Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
1	Both	1	1	000007	000007EK1.04	3.6	3.9	High

System/Evolution Name:
Reactor Trip

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the reactor trip:

KA Statement:
Decrease in reactor power following reactor trip (prompt drop and subsequent decay)

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A reactor trip occurs.
- All systems respond as designed.

Assuming NO operator action, the time interval from the time of the reactor trip until the time the Source Range NIs automatically energize is…

A less than or equal to 10 minutes.

B greater than 10 minutes, but less than or equal to 20 minutes.

C greater than 20 minutes, but less than or equal to 30 minutes.

D greater than 30 minutes.

Answer:	Task No:	R-NI-003	Question Source:	Question Difficulty
B	Obj No:	S.NI-10-A	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(1)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-NT-XL-07, Neutron Kinetics
ILT lesson plan I1-NI-XL-01, Source Range Nuclear Instrumentation.

Explanation:
Question meets KA. Question requires examinee analyze plant conditions and predict drop in reactor power following reactor trip and requires examinee knowledge of operational implication associated with post-reactor trip response of SR detectors.
At 100% power, IR channels = 2.5 E-4 amps. When reactor trip occurs, prompt drop lowers IR current 2 decades from 2.5 E-4 amps to 2.5 E-6 amps. Initial post trip startup rate is > 0.5 dpm. Post trip startup rate drops exponentially from > -0.5 dpm to -1/3 dpm until approximately 2E-8. At 2E-8, post trip startup rate stabilizes at -1/3 dpm and remains at -1/3 dpm from 2E-8 to the P6 setpoint (5.0 E-11 amps). When the P6 setpoint is reached, SR channels automatically energize. Time from reactor trip to P6 setpoint is approximately 12.5 minutes.
Examinee can perform the following calculation and arrive at correct answer:
Reactor period = 1/lambda bar = 1/.0124 sec-1 = 80.6 sec
Startup rate = 26.06/reactor period = 26.06/-80.6 = -.326, or -1/3 dpm as examinees are taught
Reactor power following trip =
$P = P_o 10^{SUR\ t}$
$5 \times 10^{-11} = 2.5 \times 10^{-6}\ 10^{(-1/3)\ t}$
$5.0\ E\text{-}11 / 2.5\ E\text{-}6\ X\ 10 = 10^{(-1/3)\ t}$
$\text{Log}\ 2.0E\text{-}5 = (-1/3)(t)$
$t = \text{Log}\ 2.0\ E\text{-}5 / -1/3 = 14.09$ minutes.

A is incorrect, SR NIs would not be energized during this time interval.
B is correct, see explanation above.
C is incorrect, SR NIs would already be energized before this time interval.
D is incorrect, SR NI would already be energized before this time interval.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
2	Both	1	1	000008	000008AK2.02	2.7	2.7	High

System/Evolution Name:
Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open)

Category Statement:
Knowledge of the interrelations between the Pressurizer Vapor Space Accident and the following:

KA Statement:
Sensors and detectors

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is in Mode 5.
- The RCS is solid.
- PZR Pressure Control Selector switch is in the 455/456 position.
- BOTH PZR PORV control switches are in ARM LOW TEMP.
- All other systems are normally aligned for current plant conditions.
- RCS pressure is 345 psig and stable.
- RCS temperature is 145°F and stable.

- RCS pressure begins to drop rapidly.
- The following annunciators are received:
  - 1-12-B2, PZR PORV OR SAFETY VALVE OPEN
  - 1-12-C4, RCS PRESS HIGH AT LOW TEMP PORV OPEN
  - 1-12-C6, PZR PORV DSCH TEMP HIGH
  - 1-12-D4, RC SYSTEM COLD PRESS HIGH

Based on the above conditions, which ONE of the following has occurred?

A 1PT-455, PZR pressure channel, has failed high.

B 1RY8010C, PZR safety valve, has failed open.

C 1PT-406, RCS WR pressure channel, has failed high.

D 1TI-423B, RCS cold leg 1C WR temperature channel, has failed low.

