX pump power supplies
Num Field 1:	2.6
Num Field 2:	2.7
Text Field:	075000K2.03
Comments:	Source: New 5/4/2010 R. F. Peterson Cognitive level: High Reference: 1BCA 0.0, Loss of All AC Power K/A 075000 K2.03 Circulating Water System: Knowledge of bus power supplies to the following: Emergency/essential SWS pumps This meets the K/A because the candidate must know the power supply alignment to the SX pumps during a limited AC crosstie..

Associated objective(s):

DISCUSS the operation of the Essential Service Water Pumps and Strainers, including: Power Supplies and Effect of Loss of Off-Site Power

39 **ID: BYLI-EP0-002** **Points: 1.00**

Which ONE of the following is the reason BEP-0, Reactor Trip or Safety Injection, Step 2, requires the operator to verify the turbine has tripped?

A. To prevent turbine blades from overheating on low steam pressure to the turbine.

B. To prevent an overcurrent condition from occurring due to a reverse power on the generator.

C. To ensure steam flow is stopped to the turbine and prevent an uncontrolled RCS cooldown.

D. To ensure steam generators do NOT boil dry in the event of a loss of feedwater accident.

Answer: C

Answer Explanation:

BEP-0 Step 2 checks the Turbine Throttle Valves and Governor Valves closed, and requires the operator to secure the steam path to the turbine by TV, GV or MSLI if necessary.
Distractors are plausible because each describes a possible negative impact of the conditions described, although not the actual basis for the BEP-0 turbine trip verification step.

Question 39 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6584
User-Defined ID:	BYLI-EP0-002
Cross Reference Number:	BY-FM-SIM-1964-00
Topic:	BEP-0 basis for turbine trip
Num Field 1:	4.0
Num Field 2:	4.6
Text Field:	EPE007AK3.01
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: EP-0 WOG background document K/A EPE007 AK3.01 Reactor Trip: Knowledge of the reasons for the following as they apply to a reactor trip: Actions contained in EOP for reactor trip. This meets the K/A because the candidate must know the reason a turbine trip is verified in BEP-0.

Associated objective(s):

Given the procedure, be able to DESCRIBE the Intent/Basis of each step and how it is performed

40 **ID: BYLC3DEP02A001** **Points: 1.00**

Given the following plant conditions:

- All RCPs: Running
- PZR level: 48% RISING
- RCS pressure: 1700 psig LOWERING

Which of the following leak locations is consistent with the described plant conditions?

A. Failure of pressurizer PORV in an intermediate position.

B. Failure of charging header connection to the RCS.

C. Weld failure on pressurizer liquid space sample line.

D. Weld failure on RCP B discharge piping.

Answer: A

Answer Explanation:

Only a failed open PORV will result in rising Pzr level for the given conditions. Distractors are plausible because they describe situations that can explain some of the plant conditions in the stem, but not all of them.

Question 40 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18364
User-Defined ID:	BYLC3DEP02A001
Cross Reference Number:	BY FM NO. 1038 NRC BANK
Topic:	Vapor space leak location
Num Field 1:	2.7
Num Field 2:	2.7
Text Field:	APE008AK2.01
Comments:	Source: Byron exam bank Cognitive level: High Reference: BEP-1, Loss of Reactor or Secondary Coolant, P&ID M-60 K/A APE008 AK2.01 Pressurizer Vapor Space Accident (Relief Valve Stuck Open): Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following: Valves This meets the K/A because the candidate must recognize an open Pzr PORV will cause a Pzr Vapor Space Leak.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Vapor Space Loss of Coolant Accident, DISCUSS the integrated plant response to the event/casualty with no operator action

41 **ID: BYLI-RC1-099** **Points: 1.00**

Given the following plant conditions:

Unit 1 is in MODE 3 at normal operating pressure and temperature with all RCPs initially running.

If the 1A RCP pump shaft shears, 1A RCP amps will __(1)__, and loop flow in the other 3 loops will __(2)__.

	__(1)__	__(2)__
A.	lower	rise
B.	lower	lower
C.	rise	rise
D.	rise	lower

Answer: A

Answer Explanation:

RCP amps will lower on the pump with the sheared shaft, and flow will rise in the other 3 loops.
Distractors are plausible because they describe conditions that would be present if pump amps rose when the shaft shears, or if loop flow lowers in the loops with RCPS still running. These changes are not obvious, and require an understanding of pump/motor behaviors, as well as an understanding of RCP loop configuration and interrelationships.

Question 41 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28125
User-Defined ID:	BYLI-RC1-099
Cross Reference Number:	
Topic:	Sheared RCP shaft
Num Field 1:	2.8
Num Field 2:	2.8
Text Field:	APE016AK2.10
Comments:	Source: New 5/12/2010 R. F. Peterson Cognitive level: High Reference: BAR 1-11-B5, RCP UF Reactor Trip K/A APE016 AK2.10 Reactor Coolant Pump Malfunctions: Knowledge of the interrelations between the Reactor Coolant Pump Malfunctions (Loss of RC Flow) and the following: RCP indicators and controls. This meets the K/A because the candidate must know the effect on the RCPs' indication of a sheared shaft, causing lower flow in the affected loop, and higher flow in the other loops.

Associated objective(s):

DESCRIBE the operational limitations, and the reasons for them, on the Reactor Coolant Pump regarding: The Conditions That Dictate a Trip of the Reactor Coolant Pump by the Operator

42 **ID: BYLI-CV1-099** **Points: 1.00**

Given the following plant conditions on Unit 1:

- The reactor is at full power with the plant in a normal lineup.
- 1LT-112, VCT level transmitter, develops an erroneous signal with a constant output of 75%.

What is the plant response if NO operator action is taken?

Actual VCT level will start to drop immediately and will continue to drop until the VCT __(1)__. The running CV pump ammeter will indicate __(2)__.

	____(1)____	_____(2)_____
A.	level reaches 37%.	NO change in amps.
B.	level reaches 5%.	NO change in amps.
C.	is empty.	FLUCTUATING amps.
D.	level reaches 37%.	HIGHER amps.

Answer: C

Answer Explanation:

With 1LT-112 failed at 75%, letdown will partially divert to the HUT. VCT level will lower and normal makeup will NOT initiate at 37%. Level will lower, and a swapover will NOT occur at 5%, because that requires low level from both 1LT-112 and 1LT-185. The charging pump will cavitate, causing current to fluctuate.
Distractors are plausible if the 1LT-112 constant output of 75% and the consequent failure of VCT makeup and RWSTswapover is neglected, and if the result of lowering level is misinterpreted to have the effect of increasing amps, as could happen if the flow were to increase in response to the lower level.

Question 42 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28126
User-Defined ID:	BYLI-CV1-099
Cross Reference Number:	
Topic:	VCT low level affect on CV pump
Num Field 1:	2.9
Num Field 2:	2.7
Text Field:	APE022AK1.06
Comments:	Source: New 5/5/2010 R. F. Peterson Cognitive level: High Reference: BOP CV-33, Makeup to the RCS with the Reactor Makeup System Unavailable K/A APE022 AK1.06: Loss of Reactor Coolant Makeup: Ability to operate and/or monitor the following as they apply to the loss of Reactor Coolant Makeup: CVCS charging pump ammeters and running indicators. This meets the K/A because the candidate must apply the results of the loss of Makeup to the effect on CVCS pump current flow.

Associated objective(s):

VCT low level.

43 **ID: BYLI-PR1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is shutdown, with the RH system in Shutdown Cooling 35 days after shutdown.
- The core HAS been refueled.
- A loss of RH cooling has occurred, and the crew has implemented "1BOA Pri-10, Loss of RH Cooling".

- Attachment C, RCS Bleed and Feed is in progress.

Figure 1BOA Pri 10-3, "Minimum Makeup Flow Required to Prevent Boiling Prior to Refuel" and Figure 1BOA Pri 10-4, "Minimum Makeup Flow Required to Prevent Boiling After Refuel" are attached.

What is the required indicated flowrate to prevent boiling for this condition?

A. 15 GPM through 1FI-121A, Charging Header Flow

B. 260 GPM through 1FI-917, High Head SI Flow Meter

C. 50 GPM through 1FI-121A, Charging Header Flow

D. 360 GPM through 1FI-917, High Head SI Flow Meter

Answer: B

Answer Explanation:

Normal charging valves are shut and cold leg injection valves are opened during performance of RCS bleed and feed. Figures 1BOA Pri 10-3 and 1BOA Pri 10-4 each has 2 curves, with the higher flow rate after refueling for the curve to prevent boiling required 250 GPM.

Figure 1BOA Pri 10-3, "Minimum Makeup Flow Required to Prevent Boiling Prior to Refuel" and Figure 1BOA Pri 10-4, "Minimum Makeup Flow Required to Prevent Boiling After Refuel"

Distractors are plausible because the describe the flowrates determined if the curves are used incorrectly, or if the required flowpath is not recognized.

Question 43 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28127
User-Defined ID:	BYLI-PR1-099
Cross Reference Number:	
Topic:	1FI-917 indication for loss of RH
Num Field 1:	2.6
Num Field 2:	2.5
Text Field:	APE025AA1.20
Comments:	Provided Reference: Figure 1BOA Pri 10-3, "Minimum Makeup Flow Required to Prevent Boiling Prior to Refuel" and Figure 1BOA Pri 10-4, "Minimum Makeup Flow Required to Prevent Boiling After Refuel" Source: New 5/5/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Pri-10, Loss of RH Cooling K/A APE025 AA1.20 Loss of Residual Heat Removal System: Ability to operate and/or monitor the following as they apply to the Loss of Residual Heat Removal System: HPI pump control switch, indicators, ammeter, running lights, and flow meter. This meets the K/A because the candidate must know the required flowpath and the indicated makeup flow rate.

Associated objective(s):

DISCUSS alternate methods of RCS decay heat removal per procedure 1/2BOA PRI-10, Loss of RH Cooling

44 **ID: BYLI-CC1-099** **Points: 1.00**

Given the following plant conditions:

- Both Unit 1 and Unit 2 are at 100% power.
- The Unit 0 CC Pump and Heat Exchanger are mechanically aligned to Unit 1.
- BOTH the 2A AND 2B CC pumps trip or fail to start.

CC Flow will be available to ALL of the Residual Heat Removal heat exchangers EXCEPT ____ heat exchanger(s).

A. 2A

B. 2B

C. 2A AND 2B

D. 1B AND 2B

Answer: B

Answer Explanation:

With U-0 CC HX aligned to Unit 1, the Unit 2 CC pumps supply ONLY the 2B RH HX. 2A RH HX is supplied from Unit 1 safety loop.
Distractors are plausible because they describe heat exchanger unavailabilities that could readily be created by the given plant conditions. The CC system is unique in the way the piping is configured to supply the RH HXs. This is a commonly-misunderstood aspect of the CC system.

Question 44 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28128
User-Defined ID:	BYLI-CC1-099
Cross Reference Number:	
Topic:	CC system loss of flow
Num Field 1:	3.5
Num Field 2:	3.7
Text Field:	APE026AK3.04
Comments:	Source: New 5/5/2010 R. F. Peterson Cognitive level: High Reference: BOP CC-10, Alignment of the U-0 CC Pump and U-0 CC HX to a Unit K/A APE026 AK3.04 Loss of Component Cooling Water: Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water: Effect on the CCW flow header of a loss of CCW. This meets the K/A because the candidate is given a loss of CC flow header and must deduce the reason the flow is lost.

Associated objective(s):

Given the appropriate procedure, DESCRIBE how to align the CC System for various operations

45 **ID: BYLI-OA1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power, with all systems in normal alignment.

1PT-455, Pressurizer Pressure channel, failed to 2100 psig.

The INITIAL response of the pressure control system is the __(1)__.
AFTER an OPERABLE Pzr pressure channel is selected, RCS pressure will return to __(2)__.

	___(1)___	___(2)___
A.	spray valves and a PORV will be OPEN.	2260 psig
B.	spray valves and a PORV will be OPEN.	2235 psig
C.	backup and variable heaters will be full ON.	2225 psig
D.	backup and variable heaters will be full ON.	2235 psig

Answer: D

Answer Explanation:

With control pressure indicating LOW, the heaters will come on. 2235 is the normal control pressure.
2225 psig is the pressure at which the backup heaters turn OFF. 2260 psig is the pressure at which the spray valves are fully closed.
Distractors are plausible because each contains a valid setpoint for the pressurizer pressure control scheme, and a valid action taken by the pressurizer system when pressure is abnormal.

Question 45 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28129
User-Defined ID:	BYLI-OA1-099
Cross Reference Number:	
Topic:	Normal RCS pressure after a RY failure
Num Field 1:	3.8
Num Field 2:	3.9
Text Field:	APE027AA2.02
Comments:	Source: New 5/5/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Inst-2, Operation with a Failed Instrument Channel K/A APE027 AA2.02 Pressurizer Pressure Control System Malfunctions: Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control System Malfunctions: Normal values for RCS pressure. This meets the K/A because the candidate must determine the response of the RY system and know the proper pressure the system will return to after mitigating actions are taken.

Associated objective(s):

Given a set of plant conditions or parameters indicating a malfunction in the Pressurizer Pressure Control System, DISCUSS the integrated plant response to the event/casualty with no operator action

46 **ID: BYLI-EP3-009** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power.
- 1BOA Sec-8, Steam Generator Tube Leak, is in progress due to a SG tube leak in the 1C SG.

The crew will trip the reactor, actuate safety injection and transition to 1BEP-0 if any of the following occur EXCEPT…

A. 1C steam line high radiation.

B. Makeup inadequate to maintain VCT level.

C. Pressurizer level CANNOT be maintained >17%.

D. RCS subcooling NOT acceptable.

Answer: A

Answer Explanation:

1BOA Sec-8 directs tripping the reactor , actuating SI and going to 1BEP-0 at the following points:
In the OAS: if RCS subcooling is not acceptable or Pzr level can't be maintained >17%.
Step 1 RNO is Pzr level can't be maintained >17%
Step 2 RNO if Makeup isn't adequate to maintain VCT level
1C steam line radiation will likely be high with a tube leak, and is not one of the directed transition criteria.

Question 46 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28160
User-Defined ID:	BYLI-EP3-009
Cross Reference Number:	
Topic:	BEP-3 entry conditions
Num Field 1:	4.6
Num Field 2:	4.8
Text Field:	EPE038G2.4.1
Comments:	Source: New 6/14/2010 R. F. Peterson Cognitive level: Memory Reference: 1BEP-3 K/A EPE038 G2.4.1 Steam Generator Tube Rupture: Knowledge of EOP entry conditions and immediate actions steps. This meets the K/A because the candidate must know the entry conditions to 1BEP-3, Steam Generator Tube Rupture from other procedures. There are no immediate action steps in the EOPs after the first 4 steps of BEP-0.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Steam Generator Tube Rupture, and a set of plant procedures, IDENTIFY the correct procedure(s) to be utilized and DISCUSS required operator actions

47 **ID: BYLITEP13002** **Points: 1.00**

Which ONE of the following parameters discriminates between a small break LOCA and a steam line break inside containment per 1BEP-0, "Reactor Trip or Safety Injection"?

A. Containment temperature

B. Containment humidity

C. Containment radiation

D. Containment pressure

Answer: C

Answer Explanation:

The background document to BEP-0 for the diagnostic step of transitioning to BEP-1 for a SBLOCA states that "abnormal containment radiation, pressure or containment floor drain sump level is indicative of a high energy line break in containment....For smaller size breaks containment pressure and sump level may not rise for a period of time; however, containment radiation would be apparent. EP-1 is used for breaks in the RCS."

Question 47 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6445
User-Defined ID:	BYLITEP13002
Cross Reference Number:	BY-FM-SIM-OEP1-1465-00
Topic:	contrast SBLOCA and steam break
Num Field 1:	2.6
Num Field 2:	2.6
Text Field:	APE040AK2.02
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BEP-0, Reactor Trip or Safety Injection K/A APE040 AK2.02 Steam Line Rupture: Knowledge of the interrelations between the Steam Line Rupture and the following: Sensors and detectors. This meets the K/A because the candidate must know the effects of a steam line break on the various sensors in CNMT.

Associated objective(s):

Without the use of EP-1, EP ES-1.1, 1.2, 1.3, 1.4: DISCUSS symptoms requiring entry into the procedure

48 **ID: BYLI-OA1-100** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 100% power, with all systems in normal alignment.

Simultaneously and instantaneously, the following Steam Generator instrument channels failed to the indicated positions. All of the listed channels are selected for control.

- 1A SG NR Level 1LI-556: failed to 0%
- 1B SG Feed Flow 1FI-521A: failed to 3 MLB/hour
- 1C SG Steam Flow 1FI-533A: failed to 4.5 MLB/hour
- 1D SG Steam Pressure 1PI-545A: failed to 0 psig

With NO operator action, the RED FIRST OUT will be due to a Low-2 SG Level Reactor Trip on the...

A. 1A SG.

B. 1B SG.

C. 1C SG.

D. 1D SG.

Answer: D

Answer Explanation:

1A SG NR level failed to 0% will cause feed flow to be raised to that SG. At 100% power, SG level will slowly rise until Hi-Hi SG level is reached.
1B SG FF failed to 3 MLB/hour (lower than normal) will cause feed flow to be raised, and the FWRV will throttle down to control feed because of the rising SG level.
1C SG SF failed to 4.5 MLB/hour (high) will cause feed flow to be raised to that SG, and the FWRV will throttle down to control feed because of the rising SG level.
1D SG SP failed to 0% will cause feed flow to be dramatically lowered to the 1D SG, because the FWRV will throttle very far closed on the initial failure, and will not reopen far enough to restore feed flow to normal as SG level drops.

Question 48 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28130
User-Defined ID:	BYLI-OA1-100
Cross Reference Number:	
Topic:	Rx trip 1st out on FF failure
Num Field 1:	3.4
Num Field 2:	3.9
Text Field:	APE054AA2.07
Comments:	Source: New 5/7/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Inst-2, Operation with a Failed Instrument Channel K/A APE054 AA2.07 Loss of Main Feedwater: Ability to determine and interpret the following as they apply to the Loss of Main Feedwater: Reactor trip first-out panel indication This meets the K/A because the candidate must determine which will be the first-out reactor trip alarm caused by conditions of a loss of feedwater.

Associated objective(s):

DESCRIBE the expected plant response for the failures listed in TKO T.OA11-03 thru T.OA11-20 including: Alarm Status Changed, Automatic Actions That Happen and Controls and Permissives That are Affected

49 **ID: BYLC3DCA01C008** **Points: 1.00**

Given the following plant conditions:

- The reactor has tripped and a prolonged Loss of All AC Power condition is occurring.
- Efforts to restore AC power have NOT been successful.
- RCP seal leakage has caused steam void formation in the reactor vessel head and in the SG U-tubes.

If AC power is NOT restored, natural circulation flow will...

A. continue at the same flow rate, since the rate of heat generation is the same.

B. stop, because the SG tubes are steam bound preventing fluid flow.

C. stop, because the steam in the vessel head blocks the hot leg inlet.

D. continue at a lower flow rate, because the steam in the vessel head transfers more heat from the core.

Answer: B

Answer Explanation:

The steam formation in the vessel HEAD will not interfere with NC flow. Steam in the SG tubes will stop NC, since there is little density difference in the steam on the SG tubes' hot side compared to cold side. The rate of heat generation will be maintained, but will cause a heatup because of the lower mass flow rate; the rule of heat transfer to mass flowrate in NC may be misapplied by the candidate for the "continue at a lower rate" and "continue at the same rate" distractors.

Question 49 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	16296
User-Defined ID:	BYLC3DCA01C008
Cross Reference Number:	SECTION B
Topic:	Natural Circ with a Loss of All AC and resulting effect on core cooling if AC power is NOT restored
Num Field 1:	4.1
Num Field 2:	4.4
Text Field:	EPE055EK1.02
Comments:	Source: Modified from Byron exam bank Cognitive level: Memory Reference: BD-CA-0.0: BCA 0.0 background document K/A EPE055 EK1.02 Loss of Offsite and Onsite Power (Station Blackout): Knowledge of the operational implications of the following concepts as they apply to the Station Blackout: Natural circulation cooling This meets the K/A because the candidate must know the effects and limits of Natural Circulation cooling during a loss of all AC power.

Associated objective(s):

Given a copy of the Loss of All AC Power Procedure, DESCRIBE the basis of each step, note or caution in the procedure

50 **ID: BYLC3DOA21A002** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power.
- Instrument Bus 113 is energized from its Constant Voltage Transformer (CVT) due to Inverter 113 maintenance.

The following events subsequently occurred:

- Bus 141 lost power when breaker 1412 opened.
- When the 1A D/G energized bus 141, breaker 131X, Bus 141 Feed to Transformer 131X, tripped open.

Two minutes later with NO operator action, the 1A AF pump would...

A. NOT be running since the 1A AF pump did NOT receive an automatic start signal.

B. be running, but AF flow would NOT be supplied to any S/G.

C. be running, and AF flow would be supplied to ALL S/Gs.

D. NOT be running since the 1A AF pump auxiliary lube oil pump was deenergized.

Answer: C

Answer Explanation:

1A AFP will start on Bus 141 undervoltage, regardless of oil pressure permissive status. The loss of AC 113 will not affect its ability to start or supply AF flow. If AC 111 were to lose power, then the MCB pots for A train AF will have a 0 demand signal, which would prevent flow. The same holds true for AC 114 for B train AF.

Question 50 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18095
User-Defined ID:	BYLC3DOA21A002
Cross Reference Number:	SECTION A
Topic:	Status of 1A AFW pp with loss of Instrument Bus 113 and ESF bus sequencer operation
Num Field 1:	4.1
Num Field 2:	4.4
Text Field:	APE056AA2.77
Comments:	Source: Byron exam bank Cognitive level: High Reference: 6E-1-4030 AF01 K/A APE056 AA2.77 Loss of Offsite Power: Ability to determine and interpret the following as they apply to the Loss of Offsite Power: Auxiliary feed pump (running) This meets the K/A because the candidate must determine the status of the AF pump given a loss of offsite power to Bus 141.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Loss of Offsite Power, PREDICT the integrated plant response to the event/casualty with no operator action

51 **ID: BYLI-EP0-199** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 100% power, with AC Instrument Bus 114 de-energized due to a bus fault.
- Unit 1 experienced a large break loss of reactor coolant accident with Pressurizer pressure and level dropping rapidly.
- An automatic reactor trip and safety injection occurred.
- The crew is responding to the accident using 1BEP-0, "Reactor Trip or Safety Injection".

In accordance with 1BEP-0, the crew will respond to the loss of AC Bus 114 by...

A. manually starting Train A ESF equipment, because automatic actuation has been lost.

B. cross-tieing AC Bus 114 from AC Bus 214, because the normal bus supply has been de-energized.

C. re-energizing AC Bus 114 from the Constant Voltage Transformer, since the inverter supply to the bus has been lost.

D. manually starting Train B ESF equipment, because automatic actuation has been lost.

Answer: D

Answer Explanation:

Train B ESF actuation system has been de-energized, so Train B ESF equipment must be manually started.
Train A ESFAS is from AC 111.
Cannot cross-tie from AC 214; this is plausible since DC bussed are crosstied in a similar situation.
Cannot supply from CVT in this case, because the bus is faulted.

Question 51 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28131
User-Defined ID:	BYLI-EP0-199
Cross Reference Number:	
Topic:	Actions for SI with loss of AC Inst bus
Num Field 1:	4.1
Num Field 2:	4.4
Text Field:	APE057AK3.01
Comments:	Source: New 5/8/2010 R. F. Peterson Cognitive level: Memory Reference: 1BEP-0, Reactor Trip or Safety Injection; 1BOA Elec-2, Loss of Instrument Bus K/A APE057 AK3.01 Loss of Vital AC Electrical Instrument Bus: Knowledge of the reasons for the following responses as they apply to the Loss of Vital AC Instrument Bus: Actions contained in EOP for loss of vital AC electrical instrument bus. This meets the K/A because the candidate must know the correct action to take, and the reason for it, for a loss of AC instrument bus during the performance of an SI response.

Associated objective(s):

Given the procedure, be able to DESCRIBE the Intent/Basis of each step and how it is performed

52 **ID: BYLI-SX1-101** **Points: 1.00**

Given the following plant conditions:

- Both Units are at 100%, with all systems in normal alignment.
- 1A and 2B SX pumps are currently running, with 140 amps running current indicated for each pump.
- 1A SX discharge pressure is 100 PSIG.

The NSO notes the following changes to the SX system:

- 1A SX pump current lowers to and stabilizes at 130 amps.
- 1A SX pump discharge pressure on 1PM06J raises to 110 PSIG.

P&ID M-42, sheet 1B is provided.

The cause of this change to SX is that...

A. 1SX143A, 1A SX Pump Discharge Isolation Valve was closed.

B. 1SX001A, 1A SX Pump Suction Isolation Valve was closed.

C. 1SX150A, 1A SX Pump Strainer Backwash Outlet Valve was opened.

D. 1SX033, 1A SX Pump Discharge Header Crosstie Valve was closed.

Answer: D

Answer Explanation:

Closing the crosstie valve removes train B SX loads on U-1, so pump amps lower and discharge pressure rises.
Closing the discharge valve would dramatically lower pump amps and drop discharge pressure to 0.
Closing the suction valve would cause fluctuating pump amps and drop discharge pressure to nearly 0.
Opening the strainer discharge valve would add load, raising amps and lowering pressure.

Question 52 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28132
User-Defined ID:	BYLI-SX1-101
Cross Reference Number:	
Topic:	SX print interpretation
Num Field 1:	3.9
Num Field 2:	4.3
Text Field:	APE063G2.2.15
Comments:	Provided reference: P&ID M-42, sheet 1B Source: New 5/10/2010 R. F. Peterson Cognitive level: High Reference: P&ID M-42, sheet 1A K/A APE062 G2.2.15 Loss of Nuclear Service Water: Ability to determine the expected plant configuration using design and configuration control documentation, such as drawings, line-ups, tag-outs, etc. This meets the K/A because the candidate must use the plant Piping and Instrumentation Drawing for SX to determine the plant configuration for the given plant conditions.

Associated objective(s):

Given a set of plant conditions or parameters involving the SX System, DETERMINE if it is responding correctly

53 **ID: BYLI-IA1-101** **Points: 1.00**

Given the following plant conditions:

- Annunciator 1-1-C7, "Remote S/D Panel Trouble" is LIT
- SER Point 1846 is printed for "Remote Shutdown Panel IA Press Low/Loss of Power Alarm".

Schematic diagram 6E-1-4030IA06 is supplied.

With this alarm LIT, Relay 1PSL-IA9X is __(1)__, and device 1EL-IA009 is __(2)__.

	___(1)___	___(2)___
A.	de-energized	energized
B.	energized	energized
C.	energized	de-energized
D.	de-energized	de-energized

Answer: A

Answer Explanation:

With low pressure, 1PSL-IA009 is open, de-energizing relay 1PSL-IA9X. Contact 1PSL-IA9X is NC, so is closed, energizing 1EL-009.
The annunciator has contact 1PSL-IA9X 3-4, which is NC, and has to be closed to bring in the alarm.

Question 53 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28133
User-Defined ID:	BYLI-IA1-101
Cross Reference Number:	
Topic:	IA alarm on print
Num Field 1:	3.5
Num Field 2:	3.9
Text Field:	APE065G2.2.41
Comments:	Provided reference: 6E-1-4030IA06 Source: New 5/10/2010 R. F. Peterson Cognitive level: High Reference: 6E-1-4030IA06 K/A APE065 G2.2.41 Loss of Instrument Air: Ability to obtain and interpret station electrical and mechanical drawings. This meets the K/A because the candidate must interpret the station electrical drawing for a loss of IA.

Associated objective(s):

STATE the purpose and DISCUSS the operation of the following major component: Instrument Air Distribution Headers

54 **ID: BYLITCA25008** **Points: 1.00**

Due to a series of events, the crew has implemented the emergency procedures and is currently performing 1BCA-1.1, "Loss of Emergency Coolant Recirculation".

If a loss of offsite power occurred AFTER the SI and CS signals were reset, which pumps can be stopped ONLY by placing the control switch in Pull To Lock? (Assume RWST is 38% and all pumps were running.)