Answer:	Task No:	R-EP-032	Question Source:	Question Difficulty
C	Obj No:	T.EP02-09-A	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
Systems big note RY-1, Pressurizer
ILT lesson plan I1-RY-XL-01, Pressurizer
BwARs 1-12-B2, 1-12-C4, 1-12-C6, 1-12-D4
BwCB-1 Figure 29, Auctioneered Low RCS Temperature vs. Maximum PORV Setpoint

Explanation: Question meets KA. Question requires examinee knowledge of the interrelationship between PZR instrumentation, PZR pressure control operational modes, and PZR vapor space accident.

A is incorrect, if PORV C/S in arm low temp removes 1PT-455 from control circuit. PORV would not open if 1PT-455 failed high at current RCS pressure due to 1PT-458 < 1885, which disables auto PORV operation.
B is incorrect, annunciator 1-12-D6, PZR SAF RLF DSCH TEMP HIGH would be lit instead of 1-12-C6
C is correct, WR press failing high would open PZR PORV in arm low temp.
D is incorrect, even though WR temp is input to PZR PORV COPS logic, temp < 350 does not alter setpoint.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
3	Both	1	1	000009	0000092.1.23	3.9	4.0	High

System/Evolution Name: Small Break LOCA

Category Statement: Conduct of Operations

KA Statement:
Ability to perform specific system and integrated plant procedures during all modes of plant operation.

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- An RCS LOCA occurred.
- The crew has implemented 1BwEP ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION.
- The crew is performing step 15 of 1BwEP ES-1.2 with the following conditions:
  - 1A CV pump is running.
  - 1B CV pump is in standby.
  - Normal charging is in service.
  - BOTH SI pumps are running.
  - BOTH RH pumps are in standby.
  - 1D RCP is running.

  - Iconics RCS subcooling is 75°F.
  - RCS hot leg temperatures are 425°F.
  - PZR level is 33% and stable.
  - Containment pressure is 6.1 psig.

Based on the above conditions, the crew's NEXT action will be to...

(Partial copy of 1BwEP ES-1.2 is attached)

A stop the 1A SI pump.

B open 1RY455B, PZR spray valve, to raise PZR level.

C manually start 1B CV pump and align CV pumps for cold leg injection.

D manually start one RH pump.

Answer: B | Task No: R-EP-09 | Question Source: New | Difficulty: Medium

Obj No: T.EP02-01

Time: 1 | Cross Ref: 10CFR55.41(b)(10)

Reference:
1BwEP ES-1.2 steps 10-21 and OAS will be provided to examinee.
ILT lesson plan I1-EP-XL-02, Loss of Reactor or Secondary Coolant
1BwEP ES-1.2, Post LOCA Cooldown and Depressurization.

Explanation: Question meets KA. Question requires examinee knowledge of plant specific procedures and requires examinee analyze plant conditions and determine correct procedural actions to be taken.
At step 15 of 1BwEP ES-1.2, examinee is directed to return to step 10 and raise PZR level based on PZR level less than adverse containment setpoint.

A is incorrect, SI pump would be stopped if PZR level requirement was satisfied. PZR level is above normal containment setpoint, but below adverse containment setpoint. Must raise PZR level prior to stopping SI pump.
B is correct, see explanation above.
C is incorrect, would be correct if subcooling requirement was not met.
D is incorrect, RCS pressure is > RH pumps shutoff head. RH pumps are not started.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: 1BwEP ES-1.2 steps 10-21 and OAS

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
4	Both	1	1	000011	000011EA1.04	4.4	4.4	High

System/Evolution Name:
Large Break LOCA

Category Statement:
Ability to operate and/or monitor the following as they apply to a Large Break LOCA:

KA Statement:
ESF actuation system in manual

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 was at 50% power.
- All systems were normally aligned.
- An RCS LOCA occurred.
- SI has actuated and all components have responded as designed.
- The following indications are present at 2PM05J:
  - Annunciator 2-11-B1, MANUAL SI/RX TRIP, is slow flashing RED.
  - Annunciator 2-11-C1, PZR PRESS LOW SI/RX TRIP, is lit WHITE.
  - Annunciator 2-11-D1, STEAMLINE LOW PRESS SI/RX TRIP, is NOT lit.
  - Annunciator 2-11-E1, CNMT PRESS HIGH SI/RX TRIP, is slow flashing WHITE.
  - Bypass permissive 4.1, SI ACTUATED, is NOT lit.
  - Bypass permissive 5.1, AUTO SI BLOCKED, is lit.