A. CS pumps

B. SI pumps

C. RH pumps

D. CV pumps

Answer: D

Answer Explanation:

Place CV pumps in PTL; all other pumps can be stopped by going to after-trip with SI and CS signals reset. CV pumps would restart due to the loss of off-site power.

Question 54 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	7616
User-Defined ID:	BYLITCA25008
Cross Reference Number:	BY-FM-SIM-OCA2-2297-00
Topic:	stopping eccs pump after loss of offsite power
Num Field 1:	3.6
Num Field 2:	4.1
Text Field:	WE11EK1.2
Comments:	Source: Byron exam bank Cognitive level: High Reference: 1BCA 1.1, Loss of Emergency Coolant Recirculation K/A WE11 EK1.2 Loss of Emergency Coolant Recirculation: Knowledge of the operational implications of the following concepts as they apply to the Loss of Emergency Coolant Recirculation: Normal, Abnormal and emergency operating procedures associated with Loss of Emergency Coolant Recirculation. This meets the K/A because the candidate must know the implications of a caution in 1BCA 1.1. This is high cognitive level, because the candidate must understand which pumps will automatically restart on the loss of power, and what must be done to stop them. This is inferred from the caution, not simply remembered.

Associated objective(s):

ANALYZE a given set of conditions and DETERMINE the appropriate operator actions per CA-1.1 and CA-1.2

55 **ID: BYLITFR32008** **Points: 1.00**

To initiate a Bleed and Feed Heat Removal operation in the RCS per BFR-H.1 "Loss of Secondary Heat Sink," SI is actuated, and RCS feed path is verified, then which ONE of the following is performed?

A. ONE Pressurizer PORV is opened MANUALLY.

B. BOTH Pressurizer PORVs are allowed to cycle open AUTOMATICALLY.

C. TWO Reactor Head Vent Valves are opened MANUALLY.

D. BOTH Pressurizer PORVs are opened MANUALLY.

Answer: D

Answer Explanation:

Per 1BFR H.1 step 17, both PORVs are opened manually. If they are not both open, then all 4 Rx head vent valves are opened.
Distractors are plausible because each would be a viable means of removing inventory and heat from the RCS, and the head vents are listed as an option in the BCA if the PORVs do not work.

Question 55 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6018
User-Defined ID:	BYLITFR32008
Cross Reference Number:	BY-FM-SIM-OFR3-0576-01
Topic:	reason for pzr PORVs held open in FR H.1
Num Field 1:	3.9
Num Field 2:	4.5
Text Field:	WE05EK1.2
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BFR H.1, Response to Loss of Secondary Heat Sink K/A WE05 EK1.2 Loss of Secondary Heat Sink: Knowledge of the operational implications of the following concepts as they apply to the Loss of Secondary Heat Sink: Normal, abnormal and emergency operation procedures associated with Loss of Secondary Heat Sink. This meets the K/A because the candidate must know the actions and reasons for the actions to mitigate a loss of heat sink in 1BFR H.1.

Associated objective(s):

Without the use of the H-Series Procedure, DESCRIBE the steps required to restore the critical safety function to within specifications

56 **ID: BYLC3CMP01A005** **Points: 1.00**

Given the following plant conditions on Unit 1:

- Generator output: 1200 MW
- MVAR out: 300 MVAR OUT
- Generator Gas pressure: 60 psig
- Voltage Regulator: ON

BCB figure 20a is attached.

Which of the following describes the proper operator actions?

A. Lower excitation by placing the Base Adjustor to lower.

B. Lower excitation by placing the Voltage Adjustor to lower.

C. Raise excitation by placing the Base Adjustor to raise.

D. Raise excitation by placing the Voltage Adjustor to raise.

Answer: B

Answer Explanation:

The MVAR loading is outside the capability curve, so excitation has to be lowered. With the Voltage Regulator ON, it is lowered by use of the Voltage Adjuster. The Base Adjuster is used when the VR is OFF.

Question 56 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18317
User-Defined ID:	BYLC3CMP01A005
Cross Reference Number:	BY FM NO. 232 QUIZ BANK
Topic:	Required actions for HI MVARS and low Hydrogen pressure
Num Field 1:	3.8
Num Field 2:	3.7
Text Field:	APE077AA1.02
Comments:	Provided reference: BCB figure 20a Source: Byron exam bank Cognitive level: High Reference: BGP 100-3, BCB figure 20a K/A APE077 AA1.02 Generator Voltage and Electric Grid Disturbances: Ability to operate and/or monitor the following as they apply to Generator Voltage and Electric Grid Disturbances: Turbine/generator controls This meets the K/A because the operator must have the ability to control TG voltage given off-normal conditions.

Associated objective(s):

Given the Main Generator Capability Curve, DISCUSS the Turbine Generator Operating Limits

57 **ID: BWLI-ROD3008** **Points: 1.00**

Unit 1 is in MODE 1 when a rod in Shutdown Bank C and a rod in Control Bank D drop to the bottom of the core.

The crew must...

A. manually trip the reactor, and go to 1BEP-0, Reactor Trip or Safety Injection.

B. first recover the Control Bank rod, THEN the Shutdown Bank rod.

C. recover the dropped rods simultaneously.

D. recover the dropped rods one at a time, in any order.

Answer: A

Answer Explanation:

1BOA Rod-3 for a dropped rod requires the Rx to be tripped if more than 1 rod at bottom light is lit.
Distractors are plausible because they describe methods that would restore correct rod alignment without requiring a plant trip.

Question 57 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	15919
User-Defined ID:	BWLI-ROD3008
Cross Reference Number:	LXROA ROD #17
Topic:	2 dropped rods
Num Field 1:	3.8
Num Field 2:	4.5
Text Field:	APE003 G2.4.8
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BOA Rod-3, Dropped or Misaligned Rod K/A APE003 G2.4.8 Dropped Control Rod: Knowledge of how abnormal operating procedures are used in conjunction with EOPs. This meets the K/A because the candidate must know to transition enter 1BOA Rod-3 for a dropped rod, and then trip the reactor and transition to 1BEP-0 as directed in the BOA for the given plant conditions of 2 dropped rods in MODE 1.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE the required actions per 1/2BOA ROD-3, Dropped or Misaligned Rod

58 **ID: BWLI-CV1-024** **Points: 1.00**

Which one of the following is a reason an Emergency Boration is required to be performed?

A. RCS boron concentration is 1000 ppm when the pressurizer boron concentration is 900 ppm, causing a dilution in the event of a Pzr outsurge.

B. Steam Generator PORV stuck open following reactor trip, causing an uncontrolled cooldown and positive reactivity addition.

C. Failure of ONE Control Rod to fully insert following a reactor trip, because adequate Shutdown Margin is NOT assured.

D. ROD BANK LO INSERTION LIMIT alarm LIT with the reactor in MODE 1, because the rods are too low to ensure adequate Shutdown Margin.

Answer: B

Answer Explanation:

1BOA Pri-2 states the conditions for emergency boration. An uncontrolled cooldown with the reactor shutdown is one of the required conditions. The other listed conditions require boration, but not emergency boration.

Question 58 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	9026
User-Defined ID:	BWLI-CV1-024
Cross Reference Number:	LXR15A-CVCS #24
Topic:	Required emergency boration
Num Field 1:	4.1
Num Field 2:	4.4
Text Field:	APE024AK3.01
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BOA Pri-2, Emergency Boration K/A APE024 AK3.01 Emergency boration: Knowledge of the reasons for the following responses as they apply to emergency boration: When emergency boration is required. This meets the K/A because the candidate must know the BOA conditions that require emergency boration.

Associated objective(s):

STATE the conditions that may require emergency boration and the emergency boration flowpaths, including flowrates, in order of preference

59 **ID: BYLITOA73005** **Points: 1.00**

During a refueling outage, each of the following situations would require entry into 1BOA REFUEL-1, Fuel Handling Emergency EXCEPT...

A. while moving the upper internals into place in the vessel, a wrench falls from the polar crane and damages fuel assembly.

B. a fuel assembly slides out of the inspection machine when the assembly is rotated above the fuel within the Spent Fuel Pool.

C. 0RE-AR055, FHB Fuel Handling Incident monitor, indicates an alarm condition with a rising trend shown on 0RE-AR056, FHB Fuel Handling Incident monitor.

D. the fuel transfer cart becomes inoperable with a spent fuel assembly loaded on it.

Answer: D

Answer Explanation:

All of the other conditions meet the entry requirements for 1BOA REFUEL-1. A spent fuel assembly on an immovable cart does not.
Distractors are plausible because all four conditions describe an actual or potential serious problem with fuel movement.

Question 59 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6150
User-Defined ID:	BYLITOA73005
Cross Reference Number:	BY-FM-SIM-OOA07-1939-01
Topic:	Entry conditions to REF-1
Num Field 1:	3.4
Num Field 2:	4.1
Text Field:	APE036AA2.02
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BOA REFUEL-1, Fuel Handling Emergency K/A APE036 AA2.02 Fuel Handling Incident: Ability to determine and interpret the following as they apply the Fuel Handling Incident: Occurrence of a Fuel Handling Incident. This meets the K/A because the candidate must determine entry conditions for the BOA for a Fuel Handling Accident.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE if entry into 1/2BOA REFUEL-1, Fuel Handling Emergency, is required

60 **ID: BYLI-DU1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 tripped from full power 10 minutes ago.
- The Steam Dump Mode Select Switch is selected to Tave.
- Tave is 561°F.
- The C-9, Condenser Not Available, light is LIT.
- 1A Circulating Water Pump is running.
- Condenser PRESSURE is 12" Hg Absolute.

The steam dump valves will immediately open when...

A. the Steam Dump Mode Select Switch is taken to RESET to reset C-9.

B. condenser pressure is lowered below 7" Hg Absolute.

C. a second Circulating Water Pump is started.

D. the Steam Dump Mode Select Switch is taken to Steam Pressure Mode.

Answer: B

Answer Explanation:

The condenser is NOT available if condenser pressure is greater than 7" Hg Absolute, or NO Circ Water pumps are running.
C-7, not C-9, is reset with the Mode Select Switch.
Mode Select Switch CAN select Tave, but dumps won't open with C-9 lit.
2 CD/CB pumps are required for a FW pump; candidates may confuse with CW pumps for C-9.

Question 60 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28134
User-Defined ID:	BYLI-DU1-099
Cross Reference Number:	
Topic:	Reason dumps are inop without C-9
Num Field 1:	2.8
Num Field 2:	3.1
Text Field:	APE051AK3.01
Comments:	Source: New 5/10/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Sec-3, Loss of Condenser Vacuum K/A APE051 AK3.01 Loss of Condenser Vacuum: Knowledge of the reasons for the following responses as they apply to the Loss of Condenser Vacuum: Loss of steam dump capability upon loss of condenser vacuum This meets the K/A because the candidate must know why the steam dumps are disarmed with a loss of condenser vacuum.

Associated objective(s):

LIST the conditions necessary to satisfy the following with respect to the steam dumps: C-9

61 **ID: BYLI-AR1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power.
- A 450 GPM steam generator tube rupture occurred on the 1A SG.

Three minutes later, the 1A Main Steam Line radiation monitor on the RM-11 is in High Alarm, and...

A. the other Main Steam Line radiation monitors will NOT be affected.

B. the 1B Main Steam Line radiation monitor on the RM-11 will indicate elevated radiation levels.

C. the 1C Main Steam Line radiation monitor on the RM-11 will indicate elevated radiation levels.

D. the 1D Main Steam Line radiation monitor on the RM-11 will indicate elevated radiation levels.

Answer: D

Answer Explanation:

The 1D MSL radiation monitor is in the same area as the 1A monitor, and it will be affected by a 450 GPM SGTR in the 1A SG, indicating elevated radiation levels. This is the size of the design basis tube rupture.
Distractors are plausible because “shine” from the contaminated 1A steam piping could affect any adjacent steamline rad monitor (or no adjacent monitor), requiring the student to know which steamline is adjacent to 1A. Additionally, radioactive materials could migrate through the secondary and cause elevated levels on any rad monitor prior to the plant trip, or conversely, this effect could be so limited within the three minutes stipulated in the stem that no other rad monitors are elevated.

Question 61 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28135
User-Defined ID:	BYLI-AR1-099
Cross Reference Number:	
Topic:	Detector locations in alarm
Num Field 1:	2.5
Num Field 2:	2.6
Text Field:	APE061AK2.01
Comments:	Source: New 5/11/2010 R. F. Peterson Cognitive level: High Reference: 1BEP-3 K/A APE061 AK2.01 Area Radiation Monitoring System Alarms: Knowledge of the interrelations between the Area Radiation Monitoring System Alarms and the following: Detectors at each ARM system location. This meets the K/A because the candidate must know the location of the detectors that will alarm on a SGTR, and that the detector on the affected line will receive higher radiation than the detector on the adjacent steam line. The affected detector may reach an alarm setpoint, depending on RCS activity. This is higher cognitive level, because the candidate must analyze the size of the break and the time period to draw the correct conclusion. If the break were much smaller, there would be little or no change in the response of the adjacent detector, and if the analyzed time period were longer, other detectors would be affected.

Associated objective(s):

DISCUSS the principles of operation of the following AR/PR detectors: G-M Tube

62 **ID: BYLC3CFP02A001** **Points: 1.00**

Given the following conditions pertaining to the Fire Protection system:

- Annunciator UNIT ONE AREA FIRE (0-37-A4): LIT
- Audible fire alarm on 1PM09J: Sounding
- FIRE alarm for DG 1B (1D-71): LIT
- ACTD alarm for DG 1B (1S-37): NOT LIT
- ACTD alarm for DG 1B TK (1S-39): LIT

There is a fire in the 1B __(1)__, and suppression will be actuated to __(2)__.

	____(1)____	____(2)____
A.	DG Day Tank Room	Day Tank Room AND DG Room
B.	DG Day Tank Room	Day Tank Room ONLY
C.	DG Room	DG Room ONLY
D.	DG Room	Day Tank Room AND DG Room

Answer: B

Answer Explanation:

The Fire alarm for DG 1B comes in for a fire in either the DG room or Day Tank room. The Suppression alarm distinguishes which area has a fire.
A fire in the Day Tank room results in CO2 supression automatically actuated to that room only. If there is a fire in the DG room, CO2 is actuated to both the DG room and Day Tank Room.