Based on the above indications, the …

A FIRST SI actuation to occur was MANUAL SI actuation AND SI is reset.

B FIRST SI actuation to occur was PZR low pressure SI actuation AND SI is NOT reset.

C FIRST SI actuation to occur was CNMT pressure SI actuation AND SI is reset.

D operators CANNOT determine the status of SI.

Answer:	Task No:	R-EP-009	Question Source:	Question Difficulty
A	Obj No:	T.EP01-06-A	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-AN-XL-01, Annunciators
BwARs 2-11-B1, 2-11-C1, 2-11-D1, 2-11-E1, BP-4.1 and BP-5.1

Explanation: Question meets KA. Question requires examinee ability to monitor ESF actuation system in manual following a large break LOCA. Question requires examinee analyze plant indications and determine ESF system status.

A is correct, annunciator 1-2-B1 red indicates first signal actuated.
B is incorrect, PZR low press SI did occur, but after manual actuation was initiated. Question asks examinee determine which occurred first.
C is incorrect, CNMT high press SI did occur and is reset, but actuation occurred after manual actuation was initiated. Question asks examinee determine which occurred first.
D is incorrect, sufficient indications available to determine SI status.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
5	Both	1	1	000017	0000172.4.49	4.0	4.0	Low

System/Evolution Name:
Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow)

Category Statement:
Emergency Procedures/Plan

KA Statement:
Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 2% power.
- All systems are normally aligned for the current power level.
- The following annunciators are received on 1PM05J:
  - 1-13-C3, RCP 1C BRKR OPEN OR FLOW LOW ALERT
  - 1-13-E3, RCP TRIP

Based on the above conditions, the operators' FIRST action will be to…

A manually insert control rods.

B place 1FW530A, FW Regulating Bypass Valve, in manual and lower demand.

C manually trip the reactor.

D place 1RY455C in manual and lower demand to 0%.

Answer:	Task No:	R-RC-006	Question Source:	Question Difficulty
C	Obj No:	3C.RC-04H	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RC-XL-02, Reactor Coolant Pumps
BwARs 1-13-C3 and 1-13-E3

Explanation: Question meets KA. Question requires examinee ability to perform without reference to procedures those actions that require immediate operation of system components and controls. Question requires examinee analyze plant indications and determine appropriate actions.
With reactor at 2% power, RCP low flow reactor trip coincidence is 2/4 loops. (1/4 trip coincidence if > P8). When RCP trips, reactor does NOT automatically trip. Immediate actions for 3 loop flow is to initiate reactor trip.

A is incorrect, reactor shutdown required, but reactor trip is initiated versus manually shutting down reactor by inserting control rods.
B is incorrect, 1FW530A would have to be closed due to rising SG level from lower loop delta T, but question asks for first actions to be taken.
C is correct, see explanation above.
D is incorrect, 1RY455C would need to be closed due to trip of RCP, but question asks for first action to be taken.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
6	Both	1	1	000022	000022AK1.01	2.8	3.2	Low

System/Evolution Name:
Loss of Reactor Coolant Makeup

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to Loss of Reactor Coolant Pump Makeup:

KA Statement:
Consequences of thermal shock to RCP seals

UserID: Topic Line:
Question Stem:

Given:
- Unit 1 was at 100%.
- All systems were normally aligned.
- Equipment malfunctions led to a loss of ALL CC and CV pumps.
- The crew implemented 1BwOA RCP-2, LOSS OF SEAL COOLING.
- ALL RCPs have been tripped due to ALL seal outlet temperature indicators reading off scale high.