Question 62 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18879
User-Defined ID:	BYLC3CFP02A001
Cross Reference Number:	BY FM NO. 817 QUIZ BANK
Topic:	FOST fire actuation
Num Field 1:	3.0
Num Field 2:	3.3
Text Field:	APE067AA1.09
Comments:	Source: Byron exam bank Cognitive level: High Reference: BAR 0-37-A4, FIRE PREPLAN BOOK, BAR 1PM09J C-13 and E-18 K/A APE067 AA1.09 Plant Fire On Site: Ability to operate and/or monitor the following as they apply to the Plant Fire on Site: Plant fire zone panel (including detector location) This meets the K/A because the candidates must monitor the control room fire panel and distinguish between fires in related areas with resultant suppression actuation.

Associated objective(s):

Given parameters, INTERPRET the indications on the Fire Protection Detection/TC # Suppression Panel, _PM09J.

63 **ID: BYLI-FRZ-001** **Points: 1.00**

Given the following plant conditions:

Unit 1 experienced a loss of coolant accident, and the crew is responding to Containment pressure of 23 PSIG using 1BFR-Z.1 "Response to High Containment Pressure".

The crew will perform all of the following actions, EXCEPT...

A. verify containment isolation.

B. verify containment heat removal capabilities.

C. perform a release from containment.

D. check for and isolate any faulted Steam Generators.

Answer: C

Answer Explanation:

CNMT is not released in 1BFR Z.1. Containment isolation is verified, CS and RCFCs are operated to remove heat in containment, and faulted SGs are isolated. Distractors are plausible because ensuring the CS system is operating as designed is the obvious response to 23 psig in cnmt. The listed actions are all less obvious responses. A cnmt release is a possible response to high cnmt pressure in the Severe Accident Management Guidleines, but not in the BFRs.

Question 63 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	11535
User-Defined ID:	BYLI-FRZ-001
Cross Reference Number:	LXRFR-Z #1
Topic:	High level actions of FR Z.1
Num Field 1:	3.3
Num Field 2:	3.6
Text Field:	WE14EK1.3
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BFR Z.1 K/A WE14 EK1.3 High Containment Pressure: Knowledge of the operational implications of the following concepts as they apply to the High Containment Pressure: Annunciators and conditions indicating signals, and remedial actions associated with the High Containment Pressure. This meets the K/A because the candidate must understand the procedure usage and actions to remedy high containment pressure.

Associated objective(s):

COMPARE the operator-initiated recovery techniques to the actions in FR-Z.1

Without the use of the Z-Series procedure, DESCRIBE the steps required to restore the Critical Safety Function to within specifications.

64 **ID: BYLI-EP0-107** **Points: 1.00**

In order to enter 1BEP ES-0.0, "Rediagnosis" which of the following conditions is required to be met?

A. 1BEP-0, "Reactor Trip or Safety Injection" has been exited.

B. Safety Injection has NOT been actuated.

C. Shift Manager permission is received.

D. The last step of 1BEP-0, "Reactor Trip or Safety Injection" has been reached with NO procedure transition identified.

Answer: A

Answer Explanation:

1BEP-0 must have been implemented and exited to use 1BEP ES-0.0.
Distractors are plausible because they all describe possible plant conditions that could readily enter into a decision to use BEP ES-0.0, or because SM permission is a likely prereq before this unusual procedure is used after normal diagnostic steps have been inadequate.

Question 64 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28157
User-Defined ID:	BYLI-EP0-107
Cross Reference Number:	
Topic:	Rediagnosis entry
Num Field 1:	3.2
Num Field 2:	4.0
Text Field:	WE01EA2.1
Comments:	Source: New 6/1/2010 R. F Peterson Cognitive level: Memory Reference: 1BEP ES-0.0, Rediagnosis K/A WE01 EA 2.1 Rediagnosis: Ability to determine and interpret the following as they apply to the Reactor Trip or Safety Injection Rediagnosis: Facility conditions and selection of appropriate procedures during abnormal and emergency operations. This meets the K/A because the candidate must have the ability to apply the rediagnosis procedure to the conditions of the facility during an emergency.

Associated objective(s):

GIVEN a set of plant conditions, DIAGNOSE and ANALYZE a Rediagnosis

65 **ID: BWLC3DEP9015** **Points: 1.00**

Thirty minutes after a reactor trip, an indication that natural circulation IS occurring is ...

A. CETCs are lowering.

B. RCS subcooling is 10°F and degrading.

C. RCS hot leg temperatures are rising.

D. S/G pressures are rising.

Answer: A

Answer Explanation:

Lowering core exit temperature is one of the verifications of natural circulation. The listed distractors indicate that NC is not occurring. Distractors are plausible because they all list parameters that are changing during natural circ, but these are all listed as changing in the wrong direction.

Question 65 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	11112
User-Defined ID:	BWLC3DEP9015
Cross Reference Number:	SECTION B
Topic:	Natl Circ indications
Num Field 1:	3.2
Num Field 2:	3.4
Text Field:	WE009EK2.1
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: 1BEP ES 0.2, Natural Circulation Cooldown K/A WE09 EK2.1 Natural Circulation Operations: Knowledge of the interrelations between the Natural Circulation Operations and the following: Component, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes and automatic and manual features. This meets the K/A because the candidate must know the relationship of indications on plant instrumentation to the verification of natural circulation.

Associated objective(s):

DESCRIBE the conditions necessary to establish and/or enhance Natural Circulation Cooling

66 **ID: BYLITAM31008** **Points: 1.00**

In accordance with OP-AA-102-104, "Pertinent Information Program", Daily Orders...

A. may be used to temporarily alter a Byron Administrative Procedure (BAP) as determined by Operating Shift Management.

B. required to last greater than one week shall be stated as such.

C. may be used in place of temporary procedures if a safety concern is involved.

D. provide Operations Management's instructions including equipment deficiencies.

Answer: D

Answer Explanation:

Daily orders are short-term instructions that can provide Operating priorities per OP-AA-102-104, section 2.1.
They cannot be used in place of temporary or admin procedures (section 2.3), and last a day to a weekend (section 2.1.1) with standing orders used for a longer term (section 2.2)
Distractors are plausible because they all list possible uses of the Daily Orders.

Question 66 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6710
User-Defined ID:	BYLITAM31008
Cross Reference Number:	BY-FM-SIM-OAM13-0680-01
Topic:	Daily Orders issuance
Num Field 1:	2.7
Num Field 2:	3.4
Text Field:	G2.1.15
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: OP-AA-102-104, section 2.1 K/A Conduct of Operations: G2.1.15 Knowledge of adminstrative requirements for temporary management directives, such as standing orders, night orders, Operations memos, etc. This meets the K/A because the candidate must know the content requirements and limitations for a temporary directive: daily orders.

Associated objective(s):

STATE the purpose of the Daily Order Book

DISCUSS the types of instructions which may be included in Daily Orders

67 **ID: BYLI-FH1-034** **Points: 1.00**

During Core Alterations on Unit 2, the Unit 2 NSO attempts to contact the Fuel Handling SRO at the Refueling Cavity to determine refueling cavity water level, but is unable to establish contact. The SRO is also unable to contact the NSO.

Which ONE of the following actions must be taken until communications is restored?

A. Raise refueling cavity level using MCR indication.

B. Suspend operations involving a reduction in boron concentration.

C. Evacuate containment of non-essential personnel.

D. Suspend Core Alterations.

Answer: D

Answer Explanation:

OU-AP-200 section 3.4.1 states the NSO is responsible to ensure direct communications are maintained between the CNMT and MCR when core alterations are being performed. Distractors are plausible because each lists an action that could be considered appropriate in the given conditions.

Question 67 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	4775
User-Defined ID:	BYLI-FH1-034
Cross Reference Number:	BY-SYS-QUEST #: SFH0034
Topic:	Loss of FH to MCR communications
Num Field 1:	3.9
Num Field 2:	3.8
Text Field:	G2.1.44
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: OU-AP-200, section 3.4 K/A Conduct of Operations G2.1.44: Knowledge of RO duties in the control room during fuel handling, such as responding to alarms from the fuel handling area, communications with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation. This meets the K/A because the candidate must know the duties of an RO regarding communications with the fuel handling supervisor.

Associated objective(s):

DETERMINE from memory, applicable Fuel Handling Tech Spec/TRM operability requirements

STATE the responsibilities of the unit NSO and SRO in charge of refueling in accordance with OU-AP-200, Administrative Controls During Fuel Handling Activities for Byron and Braidwood

68 **ID: BYLI-AM1-099** **Points: 1.00**

In accordance with OP-AA-101-111, "Roles and Responsibilities of On-shift Personnel", while performing abnormal or emergency procedures, the Reactor Operator will perform immediate operator actions __(1)__, and subsequent operator actions __(2)__.

	_____(1)_____	_____(2)_____
A.	from memory	as directed by the Unit Supervisor using the procedure
B.	from memory	with the procedure in the RO's hand
C.	with the procedure in the RO's hand	as directed by the Unit Supervisor using the procedure
D.	with the procedure in the RO's hand	with the procedure in the RO's hand

Answer: A

Answer Explanation:

Section 4.6.2 part 1 & 2 of OP-AA-101-111 states it is the RO's responsibility to perform immediate operator actions of an abnormal procedure from memory and subsequent actions as directed by the Unit Supervisor.
Distractors are plausible because they describe common-sense variations of the “in hand” expectations for procedure use, and/or the actual practice of Unit Supv providing procedural direction.

Question 68 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28137
User-Defined ID:	BYLI-AM1-099
Cross Reference Number:	
Topic:	RO responsibility during BOA
Num Field 1:	4.1
Num Field 2:	4.4
Text Field:	G2.1.2
Comments:	Source: New 5/13/2010 R. F. Peterson Cognitive level: Memory Reference: OP-AA-101-111 K/A G2.1.2 Conduct of Operations: Knowledge of operator responsibilities during all modes of plant operation. This meets the K/A because the candidate must know the RO's responsibilities for actions taken during the perfomance of Abnormal Operating Procedures.

Associated objective(s):

SRO - Given a set of plant conditions involving the use of a GP or a OA, EVALUATE operator action and DETERMINE appropriate actions

69 **ID: BYLI-AM3-099** **Points: 1.00**

In what order are the components tagged during a pump Clearance Order placement?

A. Discharge Valve, Suction Valve, Control Switch, Motor Breaker

B. Control Switch, Motor Breaker, Suction Valve, Discharge Valve

C. Control Switch, Motor Breaker, Discharge Valve, Suction Valve

D. Discharge Valve, Suction Valve, Motor Breaker, Control Switch

Answer: C

Answer Explanation:

The control switch is tagged first to prevent operation of the breaker. Breaker next to prevent starting the motor before the valves are closed. Discharge, then suction valve to protect pump and lower pump pressure.
The distractors are commonly confused variations on the correct answer.

Question 69 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28138
User-Defined ID:	BYLI-AM3-099
Cross Reference Number:	
Topic:	C/O sequence
Num Field 1:	4.1
Num Field 2:	4.3
Text Field:	G2.2.13
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: OP-AA-109-101, Clearance and Tagging K/A G2.2.13 Equipment Control: Knowledge of tagging and clearance procedures. This meets the K/A because the candidate must know the sequence of taking components out of service to safely hang a clearance order.

Associated objective(s):

STATE the proper C/O checklist order for performing a C/O on driving and driven equipment

70 **ID: BWLI-DG1-079** **Points: 1.00**

Which of the following is the MINIMUM volume that satisfies the Technical Specification requirement for the 2B Diesel Generator's fuel oil storage system?

A. 41,000 gallons

B. 45,000 gallons

C. 47,000 gallons

D. 50,000 gallons

Answer: B

Answer Explanation:

TS 3.8.3 requires each DG FO storage system to contain at least 44,000 gallons.
41,000 is below the minimum requirement
47,000 satisfies the LCO, but is not the minimum number give that satisfies it.
50,000 is the 50,000 gallon tank volume, but is more than TS requires.

Question 70 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	10034
User-Defined ID:	BWLI-DG1-079
Cross Reference Number:	LXR09-EDG #79
Topic:	EDG FO TS requirements
Num Field 1:	3.9
Num Field 2:	4.6
Text Field:	G2.2.42
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: TS 3.8.3 K/A G2.2.42 Equipment Control: Ability to recognize system parameters that are entry-level conditions for Technical Specifications This meets the K/A because the candidate must know the TS LCO requirements for EDG fuel oil storage capacity.

Associated objective(s):

DETERMINE from memory, applicable Diesel Generator Tech Spec/TRM Operability Requirements

71 **ID: BWLI-INS2058** **Points: 1.00**

Given the following plant conditions.

- Unit 1 is at 80% power.
- Rod Control Mode Selector Switch is in AUTO.

- Tref has failed to 4° LOWER than High Auctioneered Tave.

Immediately after the failure, rods will be moving __(1)__, at __(2)__ steps per minute.

	__(1)__	__(2)__
A.	IN	40
B.	OUT	64
C.	IN	64
D.	OUT	40

Answer: A

Answer Explanation:

Tref below Tave will cause rods to move in. A 4° error results in 40 SPM rod movement. There is a 3° deadband, and a control band of 64 SPM (8 to 72 SPM).

Question 71 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	13105
User-Defined ID:	BWLI-INS2058
Cross Reference Number:	LXROA INST #89
Topic:	Tref failure effect on rod control
Num Field 1:	4.2
Num Field 2:	4.4
Text Field:	G2.2.44
Comments:	Source: Byron exam bank Cognitive level: High Reference: 1BOA Inst-2, Operation with a Failed Instrument Channel K/A G2.2.44 Equipment Control: Ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions and directives affect plant and system conditions. This meets the K/A because the candidate must interpret the indications to determine the failure.

Associated objective(s):

DESCRIBE the actions necessary to stabilize the plant following a Process Instrumentation malfunction

ANALYZE a given set of plant conditions and DETERMINE the required actions per 1/2BOA INST-2, Operation with Failed Instrument Channel

Concerning the following instrument, EXPLAIN how the instrument detects it's parameter, what indication is provided, what control and alarm functions are provided; and dose the instrument generate inputs to the protection system: T_{hot} and T_{cold} Narrow Range

ANALYZE a given set of plant conditions and DETERMINE which instrument has failed: RCS Narrow Range RTD Channel

DISCUSS the expected plant response for the failures listed in TKO T.OA11-03 thru T.OA11-20 including: Plant Recovery From the Instrument Failure and Actions Taken by Operators, including; Defeating Failed Channels, Tripping Bistables, and Changing Power Levels

72 **ID: BYLITAM35009** **Points: 1.00**

When people have entered containment, in accordance with BAP 1450-1, Access to Containment, all of the following activities are allowed EXCEPT...