- 1CV8355A-D, RCP 1A-D Seal Injection Isolation Valves, are open.
- 1A Seal Injection filter is online.
- 1B Seal Injection filter is isolated.
- The equipment malfunctions have been corrected and the crew is preparing to restore CV pumps to operation.

If the operators were to start a CV pump with the current plant conditions, the…

A RCP #1 seals would be damaged due to thermal shock of the seal package.

B RCP #1 seals would become cocked due the pressure surge.

C RCP thermal barrier HXs would be damaged due to thermal shock of the tubes.

D RCP thermal barrier HX would become steam bound as the stagnant seal water is flushed into the RCS.

Answer:	Task No:	R-OA-062	Question Source:	Question Difficulty
A	Obj No:	3D.OA-052B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(3)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-28, BwOA RCP-2

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of thermal shock to RCP seals during a loss of reactor coolant pump makeup.
If cool water is initiated to hot RCP seal package, RCP seals would be damaged from thermal shock.

A is correct, see explanation above.
B is incorrect, seal cocking may occur if seal injection is initiated at very low RCS pressures. Plant is at NOP in question. Seal cocking will not occur.
C is incorrect, thermal barrier HX will not be damaged from initiation of seal injection flow.
D is incorrect, steam binding of thermal barrier HX will not occur when seal injection flow is initiated.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
7	Both	1	1	000025	000025AK2.02	3.2	3.2	Low

System/Evolution Name:
Loss of Residual Heat Removal System (RHRS)

Category Statement:
Knowledge of the interrelations between the Loss of Residual Heat Removal System and the following:

KA Statement:
LPI or Decay Heat Removal/RHR pumps

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is in Mode 5.
- RCS temperature is 185°F and stable.
- Reactor vessel level is 393' 8".
- Reactor vessel level is being lowered to 393' 6" at 25 gpm for ECCS check valve maintenance.
- 1A RH pump is running with indicated flow of 3300 gpm.
- 1A RH pump flow and letdown flow begin oscillating.
- The 1A RH pump then trips.

Which ONE of the following is the reason why the 1B RH pump is NOT started immediately after the 1A RH pump trips?

A Water hammer would occur in the RH system discharge piping.

B The RH piping downstream of the RH pumps would be over pressurized.

C The 1B RH pump may seize if it is not first heated up prior to placing it in service.

D A loss of all RH would occur due to air binding in the RH pumps.

Answer:	Task No:	R-OA-072	Question Source:	Question Difficulty
D	Obj No:	T.OA20-04	Bank: INPO bank #19415, Kewaunee Unit 1, 12/11/2000	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-20, BwOA PRI-10
ILT lesson plan I1-RH-XL-01, Residual Heat Removal
BwOP RH-6, Placing the RH System in Shutdown Cooling.

Explanation: Question meets KA. Question requires examinee knowledge of the interrelations between the loss of RH and the RH pumps. Question requires examinee knowledge of symptoms/conditions for loss of RH due to RH pump trip and knowledge of effect on alternate RH pump.

Indications given are for RH pump loss of suction due to high flow and low reactor vessel level. Placing standby pump in service would cause same condition and loss of all RH.

A is incorrect, water hammer would not occur is RH system. System discharge piping is not voided.
B is incorrect, starting a RH pump does not produce sufficient pressure to over pressurize system and overpressure protection is provided by discharge relief valves.
C is incorrect, RH pump heat up is required if RCS is > 260°F prior to starting. Unit is in Mode 5, 185°F, no heat up required.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
8	Both	1	1	000026	000026AK3.02	3.6	3.9	Low

System/Evolution Name:
Loss of Component Cooling Water (CCW)

Category Statement:
Knowledge of the reasons for the following responses as they apply to the Loss of Component Cooling Water:

KA Statement:
The automatic actions (alignments) within the CCWS resulting from the actuation of the ESFAS

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- Excess letdown was in operation.
- An event occurred and the ESF system automatically isolated the CC flowpath to and from the excess letdown heat exchangers.
- As the event progressed, the ESF system automatically isolated the CC flowpath to and from the RCPs.

Which ONE of the following correctly describes the reason(s) the ESF system isolated the CC system flow paths?