A. RCS dilution.

B. changing reactor power by 1%.

C. a reactor startup.

D. a Control Rod position adjustment.

Answer: C

Answer Explanation:

BAP 1450-1, section 4.3.1 states that a reactor startup is NOT considered maintaining the reactor power stable even though power limits may not be exceeded. Distractors are plausible because each will have an impact on reactor power.

Question 72 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	5344
User-Defined ID:	BYLITAM35009
Cross Reference Number:	BY-FM-SIM-OAM13-0692-00
Topic:	CNMT entry requirements
Num Field 1:	3.2
Num Field 2:	3.7
Text Field:	G2.3.12
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: BAP 1450-1 K/A G2.3.12 Radiation Control: 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. This meets the K/A because the candidate must know the licensed operator duty to maintain reactor power stable during a containment entry.

Associated objective(s):

DISCUSS the requirement for containment entries during shutdown and power operations

73 **ID: BYLI-CC1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 4 with A Train RH providing Shutdown Cooling.
- RCS pressure is 300 psig.

If 100 GPM leaks develop in both the 1A CC Heat Exchanger and the 1A RH Heat Exchanger, the SX system __(1)__ become contaminated, because __(2)__.

	___(1)___	_____(2)_____
A.	will NOT	RH pressure is less than CC pressure, which is less than SX pressure
B.	will	RH pressure is greater than CC pressure, which is greater than SX pressure
C.	will NOT	RH pressure is greater than CC pressure, which is less than SX pressure
D.	will NOT	RH pressure is less than CC pressure, which is greater than SX pressure

Answer: B

Answer Explanation:

RH system will leak into the CC system because RH pressure at the CC HX is about 400 psig. The CC system pressure is about 130 psig, and SX pressure is 100 psig, so CC will leak into the SX system.

Question 73 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28139
User-Defined ID:	BYLI-CC1-099
Cross Reference Number:	
Topic:	RH to CC to SX leak
Num Field 1:	3.4
Num Field 2:	3.8
Text Field:	G2.3.14
Comments:	Source: New 5/15/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Pri-6 K/A G2.3.14 Radiation Control: Knowledge of radiation or contamination hazards that may arise during normal, abnormal, or emergency conditions or activities. This meets the K/A because the candidate must evaluate the leakage path that will result in radioactive contamination of a system in contact with the environment.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Component Cooling Malfunction, and OA Pri-6, Component Cooling Malfunction, ANALYZE those conditions and DETERMINE the operator actions required to stabilize the plant

74 **ID: BYLC3DEP19D003** **Points: 1.00**

Each of the following procedures can be transitioned to during the performance of the Immediate Operator Actions of a Reactor Trip and Safety Injection EXCEPT...

A. BCA-0.0, Loss of All AC Power

B. BEP ES-0.1, Reactor Trip Response

C. BFR-S.I, Response to Nuclear Power Generation/ATWS

D. BFR-H.1, Response to a Loss of Heat Sink

Answer: D

Answer Explanation:

BFR H.1 can be transitioned to, from step 15 of BEP-0. The other choices are RNO transitions during the immediate operator actions of BEP-0.

Question 74 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	19158
User-Defined ID:	BYLC3DEP19D003
Cross Reference Number:	BY FM NO. 1120 NRC BANK
Topic:	BEP-0 transition points
Num Field 1:	3.5
Num Field 2:	4.4
Text Field:	G2.4.16
Comments:	Source: Byron exam bank Cognitive level: Memory Reference: BEP-0 K/A G2.4.16 Emergency Procedures: Knowledge of EOP implementation hierarchy and coordination with other support procedures or guidelines such as, operating procedures, abnormal operating procedures, and severe accident management guidelines. This meets the K/A because the candidate must know the hierarchy of Emergency procedure usage and the transitions to other guidelines-the contingency actions, functional restoration and event specific procedure.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Safety Injection and a set of plant procedures, IDENTIFY the correct procedure(s) to be utilized and DESCRIBE required operator actions

75 **ID: BYLI-ZP1-101** **Points: 1.00**

The Shift Manager has made the initial Emergency Action Level classification of a plant event. A Unit Assist NSO is to make the notifications to the Illinois Emergency Management Agency (IEMA) and the NRC.

The NSO will notify IEMA using the __(1)__, and then notify the NRC using the __(2)__.

	_____(1)_____	_____(2)_____
A.	Nuclear Accident Reporting System	Event Notification System
B.	Nuclear Accident Reporting System	Nuclear Accident Reporting System
C.	Event Notification System	Nuclear Accident Reporting System
D.	Event Notification System	Event Notification System

Answer: A

Answer Explanation:

EP-AA-114, section 2 specifies ENS and NARS usage. The ROs will make the initial notifications during an accident situation.

Question 75 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28158
User-Defined ID:	BYLI-ZP1-101
Cross Reference Number:	
Topic:	NARS and ENS
Num Field 1:	3.9
Num Field 2:	3.8
Text Field:	G2.4.39
Comments:	Source: New 6/2/2010 R. F. Peterson Cognitive level: Memory Reference, EP-AA-114, Notifications, section 4.2.1 K/A G2.4.39 Emergency Plan: Knowledge of RO responsibilities in emergency plan implementaion. This meets the K/A because the candidate must know the emergency notification systems for notifications that are made by RO's during the inital classification of an accident.

Associated objective(s):

EXPLAIN the use of the nuclear accident reporting system (NARs) including: Initial Notification and Update Requirements (Time Limits)

76 **ID: BYLI-OA3-101** **Points: 1.00**

Give the following plant conditions:

- Unit 1 is at 100% power, with all systems normally aligned.
- Spent fuel is being moved in the Spent Fuel Pool (SFP) for dry cask storage.

The Gross Failed Fuel Monitor 1PR006 is in High Alarm.

The cause of this alarm is high __(1)__ activity, and the SRO must direct __(2)__.

	___(1)___	_____(2)_____
A.	SFP	all fuel assemblies to be secured per 1BOA Refuel-1, Fuel Handling Emergency
B.	RCS	CVCS letdown to be maximized per 1BOA Pri-4, Abnormal Primary Chemistry
C.	RCS	CVCS letdown to be secured per BOP CV-17, Establishing and Securing Normal and RH Letdown Flow
D.	SFP	the Fuel Handling Building to be evacuated per 1BOA Refuel-1, Fuel Handling Emergency

Answer: B

Answer Explanation:

1PR006 monitors U-1 CVCS letdown line for high RCS activity. When it is alarming, 1BOA Pri-4 is the applicable procedure, which directs maximizing letdown. The procedure at step 4 directs letdown to be maximizeds.
A reasonable response to hi rad in the SFP during fuel moves would be to stop moving fuel or to evacuate. The “Gross Failed Fuel Monitor” could be thought to refer to rad monitors in the fuel building.

Question 76 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28140
User-Defined ID:	BYLI-OA3-101
Cross Reference Number:	
Topic:	GFF monitor alarm and procedure
Num Field 1:	2.9
Num Field 2:	2.9
Text Field:	004000G2.3.5
Comments:	SRO Only Source: New 5/17/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Pri-4, Abnormal Primary Chemistry K/A 004000 G2.3.5 Chemical and Volume Control: Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. This meets the K/A because the candidate must know the Gross Failed Fuel monitor is the fixed radiation monitor for the CVCS system, and the SRO must assess the conditions and direct the correct action from the controlling procedure. This meets 10CFR55.43(b) item 5, Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating High Reactor Coolant Activity (Abnormal Primary Chemistry) and a set of plant procedures, IDENTIFY the correct procedure(s) to be utilized and DISCUSS required operator actions

77 **ID: BYLI-EP1-101** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was tripped, with Safety Injection actuated.
- Pressurizer level is 100%.
- RCS pressure is 900 psig and lowering.
- RVLIS indicates 15% Head level.
- PRT level is 90% and rising.
- PRT pressure is 80 psig and rising.
- RCS Subcooling is 0°F.
- NO containment radiation monitors are in Alarm.
- Containment pressure is 0.5 psig and stable, and RF sump indicates 7".
- RWST level is 87% and lowering.

Based on the current plant conditions, when the SRO directs the actions of 1BEP-0, Reactor Trip or Safety Injection, the decision will be made to __(1)__.

The reason for this priority is because __(2)__.

A. (1) transition to 1BEP ES-1.1, SI Termination
(2) Pressurizer level indicates the SI should be terminated

B. (1) transition to 1BCA-1.2, LOCA Outside of Containment
(2) containment conditions indicate there is a loss of RCS outside containment

C. (1) continue in 1BEP-0
(2) NO transition criteria have yet been met

D. (1) transition to 1BEP ES-1.3, Transfer to Cold Leg Recirculation
(2) auto swapover to the CNMT sump suction valves is imminent.

Answer: C

Answer Explanation:

1BEP-0 chooses 1BEP-1 based on CNMT high rads, pressure or sump level. Until the PRT ruptures, these will not occur. The crew will cycle back through 1BEP-0 until CNMT parameters change. The basis document specifically calls out these criteria.
1BEP ES-1.1 is entered if subcooling is acceptable, which it is not.
1BEP ES-1.2 is entered from 1BEP-1, not 1BEP-0.

Question 77 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28141
User-Defined ID:	BYLI-EP1-101
Cross Reference Number:	
Topic:	Basis for procedure transition with PRT changing
Num Field 1:	3.4
Num Field 2:	4.4
Text Field:	007000G2.4.23
Comments:	SRO Only Source: New 5/17/2010 R. F. Peterson Cognitive level: High Reference: Background document for 1BEP-0 K/A 007000 G2.4.23 Pressurizer Relief/Quench Tank: Knowledge of the bases for prioritizing emergency procedure implementation during emergency operations. This meets the K/A because the candidate must recognize the pending PRT rupture, and know the reason for the transition to 1BEP-1, and that it has not yet been met. This meets 10CFR55.43(b) item 5, Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency procedures.

Associated objective(s):

Given a copy of the Loss of Reactor or Secondary Coolant Procedure, DISCUSS the basis of each step, note or caution in the procedure

78 **ID: BYLI-AF1-002** **Points: 1.00**

Given the following plant conditions:

- 1A Auxiliary Feedwater pump is out of service.
- Unit 1 was manually tripped because of a loss of main feedwater.

The following alarms are LIT:
- AF PUMP TRIP (1-3-A6)
- AF PUMP AUTO START (1-3-B6)
- AF PUMP SUCT PRESS LOW (1-3-A7)
- AF PUMP SX SUCT VLVS ARMED (1-3-E7)

The EO reports the 1B Auxiliary Feedwater pump suction pressure switch has failed to 0 PSIA.

The 1B Auxiliary Feedwater pump will __(1)__, using __(2)__.

A. (1) be started at the 383' Unit 1 Remote Shutdown Panel
(2) 1BOA Pri-5, "Control Room Inaccessibility"

B. (1) be started at the AB 383' AF Local Control Panel
(2) 1BOA Elec-5, "Local Emergency Control of Safe Shutdown Equipment"

C. (1) be started with the control switch in the MCR at 1PM05J
(2) 1BEP-0, "Reactor Trip or Safety Injection"

D. (1) be started at the 364' Aux Bldg AF Emergency Control Panel
(2) 1BOA Elec-5, "Local Emergency Control of Safe Shutdown Equipment"

Answer: D

Answer Explanation:

With the pump trip alarm up, and report of suction pressure switch failure, the 1B AF pump is tripped. The low suction pressure trip can be overriden by Start With Bypass at the 364' Emergency Control Panel. This is directed in 1BOA Elec-5.
1BOA PRI-5 directs many actions taken outside the Control Room, and is referred to in several emergency procedures for accomplishing discrete actions.

Question 78 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	6087
User-Defined ID:	BYLI-AF1-002
Cross Reference Number:	BY-SYS
Topic:	local start of the 1B AF pump
Num Field 1:	3.1
Num Field 2:	3.4
Text Field:	061000A2.05
Comments:	SRO Only Source: New 5/17/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Elec-5 K/A 061000 A2.05 Auxiliary/Emergency Feedwater System: Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Automatic control malfunctions This meets the K/A because the candidate must know the impact on the ability to start the AFW pump of a failure of the pressure switch, which is part of the automatic control system. The candidate must know the procedure to be used for this start. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given an operating mode and various plant conditions, PREDICT how supported systems and the Auxiliary Feedwater System will be impacted by Auxiliary Feedwater System failures and misoperations

79 **ID: BWLC3CAR2006** **Points: 1.00**

Given the following plant conditions on Units 1 & 2:

- BOTH reactors are at full power with each unit in a normal lineup.
- 2PR030J, Auxiliary Building Vent Stack 0B WR Gas Monitor (WRGM), has lost power and CANNOT be restored.

Under these conditions, the SRO will…

(TLCO 3.3.i is attached.)

A. need to enter TLCO 3.0.c immediately, because there is NO monitor available for the U-2 Vent Stack.

B. NOT need to enter a TLCO, because ONE required channel is still OPERABLE.

C. initiate an alternate monitoring method within 3 days, and restore 2PR030J within 7 days.

D. restore 2PR030J within 30 days.

Answer: C

Answer Explanation:

TLCO 3.i action D requires initiation of alternate method of monitoring within 72 hours (3 days) and restoration in 7 days. Other actions in this TLCO have required completion times of 14 days and 30 days, or require entering TLCO 3.0.c.
There is 1 monitor per stack, with 2 stacks, with 1 monitor (per stack) required. The candidate must know that 1 monitor out of operability will have action requirements and not confuse "1 required" as meaning only 1 for both stacks.

Question 79 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	18022
User-Defined ID:	BWLC3CAR2006
Cross Reference Number:	OPEX, SECTION B
Topic:	TS action for loss of power to PR
Num Field 1:	2.5
Num Field 2:	2.9
Text Field:	073000A2.01
Comments:	Provided reference: TLCO 3.3.1 SRO Only Source: Byron exam bank Cognitive level: Memory Reference: TLCO 3.3.i K/A 073000 A2.01 Process Radiation Monitoring: Ability to (a) predict the impacts of the following malfunctions or operations on the PRM system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Erratic or failed power supply. This meets the K/A because the candidate must understand that the loss of power makes the monitor inoperable, and know the TS required actions for this malfunction. This meets 10CFR55.43(b) item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters involving the radiation monitoring system, DETERMINE Tech Spec compliance and required actions

80 **ID: BYLI-OA6-099** **Points: 1.00**

Given the following plant conditions:

- 1A SX pump AND 2A SX Pump are OOS for a common suction valve replacement.
- 1B and 2B SX Pumps BOTH trip and CANNOT be restarted.

The Unit Supervisors will direct alternate SX cooling to be supplied DIRECTLY from the ____(1)____ system, and the units to be ____(2)____.

	_____(1)_____	_____(2)_____
A.	Non-Essential Service Water	rapidly shutdown per 1 and 2BGP 100-4T.1
B.	Non-Essential Service Water	tripped, and enter 1 and 2BEP-0
C.	Fire Protection	rapidly shutdown per 1 and 2BGP 100-4T.1
D.	Fire Protection	tripped, and enter 1 and 2BEP-0

Answer: D

Answer Explanation:

Per 0BOA Pri-7, Loss of Ultimate Heat Sink, the reactor must be tripped and 1BEP-0 implemented if no SX pumps are running. Fire Protection water, if available, is lined up to supply SX water.
Since the SX system has a large mass with cooling towers, and takes a considerable amount of time to heat up, it's plausible for a rapid shutdown to be used instead of a trip. This is true especially in light that there are backup supplies for SX. Fire Protection can be aligned, along with WS (Non-essential service water) through the FP system. WS can not be DIRECTLY aligned to SX.

Question 80 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28142
User-Defined ID:	BYLI-OA6-099
Cross Reference Number:	
Topic:	Actions for loss of SX
Num Field 1:	3.5
Num Field 2:	3.7
Text Field:	076000A2.01
Comments:	SRO Only Source: New 5/17/2010 R. F. Peterson Cognitive level: High Reference: 0BOA Pri-7, Loss of Ultimate Heat Sink K/A 076000 A2.01 Service Water System: Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS This meets the K/A because the candidate must determine the nature of the problem from the given alarm and supplied information and select the procedure transitions as directed in the BOA for a loss of SX that affects the CC system. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating an Essential Service Water Malfunction and a set of plant procedures, IDENTIFY the correct procedure(s) to be utilized and DISCUSS required operator actions

81 **ID: BYLI-RC2-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 4, with a plant heatup in progress.
- RCS pressure is 345 PSIG and temperature is 280°F.
- 1C & 1D RCPs are running.
- 1A & 1B RCPs are INOPERABLE.
- Pressure is being controlled in MANUAL with a bubble in the Pressurizer.
- NO RH pumps are running.
- Train A RH is aligned for shutdown cooling.
- Train B RH is aligned for ECCS injection.
- A dilution is in progress.

- 1RY455B, Loop 1D spray valve, fails OPEN.

- RCS pressure lowers to **225 PSIG**.

The SRO must direct __(1)__, and enter __(2)__.

	____(1)____	_____(2)_____
A.	tripping both RCPs	1BEP ES-0.2, Natural Circulation Cooldown
B.	tripping both RCPs	3.4.6, RCS Loops, MODE 4, Condition A, No required loop in operation
C.	closure of 1RY455C, Loop 1C spray valve	BOP RC-2, Shutdown of a Reactor Coolant Pump
D.	tripping both RCPs	3.4.6, RCS Loops, MODE 4, Condition B, one required loop inoperable

Answer: B

Answer Explanation:

If the spray valve fails open, RCS pressure will drop. Both RCPs have to be tripped because of the loss of npsh. With no loops in operation in MODE 4, TS 3.4.6 condition A applies.
Tripping both RCPs with the spray valve open may be chosen if the candidate thinks that makes a loop inoperable.
Tripping both RCPs and using 1BEP ES-0.2 may be chosen to utilize natural circulation, but 1BEP ES-0.2 is not entered directly, but from 1BEP-0.
Closing the 1C spray valve may be chosen to prevent "short cycling" the spray path.

Question 81 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28143
User-Defined ID:	BYLI-RC2-099
Cross Reference Number:	
Topic:	RCP trip on low pressure
Num Field 1:	4.2
Num Field 2:	4.4
Text Field:	002000A2.02
Comments:	SRO Only Source: New 5/17/2010 R. F. Peterson Cognitive level: High Reference: 1BGP 100-1, BOP RC-1, TS 3.4.6 K/A 002000 A2.02 Reactor Coolant System: Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of coolant pressure. This meets the K/A because the candidate must know the effect on the RCS of a loss of pressure, and know the proper actions to take (TS entry) to mitigate the consequences. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

DESCRIBE the operational limitations, and the reasons for them, on the Reactor Coolant Pump regarding: The Conditions That Dictate a Trip of the Reactor Coolant Pump by the Operator

82 **ID: BYLI-FH4-099** **Points: 1.00**

The Unit 1 reactor is currently being refueled.

During MODE 6 activities, the SRO will approve the setpoints of 1RT-AR011 AND 1RT-AR012, CNMT Fuel Handling Incident monitors to be ___(1)___, to ___(2)___.

	___(1)___	_____(2)_____
A.	lowered	maintain containment ventilation isolation valves closed during core alterations
B.	lowered	ensure an interlock actuation will stop withdrawal of spent fuel if radiation levels become too high
C.	raised	prevent unnecessary containment ventilation isolation from occurring during planned movement of reactor vessel components
D.	raised	prevent an unnecessary interlock actuation that would stop withdrawal of spent fuel from the vessel

Answer: C

Answer Explanation:

1BGP 100-6 directs the crew to raise the setpoints of 1RT-AR011 AND 1RT-AR012 to prevent an unnecessary isolation of containment purge during movement of radioactive core materials such as the upper internals. (Step F.13.c.)
There is no interlock function between CNMT area rad monitors and the refueling machine. We do not lower the setpoint to maintain the purge valves closed. The setpoint IS lowered when the plant is taken off line because of lowered background radiation, but it is set high enough to maintain purge valves open under normal conditions.

Question 82 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28144
User-Defined ID:	BYLI-FH4-099
Cross Reference Number:	
Topic:	Purge during core alts
Num Field 1:	3.0
Num Field 2:	4.1
Text Field:	029000G2.1.36
Comments:	SRO Only Source: New 5/19/2010 R. F. Peterson Cognitive level: Memory Reference: 1BGP 100-6, Refueling Outage K/A 062000 G2.1.36 Containment Purge: Knowledge of procedures and limitations involved in core alterations. This meets the K/A because the SRO authorizes changing the rad monitor setpoints during core alterations to prevent a containment vent isolation. This is a procedurely directed action, done during MODE 6 activities, that affects containment purge. The MODE 6 activity in question is the movement of the highly radioactive upper internals. This evolution is directed by the SRO. This meets 10CFR55.43b: item 4: Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Associated objective(s):

Given a set of plant conditions involving the movement of fuel in containment, DETERMINE appropriate actions

83 **ID: BYLI-FH4-100** **Points: 1.00**

When moving irradiated fuel assemblies in the Refueling Cavity, the minimum water level of 23 feet above the vessel flange can be monitored __(1)__.

The Tech Spec basis for the minimum water level is to __(2)__.

	_____(1)_____	_____(2)_____
A.	ONLY locally	reduce gamma exposure
B.	locally and in the MCR	limit iodine fission product release
C.	ONLY in the MCR	limit iodine fission product release
D.	ONLY in the MCR	reduce gamma exposure

Answer: B

Answer Explanation:

TS 3.9.7 requires at least 23 feet above the vessel flange when moving irradiated fuel. The top of the cavity is 26 feet above the vessel, and the TS basis is to lower iodine activity.
The local and MCR indicators are both individually used in some surveillances and procedures, making it plausible that only one exists. Cavity level is regularly raised during refueling to limit the gamma exposure, but this is not the TS basis for the water level.

Question 83 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28145
User-Defined ID:	BYLI-FH4-100
Cross Reference Number:	
Topic:	Refueling cavity level
Num Field 1:	2.9
Num Field 2:	3.7
Text Field:	034000A1.02
Comments:	SRO Only Source: New 5/19/2010 R. F. Peterson Cognitive level: Memory Reference: TS 3.9.7, Refueling Cavity Water Level K/A 034000 A1.02 Fuel Handling Equipment: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the Fuel Handling System controls including: Water level in the refueling canal This meets the K/A because the candidate must know the places to monitor and the basis for the minimum TS refueling cavity level. This meets 10CFR55.43b: item 4: Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Associated objective(s):

Given a set of plant conditions during Fuel Handling operations, EVALUATE the conditions and DETERMINE required actions as outlined in OU-AP-200, Administrative Controls During Fuel Handling Activities for Byron and Braidwood

84 **ID: BYLI-EP0-199** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 50% power and developed a cold leg leak.
- Pressurizer pressure is lowering at 100 PSI per minute.

The reactor will trip in __(1)__ minutes.

The basis for this trip setpoint is to prevent __(2)__.

	__(1)__	_____(2)_____
A.	4.06	loss of heat sink
B.	3.50	exceeding departure from nucleate boiling ratio
C.	3.50	loss of heat sink
D.	4.06	exceeding departure from nucleate boiling ratio

Answer: B

Answer Explanation:

Normal pressure 2235 PSIG - Rx Low Pzr Pressure trip setpoint 1885 PSI = 350 PSI.
350 PSI/100PSI per minute = 3.5 minutes
Low pressure trip guards against DNB.
The distractors are based on the Low Pressure SI setpoint at 1829 PSIG, and the basis for the Low SG level trip.

Question 84 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28146
User-Defined ID:	BYLI-EP0-199
Cross Reference Number:	
Topic:	SBLOCA Rx Trip
Num Field 1:	3.9
Num Field 2:	4.1
Text Field:	EPE009EA2.25
Comments:	SRO Only Source: New 5/21/2010 R. F. Peterson Cognitive level: High Reference: 1BEP-0, Reactor Trip or Safety Injection K/A EPE009 EA2.25 Small Break LOCA: Ability to determine or interpret the following as they apply to a small break LOCA: Reactor trip setpoints This meets the K/A because the candidate must interpret the time to reach a reactor trip setpoint during a SBLOCA, and must know the Tech Spec basis for this trip setpoint. This meets 10CFR55.43b: item 2: Facility operating limitations in the technical specifications and their bases.

Associated objective(s):

DESCRIBE the overall response of the Reactor Coolant System, in terms of RCS pressure, water inventory, and temperature, to a Small Cold Leg Break

85 **ID: BYLI-EP1-102** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 100% power and experienced a large break loss of coolant accident.
- RWST level is 30%.
- All systems and components responded as designed except as noted below.
- When the operators pushed the SI RESET pushbuttons, the SI ACTUATED light stayed LIT and the AUTO SI BLOCKED light stayed NOT LIT.

If the operators place the control switch for 1SI8811A, CNMT Recirc Sump Isolation valve to CLOSE, the valve will __(1)__.

In order to RESET SI, the SRO will direct SI to be reset per __(2)__.

	____(1)____	_____(2)_____
A.	close and reopen	1BOA Pri-5, Att F, SI Termination
B.	close and reopen	1BOA Pri-5, Att E, ESF Manual Block or Reset
C.	close and stay closed	1BOA Pri-5, Att F, SI Termination
D.	close and stay closed	1BOA Pri-5, Att E, ESF Manual Block or Reset

Answer: B

Answer Explanation:

The response of the SI ACTUATED and AUTO SI BLOCKED lights indicate the SI signal did not reset, thus the recirc sump valve has an automatic open signal. The open signal to this valve does not prevent it from going closed, but will cause it to immediately reopen.
1BOA Pri-5 Attachment E is used to reset SI in the RNO column of each BEP step that directs SI reset.

Question 85 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28147
User-Defined ID:	BYLI-EP1-102
Cross Reference Number:	
Topic:	SI reset failure effect on RH
Num Field 1:	3.3
Num Field 2:	3.7
Text Field:	EPE011EA2.02
Comments:	SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: 1BEP ES-1.3 K/A EPE011 EA2.02 Large Break LOCA: Ability to determine or interpret the following as they apply to a Large Break LOCA: Consequences to RHR of not resetting safety injection. This meets the K/A because the candidate must know that the RH system sump suction valves can be reset even with SI not reset. This tests the SRO ability to direct use of the proper procedure to reset SI. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Large Break Loss of Coolant Accident, EVALUATE operator response and DETERMINE appropriate actions

86 **ID: BYLI-FRS-047** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 100% power.
- 30 minutes ago, Unit 1 experienced a safety injection actuation.

The SRO has transitioned out of 1BEP-0, Reactor Trip or Safety Injection, and the following instruments have indications as shown:

- N41 - N44: 1%
- IR SUR: + 0.2 DPM
- CNMT pressure: 22 psig
- Pzr level: 16%
- CNMT Floor water level 51 inches

The procedure that the SRO must transition to is...

A. 1BFR S.1, "RESPONSE TO NUCLEAR POWER GENERATION/ATWS".

B. 1BFR Z.1, "RESPONSE TO HIGH CONTAINMENT PRESSURE".

C. 1BFR Z.2, "RESPONSE TO CONTAINMENT FLOODING".

D. 1BFR I.2, "RESPONSE TO LOW PRESSURIZER LEVEL".

Answer: A

Answer Explanation:

With a positive IR SUR, BST-1 directs use of 1BFR S.1 on an orange path. Pzr level of 16% is a yellow path to 1BFR I.2. 22 PSIG in CNMT is potentially an orange path to 1BFR Z.1, and if CNMT water level were to be >59”, 1BFR Z.2 would be used.