A The excess letdown flowpath was isolated to provide more cooling for safety related components AND the RCP flowpath was isolated to prevent the potential release of radioactive material from containment.

B The excess letdown flowpath was isolated to prevent potential release of radioactive material from containment AND the RCP flowpath was isolated to provide more cooling for safety related components.

C BOTH flow paths were isolated to ensure adequate CC flow will be available to the RH system for long term decay heat removal.

D BOTH flow paths were isolated to prevent the potential release of radioactive material from containment.

Answer:	Task No:	R-EF-001	Question Source:	Question Difficulty
D	Obj No:	S.EF1-07D/E	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(8)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EF-XL-01, Engineered Safety Functions
ILT lesson plan I1-CC-XL-01, Component Cooling

Explanation: Question meets KA. Question requires examinee knowledge of the reasons for the automatic actions and alignments within the CC system from the actuation of the ESFAS.
As containment pressure rises, phase A containment isolation and phase B containment isolation occur to isolate potential rad releases from containment during accidents.

A is incorrect, excess letdown flow path isolated to eliminate potential rad release path.
B is incorrect, RCP flow path isolated to eliminate potential rad release path.
C is incorrect, both are potential rad release path.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
9	Both	1	1	000027	000027AA2.05	3.2	3.3	High

System/Evolution Name:
Pressurizer Pressure Control (PZR PCS) Malfunction

Category Statement:
Ability to determine and interpret the following as they apply to the Pressurizer Pressure Control Malfunctions:

KA Statement:
PZR heater setpoints

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- PZR pressure controller select switch is in the 455/456 position.
- 1PT-455, PZR pressure channel, fails to 2205 psig.
- All systems respond as designed.

- One minute later, actual PZR pressure is 2255 psig and rising.
- The NSO then places the PZR pressure controller select switch to the 457/458 position.

Assuming NO operator action was taken while the PZR pressure controller select switch was in the 455/456 position…

A ALL PZR heaters were energized.
When the PZR pressure controller select switch was placed in the 457/458 position, ALL PZR backup heaters deenergized and PZR variable heater amps began lowering over the next one minute.

B ONLY the PZR variable heaters were energized.
When the PZR pressure controller select switch was placed in the 457/458 position, PZR variable heater amps began lowering over the next one minute.

C ALL PZR heaters were energized.
When the PZR pressure controller select switch was placed in the 457/458 position, ALL PZR backup heaters deenergized and PZR variable heater amps did NOT change over the next one minute.

D ALL PZR heaters were energized.
When the PZR pressure controller select switch was placed in the 457/458 position, PZR backup heaters remained energized and PZR variable heater amps did NOT change over the next one minute.

Answer:	Task No:	R-OA-077	Question Source:	Question Difficulty
A	Obj No:	T.OA11-25	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RY-XL-01, Pressurizer
System big note RY-2, Pressurizer Pressure Control

Explanation: Question meets KA. Question requires examinee determine and interpret PZR heater setpoints during PZR pressure control malfunctions.
PZR pressure control is initially from 1PT-455A. When 1PT-455 fails to 2205 psig, all PZR heaters (variable and backup) energize to attempt to raise PZR pressure. 1PT-456, 457, and 458 pressure would rise due to PZR heaters energizing. When PZR pressure control is transferred to 1PT-458, all PZR heaters would deenergize due to PZR pressure being above PZR heater operational setpoints.
A is correct, see explanation above.
B is incorrect, all PZR heaters energized when PZR press is < 2210 psig.
C is incorrect, all PZR heaters would deenergize when pressure control is transferred to 1PT-458.
D is incorrect, all PZR heaters energized when PZR press is < 2210 psig and all PZR heaters would deenergize when pressure control is transferred to 1PT-458.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
10	Both	1	1	000029	000029EA1.10	3.6	3.2	Low

System/Evolution Name:
Anticipated Transient Without Scram (ATWS)

Category Statement:
Ability to operate and/or monitor the following as they apply to a ATWS:

KA Statement:
Rod control function switch

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems were normally aligned.
- A valid reactor trip signal was received in the MCR.
- The NSO manually attempted a reactor trip from 1PM05J and 1PM06J.
- The crew has implemented 1BwFR-S.1, RESPONSE TO NUCLEAR POWER GENERATION/ATWS, with the following indications in the MCR:
- BOTH reactor trip breakers are closed.
- Control rods are automatically stepping in at 8 steps per minute.
- The main turbine is tripped.