Question 86 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	11346
User-Defined ID:	BYLI-FRS-047
Cross Reference Number:	LXRFR-S #47
Topic:	ATWS BST eval
Num Field 1:	4.0
Num Field 2:	4.5
Text Field:	EPE029G2.4.21
Comments:	SRO Only Source: Modified from Byron exam bank Cognitive level: Memory Reference: 1BST-1 K/A EPE029 G2.4.21 Anticipated Transient Without Scram: Knowledge of the parameters and logic used to assess the status of safety functions, such as reactivity control, core cooling and heat removeal, reactor coolant system integrity, containment conditions, radioactivity release control, etc. This meets the K/A because the candidate must assess the parameters of safety functions and apply the logic of the status trees for the ATWS. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions, EVALUATE whether entry into FR-S.1 or S.2 are required

Given a set of plant conditions, DIAGNOSE and ANALYZE the: Subcriticality Status Tree

GIVEN a set of plant conditions, DIAGNOSE and ANALYZE a Reactor Trip or Safety Injection

87 **ID: BYLI-ZP1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 was at 100% power.
- All Steam Generator pressures dropped rapidly, with a subsequent reactor trip and safety injection.
- Bus 141 lost offsite power, and CANNOT be re-energized.
- Containment pressure is 51 PSIG and slowly rising.
- The operators isolated Auxiliary Feedwater Flow to ALL Unit 1 SG's in accordance with procedure direction.

EP-AA-1002 is provided.

Which of the following Emergency Action Levels, IF ANY, will the Station Director classify this event as?

A. No EAL classification

B. Unusual Event, MU1

C. Alert, FA1

D. Unusual Event, FU1

Answer: D

Answer Explanation:

A secondary fault, by itself, has NO EAL classification.
Loss of offsite power to both ESF busses for > 15 minutes would be MU1, but not a loss of only 141.
A secondary fault that caused containment to have a potential loss, since CNMT pressure is 51 psig and rising, results in a classification of FU1.
Because the operators have reduced feed flow to less than 500 GPM, there is no classifiable loss of heat sink (BY 3-57) so there is no potential loss of fuel clad or RCS, so it is not FA1.

Question 87 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28148
User-Defined ID:	BYLI-ZP1-099
Cross Reference Number:	
Topic:	All SG faulted - EAL class
Num Field 1:	2.9
Num Field 2:	4.6
Text Field:	WE12G2.4.41
Comments:	Provided Reference: EP-AA-1002 SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: EP-AA-1002 K/A WE12 G2.4.41 Uncontrolled Depressurization of All Steam Generators: Knowledge of the emergency action levels and classifications. This meets the K/A because the candidate must know the EALs and classify an event given an uncontrolled depressurization of all SGs. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

CLASSIFY the Event per EP-AA-1001

88 **ID: BYLI-DC1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is in MODE 3.
- Bus 143 tripped due to a phase overcurrent.
- DC Bus 113 experienced a ground fault, and the supply fuses to it OPENED.

After entering the appropriate procedure for the given conditions, the SRO will use ____ to RESTORE the annunciators.

A. 1BOA Elec-4, Loss of Offsite Power

B. 1BOSR AN-SA-1, Annunciator System Input Isolator Circuit Operability Semiannual Surveillance

C. BOP AN-5, Ground Isolation for the Plant Annunciator System

D. 1BOA Elec-1, Loss of DC Bus

Answer: D

Answer Explanation:

With Bus 143 and DC Bus 113 de-energized, both power supplies to the MCB annunciators are lost.
1BOA Elec-7, Loss of Annunciators is the unnamed "appropriate procedure" in the stem. It's not specifically called out so as to avoid cueing the examinees as to BOA usage in this questions.
Both 1BOA Elec-7 and Elec-1 are utilized to restore DC and the annunciators. 1BOA Elec-7 directs the use of 1BOA Elec-1 for a loss of DC 113, and 1BOSR AN-SA-1, Annunciator System Input Isolator Circuit Operability Semiannual Surveillance to verify operability after restoration.
1BOA Elec-4 is used to restore 4KV AC busses after a loss of offsite power. It will not work in this particular situation because Bus 143 is faulted.
BOP AN-5 is used for an AN system ground, not a DC Bus ground.
Loss of annunciators is not an entry condition for 1BOA Elec-1; 1BOA Elec-1 usage is will be directed from 1BOA Elec-7.

Question 88 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28149
User-Defined ID:	BYLI-DC1-099
Cross Reference Number:	
Topic:	Loss of annunciators
Num Field 1:	3.6
Num Field 2:	4.0
Text Field:	APE058G2.4.32
Comments:	SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Elec-7 K/A APE058 G2.4.41 Loss of DC Power: Knowledge of operator response to loss of all annunciators This meets the K/A because the candidate must know the annunciators will be lost on the given scenario and what procedures are selected AFTER the initial BOA is entered, to mitigate the loss. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

PREDICT how supported systems will be impacted by various 125 VDC System failures

89 **ID: BYLI-FR3-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 experienced a loss of secondary heat sink, and 1BFR H.1, "Response to Loss of Secondary Heat Sink" was implemented.
- RCS bleed and feed was initiated during the performance of 1BFR H.1.
- Auxiliary Feedwater flow was then restored, and currently 1A Steam Generator NR Level is 40%, with the other SG NR Levels at 8% and trending up.
- Containment pressure is 7 PSIG.
- Charging and letdown flow have been re-established.
- RCS pressure is 1700 PSIG and LOWERING.

The SRO will be procedurally directed to...

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

B. transition to 1BEP-1, "Loss of Reactor or Secondary Coolant".

C. transition to 1BEP ES-1.1, "SI Termination".

D. stay in 1BFR H.1, "Response to Loss of Secondary Heat Sink" until 1 more SG NR Level is above 31%.

Answer: B

Answer Explanation:

With RCS pressure lowering, transition is made to 1BEP-1. SI termination is used if pressure is >325 PSIG and stable or rising. A SG may be faulted, but 1BEP-2 is not transitioned to, from 1BFR S.1. Procedure return is used if no SG level is >31%.

Question 89 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28150
User-Defined ID:	BYLI-FR3-099
Cross Reference Number:	
Topic:	Transition from BFR H.1
Num Field 1:	3.7
Num Field 2:	4.3
Text Field:	WE05EA2.2
Comments:	SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: 1BFR H.1 K/A WE05 EA2.2 Loss of Secondary Heat Sink: Ability to determine and interpret the following as they apply to the Loss of Secondary Heat Sink: Adherence to appropriate procedures and operation within the limitation in the facility's license and amendments. This meets the K/A because the candidate must have the knowledge of the procedure for loss of heat sink to select an appropriate exit procedure. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating a Loss of Secondary Heat Sink condition, EVALUATE operator response and DETERMINE appropriate actions

90 **ID: BYLITOA86003** **Points: 1.00**

Given the following plant conditions:

- Unit 1 turbine power is approximately 225 Mw during an ascension to full power.
- Power Range (PR) NIs N41-N44 are reading 8%, 9%, 11% & 9% respectively.
- Power Range Permissive P-10 is LIT.
- Intermediate Range (IR) NIs N35 & N36 are reading 2.1 E1% & 2.2 E1% respectively.
- The IR HIGH FLUX ROD STOP C-1 (1-10-A2) alarm light is LIT.
- The rods will NOT move out in AUTO or MANUAL.

Which of the following actions will be directed by 1BOA ROD-2, "Failure of Rods To Move"?

A. Go to 1BOA INST-1, "Nuclear Instrumentation Malfunction", and perform actions for a failed Intermediate Range channel (Attachment B).

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

C. Perform a calorimetric, adjust the power range NIs, place IR MAN BLOCK switches (both trains) to BLOCK and verify C-1 light NOT LIT.

D. Go to 1BOA INST-1, "Nuclear Instrumentation Malfunction", and perform actions for a failed Power Range channel (Attachment A).

Answer: C

Answer Explanation:

1BOA ROD-2 step 2.b RNO directs calorimetric of IR or PR NI if P10 is lit. Turbine power indicates 16%, so the PR NIs are reading low. IR are reading appropriately. Rod movement is blocked by the IR High Flux (20% on 1/2) Rod Stop.
1BOA ROD-2 directs the use of 1BOA Inst-1 for a failed IR or PR instrument, but there is no indication they are failed, just miscalibrated. 1BEP-0 is entered from 1BOA Rod-1 for uncontrolled rod motion, a similar procedure and potentially confused by the examinee.

Question 90 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	5762
User-Defined ID:	BYLITOA86003
Cross Reference Number:	BY-FM-SIM-OOA08-063-01
Topic:	Inoperable rods with NI miscalibration
Num Field 1:	3.3
Num Field 2:	4.1
Text Field:	APE005AA2.01
Comments:	SRO Only Source: Byron exam bank Cognitive level: High Reference: 1BOA Rod-2, Failure of Rods to Move K/A APE005 AA2.01 Inoperable/Stuck Control Rod: Ability to determine and interpret the following as they apply to the inoperable/stuck control rod: Stuck or inoperable rod from in-core and ex-core NIS, in-core or loop temperature measurements. This meets the K/A because the candidate is using the inoperable rod procedure to determine the cause based on ex-core NIS, and selecting the appropriate actions to apply. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

DESCRIBE the actions necessary to stabilize the plant during a Failure of Rods to Move event.

ANALYZE a given set of plant conditions and DETERMINE the required actions per 1/2BOA ROD-2, Failure of Rods to Move.

91 **ID: BYLI-AN2-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 60% power.
- The controlling Pressurizer Level channel indicates 100%.
- The other hot calibrated Pressurizer Level channels indicate 40%.
- CHG LINE FLOW HIGH LOW (1-9-D3) is LIT.
- The AUTO and DECREASE lights on 1CV121 M/A Controller are LIT.

There is __(1)__ GPM charging flow. The SRO will direct __(2)__ to address the failure.

	__(1)__	_____(2)_____
A.	0	locally bypassing 1CV121 per BOP CV-26, CV Valves Bypassing, Isolating and Restoration
B.	52	locally bypassing 1CV121 per BOP CV-26, CV Valves Bypassing, Isolating and Restoration
C.	52	manual control of 1CV121 per 1BOA Inst-2, Operation with a Failed Instrument Channel
D.	0	manual control of 1CV121 per 1BOA Inst-2, Operation with a Failed Instrument Channel

Answer: C

Answer Explanation:

The controller for 1CV121 goes to minimum of 52 GPM flow when in AUTO and 0 demand. With the controlling Pzr level channel high, there will be 0 demand for charging. This is a failed channel, addressed by 1BOA Inst-2, which directs taking manual control to restore Pzr level to normal (46% at this power).
1CV121 would be bypassed if the valve itself failed and could not be controlled from the MCR, and that evolution would be controlled by BOP CV-26.

Question 91 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28151
User-Defined ID:	BYLI-AN2-099
Cross Reference Number:	
Topic:	1CV121 indication and actions
Num Field 1:	2.6
Num Field 2:	2.7
Text Field:	APE028AA2.05
Comments:	SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: 1BOA Inst-2, Operation with a Failed Instrument Channel, BCB-1, Fig 34 K/A APE028 AA2.05 Pressurizer Level Control Malfunction: Ability to determine and interpret the following as they apply to the Pressurizer Level Control Malfunction: Flow control valve isolation valve indicator. This meets the K/A because the candidate must interpret the indication of the Pressurizer Level Flow control valve and direct the corrective measures from the mitigating procedure. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE the required actions per 1/2BOA INST-2, Operation with Failed Instrument Channel

92 **ID: BYLI-EP4-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 experienced a loss of coolant accident.
- The crew actuated a Reactor Trip and Safety Injection and all systems responded as designed.

- Currently the crew is performing depressurizing the RCS per 1BEP ES-1.2, "Post LOCA Cooldown and Depressurization", step 20.e. (attached), with the following parameters:

- Containment pressure is 12 PSIG and slowly lowering.
- Pressurizer level is 64%.
- RCS pressure is 950 PSIG.
- RCS temperature is 500°F.

Figures 1BEP ES 1.2-4 and 1BEP ES 1.2-5 are attached.

The SRO will direct the crew to ...

A. continue the depressurization because Pressurizer Level is NOT satisfied.

B. stop the depressurization because at least ONE of the required parameters is met.

C. continue the depressurization because RCS Subcooling is too HIGH.

D. continue the depressurization because RCS Subcooling is too LOW.

Answer: B

Answer Explanation:

Pzr level must restored to >62% because CNMT is adverse.
The SRO must use Figure 1BEP ES 1.2-5.
If the candidate doesn't realize CNMT is adverse, they will misinterpret the required parameters.

Question 92 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28152
User-Defined ID:	BYLI-EP4-099
Cross Reference Number:	
Topic:	1BEP ES-1.2 usage
Num Field 1:	3.9
Num Field 2:	4.2
Text Field:	WE03G2.1.25
Comments:	Provided Reference: 1BEP ES-1.2 pages 28, 41 & 45 SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: High Reference: 1BEP ES-1.3, Post LOCA Cooldown and Depressurization K/A WE03 G2.1.25, LOCA Cooldown: Ability to interpret reference materials, such as graphs, curves, tables, etc. This meets the K/A because the candidate will use the graph from 1BEP ES-1.2 to determine required actions. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating a need to perform or while performing a Post LOCA Cooldown, EVALUATE operator response and DETERMINE appropriate actions

93 **ID: BYLC3DFR2016** **Points: 1.00**

Given the following plant condtions:

- Unit 1 experienced a large-break LOCA.
- The crew is transitioning to 1BEP ES-1.3, "Transfer to Cold Leg Recirculation".

- The following conditions are reported by the STA as 1BEP ES-1.3 is entered:
- An ORANGE path in Core Cooling
- A RED Path in INTEGRITY
- RH Pump has 1B TRIPPED on overcurrent.
- RCS pressure is approximately 20 PSIG.

Based on the conditions listed above, the SRO will...

A. direct performance of steps 1 thru 6 of 1BEP ES-1.3, then go to 1BFR-P.1, "Response to Imminent Pressurized Thermal Shock Condition".

B. immediately transition to 1BFR-P.1, "Response to Imminent Pressurized Thermal Shock Condition".

C. immediately go to 1BCA-1.1, "Loss of Emergency Coolant Recirculation".

D. direct performance of steps 1 thru 6 of 1BEP ES-1.3, and then go to 1BFR-C.2, "Response to Degraded Core Cooling".

Answer: A

Answer Explanation:

1BFR ES-1.3 takes precedence over any BFR's until step 6 is complete. The transition to the applicable BFR will then be made.
With RCS pressure <325 PSIG, 1BFR P.1 will be exited at step 1, but still must be entered.
The RH pump trip is a likely cause of loss of recirculation ability.
The Core Cooling critical safety function is a higher priority than the Integrity critical safety function, but any RED path takes precedence over any ORANGE path.

Question 93 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	17965
User-Defined ID:	BYLC3DFR2016
Cross Reference Number:	
Topic:	BFR P.1 usage
Num Field 1:	4.4
Num Field 2:	4.7
Text Field:	WE08G2.1.7
Comments:	SRO Only Source: Byron exam bank Cognitive level: High Reference: 1BFR P.1 K/A WE08 G2.1.7 PTS: Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument interpretation. This meets the K/A because the SRO will determine the proper procedure transitions based on the priorities of recirculation implementation and PTS. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating an Imminent Pressurized Thermal Shock transient, EVALUATE operator response and DETERMINE appropriate actions

94 **ID: BY-SROL-FH05** **Points: 1.00**

During a refueling outage with only ONE Source Range Neutron Flux Monitor OPERABLE, it is PROHIBITED to remove...

A. a rod control cluster assembly.

B. the reactor vessel head.

C. an irradiated sample specimen.

D. the upper internals assembly.

Answer: A

Answer Explanation:

TS 3.9.3 requires TWO SR monitors operable. If less than 2 are operable, core alterations must be stopped. A core alteration is defined as the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. A RCCA is a reactivity control component.

Question 94 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	9624
User-Defined ID:	BY-SROL-FH05
Cross Reference Number:	
Topic:	Prohibited core alteration
Num Field 1:	2.8
Num Field 2:	3.9
Text Field:	G2.1.40
Comments:	SRO Only Source: New 7/27/2010 Cognitive level: Memory Reference: OU-AP-200 2.1 K/A Conduct of Operations G2.1.40: Knowledge of refueling administrative requirements This meets the K/A because the candidate must know the requirements of the Administrative procedures for refueling. This meets 10CFR55.43b: item 6: Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity.

Associated objective(s):

Given the appropriate procedure, DESCRIBE areas of concern when supervising a refueling outage

95 **ID: BYLITAM3-016** **Points: 1.00**

A refueling outage is in progress.

- The core offload began at 0100 on 01/01/2010.

If a full core offload is to be done, the EARLIEST time and date it may be completed is...

A. 1300 on 01/01/2010.

B. 0106 on 01/02/2010.

C. 0112 on 01/03/2010.

D. 0500 on 01/05/2010.

Answer: B

Answer Explanation:

193 fuel assemblies / 8 assemblies per hour = 24.1 hours.
UFSAR 9.1.3.1 limits core offload rates to 8 assemblies per hour, resulting in 24.1 hours for a full core offload.
1300 on the same day is one 12 hour shift.
0112 the next day is 48.2 hours.
0500 is 100 hours.

Question 95 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	5507
User-Defined ID:	BYLITAM3-016
Cross Reference Number:	BY-FM-SIM-1249-00
Topic:	24.1 hour core offload
Num Field 1:	2.5
Num Field 2:	3.4
Text Field:	G2.1.42
Comments:	SRO Only Source: Bank Cognitive level: High Reference: OU-AP-200, section 4.1.23 K/A Conduct of Operations G2.1.42: Knowledge of new and spent fuel movement procedures. This meets the K/A because the candidate must know the procedural limitation on the time for moving spent fuel. This meets 10CFR55.43b: item 7: Fuel handling facilities and procedures

Associated objective(s):

Given a specific Fuel Handling activity, ANALYZE the activity and DETERMINE if the requirements of OU-AP-200, Administrative Controls During Fuel Handling Activities for Byron and Braidwood are being met

Given a Technical Specification/Technical Requirements Manual condition, involving Fuel Handling Operations, EVALUATE the conditions and DETERMINE if Fuel Handling Operations may continue as outlined in OU-AP-200, Administrative Controls During Fuel Handling Activities for Byron and Braidwood

96 **ID: BYLI-AM6-099** **Points: 1.00**

An OTDM (Operational and Technical Decision Making) must be reviewed for Operations Department concerns by the __(1)__, and approved by the __(2)__ or designee.

	_____(1)_____	_____(2)_____
A.	Operations Services Manager	Plant Manager
B.	Operations Services Manager	Site Vice President
C.	Unit Supervisor	Site Vice President
D.	Unit Supervisor	Plant Manager

Answer: A

Answer Explanation:

OP-AA-106-101-1006 Section 3 states the Station Manager has the responsibility to approve, and the OSM will screen for operator burden and impact.
The Unit Supervisor is the designated reviewer in several other admin processes, and the SVP is a plausible distractor for approval of a significant product such as an OTDM.

Question 96 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28153
User-Defined ID:	BYLI-AM6-099
Cross Reference Number:	
Topic:	Operational & Technical Decision Making
Num Field 1:	2.2
Num Field 2:	3.2
Text Field:	G2.2.5
Comments:	SRO Only Source: New 5/22/2010 R. F. Peterson Cognitive level: Memory Reference: OP-AA-106-101-1006 K/A Equipment Control G2.2.5: Knowledge of the process for making design or operating changes to the facility. This meets the K/A because the candidate must know the process for OTDM process changes to the facility. This meets 10CFR55.43b: item 3: Facility licensee procedures required to obtain authority for design and operating changes in the facility.

Associated objective(s):

Given a copy of the appropriate procedure, DISCUSS the process for a system design change

97 **ID: BYLI-WX1-151** **Points: 1.00**

Given the following plant conditions:

- 0C and 0D VA Exhaust Fans are OOS.
- A Unit 2 Containment gaseous release is pending.

In addition to the Radiation Protection Department, who else must waive the requirement for VA fans to be in operation, to perform a Containment release?

A. Plant Manager.

B. Shift Manager.

C. Station Duty Officer.

D. Operations Director.

Answer: B

Answer Explanation:

The Shift Manager and RP Department may waive the requirement for VA exhaust fans in operation for releases. BCP 400-TCNMT/ROUTINE, Revision 20, Page 12, Section 4.2 Positions used as distractors are all responsible for reviews or approvals of other administrative items.

Question 97 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28159
User-Defined ID:	BYLI-WX1-151
Cross Reference Number:	
Topic:	authorizing a CNMT release
Num Field 1:	3.8
Num Field 2:	4.3
Text Field:	G2.3.11
Comments:	SRO Only Source: New 6/3/2010 R. F. Peterson Cognitive level: Memory Reference: BCP 400-TWX01, Section 2.6 K/A Radiation Control G2.3.11: Ability to control radiation releases. This meets the K/A because the candidate must know the process for gaseous/liquid release approvals, i.e., release permits. This meets 10CFR55.43b: item 4: Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions.

Associated objective(s):

Given the appropriate procedures, DESCRIBE the requirements for authorizing a liquid radioactive waste release

98 **ID: BYLI-FH!-105** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 100% power.
- Unit 2 is in MODE 6, with core offload in progress.

The following alarms are LIT:
- SPENT FUEL PIT LEVEL HIGH LOW (2-1-C1)
- REFUELING CAVITY LEVEL HIGH LOW (2-6-C3)
- CNMT DRAIN LEAK DETECT FLOW HIGH (2-1-A2)

- 0RE-AR055 426' Fuel Bldg - Fuel Hdlg Incident is GREEN.
- 0RE-AR056 426' Fuel Bldg - Fuel Hdlg Incident is GREEN.

- 2RE-AR011 426' Cnmt - Fuel Hdlg Incident is YELLOW.
- 2RE-AR012 426' Cnmt - Fuel Hdlg Incident is YELLOW.

The cause of the alarms is a leak in the __(1)__ and the SRO will direct __(2)__.

	_____(1)_____	_____(2)_____
A.	Spent Fuel Pool	Rad Protection to perform BRP 5110-15, Fuel Handling Incident Response
B.	cavity boot seal	placing ALL THREE Inaccessible Filter Plenum Fans in service
C.	Spent Fuel Pool	placing TWO Inaccessible Filter Plenum Fans in service
D.	cavity boot seal	Rad Protection to perform BRP 5110-15, Fuel Handling Incident Response

Answer: D

Answer Explanation:

Both level alarms will come in since the Reactor Cavity and Spent Fuel Pool are connected through the transfer canal during refueling.
The CNMT DRAIN LEAK DETECT FLOW HIGH alarm indicates a leak in cnmt rather than the fuel handling building.
Elevated radiation levels is an entry condition for both BOA Refuel 1 and 2, but the Loss of Level BOA is tied to the level alarms.
The action to direct RP to use BRP 5110-15 is done in response to low levels in the cavity or SFP; the actions to start filter plenum fans are done in reponse to a fuel handling emergency in the FHB. These are actions from 2BOA REFUEL-1 and 2 to be directed by the SRO.

Question 98 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28155
User-Defined ID:	BYLI-FH!-105
Cross Reference Number:	
Topic:	Rx cavity level loss actions and rad monitor
Num Field 1:	2.9
Num Field 2:	3.1
Text Field:	G2.3.15
Comments:	SRO Only Source: New 5/24/2010 R. F. Peterson Cognitive level: High Reference: 1BOA REFUEL-2 K/A Radiation Control G2.3.15: Knowledge of radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc. This meets the K/A because the candidate must know the location of the listed radiation monitors and use the information to select procedure based actions to mitigate a casualty. This meets 10CFR55.43b: items: 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

ANALYZE a given set of plant conditions and DETERMINE if entry into 1/2BOA REFUEL-2, Refueling Cavity or Spent Fuel Pool Level Loss, is required

99 **ID: BYLI-ST-033** **Points: 1.00**

The control room operators are performing 1BFR I.2, "Response to Low Pressurizer Level" after a reactor trip that occurred 30 minutes ago.

- All RCS cold leg temperatures are at 235°F.
- RCS pressure is 2000 psig.

The SRO must direct transition to __(1)__, because the Integrity CSF is __(2)__.

Figure 1 BST 4-1, Plant Operational Limits, is attached.

A. (1) 1BFR P.2, "Response to Anticipated Pressurized Thermal Shock Condition" IMMEDIATELY
(2) ORANGE requiring immediate implementation

B. (1) 1BFR P.1, "Response to Imminent Pressurized Thermal Shock condition" IMMEDIATELY
(2) RED, requiring immediate implementation

C. (1) 1BFR P.2, "Response to Anticipated Pressurized Thermal Shock Condition" after completion of 1BFR I.2.
(2) YELLOW and does not require prioritizing above 1BFR I.2

D. (1) 1BFR P.1, "Response to Imminent Pressurized Thermal Shock condition" after reviewing for any RED CSF
(2) ORANGE, requiring immediate implementation

Answer: D

Answer Explanation:

1BFR I.2 is a response to a yellow path. All RCS cold leg temperatures are to the right of the Integrity Limt A line, so it is not an Integrity red path which would require implementing 1BFR P.1 immediately.

RCS temperatures at 235°F at 2000 psig is an Integrity orange path, requiring implementing 1BFR P.1 after scanning for any other CSF's RED paths.

1BFR P.1 is entered from an orange or red path on the Integrity status tree. 1BFR P.2 is entered from a yellow path.

Question 99 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	4884
User-Defined ID:	BYLI-ST-033
Cross Reference Number:	LXRST #33
Topic:	Status tree priorities
Num Field 1:	3.6
Num Field 2:	4.4
Text Field:	G2.4.22
Comments:	Provided Reference: Figure 1 BST 4-1 SRO Only Source: Modified from Byron exam bank Cognitive level: High Reference: BAP 1310-10, 1BST-1 and 2 K/A Emergency Procedures/Plan G2.4.22: Knowledge of the bases for prioritizing safety functions during abnormal/emergency operations. This meets the K/A because the candidate must prioritize the safety functions and know the basis for this priority as specified in BAP 1310-10. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

DESCRIBE the Critical Safety Function Status Trees and their usage

STATE the conditions for all red paths

DEFINE and LIST in order of priority the color coding used for status tree priority

STATE the operator action required by each status tree color code

100 **ID: BYLI-VR1-099** **Points: 1.00**

Given the following plant conditions:

- Unit 1 is at 25% power.
- Main Generator output is 250 MW.

- Annunciator GENERATOR FIELD FORCING (1-19-B6) is LIT.
- The NSO reported that Unit 1 Main Generator exciter field current is 115 amps.

The SRO directed the NSO to shift the Voltage Regulator to OFF, and reduce current.

If current can NOT be reduced to less than __(1)__ amps, the SRO will direct a __(2)__.

	_(1)_	_____(2)_____
A.	100	Reactor Trip, and enter 1BEP-0, "Reactor Trip or Safety Injection"
B.	109	Reactor Trip, and enter 1BEP-0, "Reactor Trip or Safety Injection"
C.	90	Turbine Trip, and enter 1BOA TG-8, "Turbine Trip Below P-8"
D.	109	Turbine Trip, and enter 1BOA TG-8, "Turbine Trip Below P-8"

Answer: D

Answer Explanation:

The alarm comes in if exciter amps are >100 amps. The BAR directs reducing current <100 amps using the base adjuster. The generator would trip if current were >109 amps. If current can't be reduced less than 109 amps, the SRO must evaluate that because the unit is below P-8, a reactor trip is not necessary, and the controlling procedure will be 1BOA TG-8.

Question 100 Info	
Question Type:	Multiple Choice
Status:	Active
Always select on test?	No
Authorized for practice?	No
Points:	1.00
Time to Complete:	3
Difficulty:	3.00
System ID:	28156
User-Defined ID:	BYLI-VR1-099
Cross Reference Number:	
Topic:	Response to field forcing
Num Field 1:	4.2
Num Field 2:	4.0
Text Field:	G2.4.50
Comments:	SRO Only Source: New 5/26/2010 R. F. Peterson Cognitive level: High Reference: BAR 1-19-B6 Generator Field Forcing K/A Emergency Procedures/Plan G2.4.50: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual. This meets the K/A because the candidate must know the alarm setpoint and trip setpoints, assess the plant power level as below P-8, and select the proper procedure for the abnormal situation. This meets 10CFR55.43b: item 5: Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations.

Associated objective(s):

Given a set of plant conditions or parameters indicating a 345 kV Grid or Voltage Regulator Instability condition, EVALUATE operator response and DETERMINE appropriate actions