Based on the above indications, in order to insert negative reactivity into the core, the operators' FIRST action(s) will be to place….

A Rod Bank Select Switch to MANUAL AND place Rod Motion Control Switch to IN.

B 1CV8104, Emergency Boration Valve, C/S to OPEN AND place Boric Acid Transfer Pump C/S to START

C 1CV112D/E, RWST to Charging Pump Suction Valve(s), C/S(s) to OPEN AND place 1CV112B/C, VCT Outlet Isolation Valve(s), C/S(s) to CLOSE.

D BOTH Steam Dump Bypass/Interlock C/S to OFF.

Answer:	Task No:	R-FR-018	Question Source:	Question Difficulty
A	Obj No:	T.FR01-02	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FR-XL-01, BwFR-S.1, S.2

Explanation: Question meets KA. Question requires examinee ability to determine proper operation of the rod control function switch during an ATWS.
During ATWS, manual control rod insertion is first means of negative reactivity insertion actions performed.

A is correct, see explanation above.
B is incorrect, emergency boration is initiated, but question asks for first means of negative reactivity insertion actions to be performed.
C is incorrect, emergency boration is initiated, but question asks for first means of negative reactivity insertion actions to be performed.
D is incorrect, steam dumps are placed in off for negative reactivity insertion from RCS heat up, but question asks for first means of negative reactivity insertion actions to be performed.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
11	Both	1	1	000038	000038EK3.09	4.1	4.5	Low

System/Evolution Name:
Steam Generator Tube Rupture (SGTR)

Category Statement:
Knowledge of the reasons for the following responses as they apply to the SGTR:

KA Statement:
Criteria for securing/throttling ECCS

UserID:

Topic Line:

Question Stem:

Which ONE of the following is the reason for terminating Safety Injection flow when the criteria are met during the performance of 1BwEP-3, STEAM GENERATOR TUBE RUPTURE?

A To identify any previously undetected ruptured SG.

B Prevent solid plant operations.

C Prevent overfilling the ruptured SG.

D Prevent depleting RWST inventory.

Answer:	Task No:	R-EP-012	Question Source:	Question Difficulty
C	Obj No:	T.EP04-04	Bank: INPO bank question ID# 26172 Point Beach Unit 1 9/29/2003	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EP-XL-04, BwEP-3
1BwEP-3, Steam Generator Tube Rupture
WOG background document for BwEP-3

Explanation: Question meets KA. Question requires examinee knowledge of the reasons for terminating ECCS during a SGTR. During SGTR, SI is terminated to prevent ruptured SG overfill and subsequent off-site release.

A is incorrect, is reason for checking intact SG levels at step 7 of BwEP-3.
B is incorrect, reason is for ECCS termination during non-SGTR events.
C is correct, see explanation above.
D is incorrect, reason is for SI termination during loss of emergency coolant recirculation.

Date Written: 6/28/2007 Author:

App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
12	Both	1	1	000040	000040AK1.05	4.1	4.4	Low

System/Evolution Name:
Steam Line Rupture

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to Steam Line Rupture:

KA Statement:
Reactivity effects of cooldown

UserID: Topic Line:

Question Stem:

During a design basis steam line piping break, which ONE of the following combinations of reactor power and core life would result in the GREATEST positive reactivity addition following the break?

A POAH following a refueling outage.

B 100% power, MOL.

C 100% power, BOL.

D 2% power, EOL.

Answer:	Task No:	R-RK-005	Question Source:	Question Difficulty
D	Obj No:	A.RT7-06-C	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(1)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RT-XL-07, Shutdown Reactivity Concerns
UFSAR 15.1.5
Tech Spec 3.1.1.Bases

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of the reactivity effects of cooldown during a steam line rupture. Question requires examinee knowledge of most limiting main steam line break.
Most limiting MS line break is at low power, end of life due to MTC being at most negative value (highest insertion of positive reactivity for a given drop in RCS temperature).

A is incorrect, see explanation above.
B is incorrect, see explanation above.
C is incorrect, see explanation above.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
13	Both	1	1	00WE12	00WE12EK2.2	3.6	3.9	High

System/Evolution Name:
Uncontrolled Depressurization of all Steam Generators

Category Statement:
Knowledge of the interrelations between the Uncontrolled Depressurization of all Steam Generators and the following:

KA Statement:
Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 was at 100% power.
- All systems were normally aligned.
- A large steam leak occurred inside containment.
- ALL MSIVs are open and CANNOT be closed.
- The crew has implemented 2BwCA-2.1, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS, with the following conditions:
  - RCS cold leg cooldown rate is 155°F/hour.
  - RCS hot leg temperatures are 390°F and lowering slowly.
  - Containment pressure is 12 psig.
  - ALL SG NR levels indicate 15% and lowering slowly.
  - AF flow indicates 350 gpm to each SG.

Based on the above conditions, the operators will…

A allow AF flow to continue at its present rate until at least one SG NR level is > 31%, then throttle AF flow as needed to maintain SG levels < 50%.

B lower AF flow to 45 gpm on ALL SGs and maintain 45 gpm to ALL SGs to maintain the SGs in a wet condition.

C allow AF flow to continue at its present rate until SG NR levels are <10%, then lower AF flow to 45 gpm for each SG with a NR level <10%.

D isolate AF flow to three of the SGs and throttle AF flow to the remaining SG as needed to stabilize RCS hot leg temperatures.

Answer:	Task No:	R-CA-005	Question Source:	Question Difficulty
B	Obj No:	T.CA3-01	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CA-XL-03, BwCA-2.1
2BwCA-2.1, Uncontrolled Depressurization of All SGs.

Explanation: Question meets KA. Question requires examinee knowledge of the interrelations between the uncontrolled depressurization of all SGs and proper operation of heat removal systems. Question requires examinee analyze plant conditions and determine proper operation of the AF system during an uncontrolled depressurization of all SGs.
With RCS cold leg cooldown rate > 100°F/hour, 1BwCA-2.1 continuous action is to lower AF flow to all SGs to 45 gpm to maintain the SGs in a wet condition.

A is incorrect, RCS cooldown rate warrants AF flow reduction. Action would be correct for intact SG.
B is correct, see explanation above.
C is incorrect, AF flow reduction is based on RCS cooldown rate and not SG level.
D is incorrect, all faulted SGs are fed to keep in wet condition.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
14	Both	1	1	000055	000055EA2.03	3.9	4.7	High

System/Evolution Name:
Loss of Offsite and Onsite Power (Station Blackout)

Category Statement:
Ability to determine and interpret the following as they apply to a Station Blackout:

KA Statement:
Actions necessary to restore power

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A loss of all AC power has occurred.
- 1BwCA-0.0, LOSS OF ALL AC POWER, has been implemented.
- The crew is preparing for ESF bus crosstie with the following conditions:
  - 1A DG is running at rated speed and volts.
  - ACB 1413, DG Feed to 4 KV Bus 141, is open and CANNOT be closed.
  - 1B DG is seized.
  - Bus 241 is energized from SAT 242-1.
  - Bus 242 is deenergized.
  - SI is reset.
  - Bus 141 has been verified to be NOT faulted.
  - ALL control switches for Unit 1 4KV ESF loads are in the normal at power alignment.
  - Unit 2 is performing 2BwCA-0.3, RESPONSE TO OPPOSITE UNIT LOSS OF ALL AC POWER.
  - ACB 1414 to 2414 Bus Alive light is NOT lit at 1PM01J.

In accordance with 1BwCA-0.0, which ONE of the following contains the MINIMUM actions necessary to energize Bus 141?

A Synch and close ACB 1414.

B Synch and close BOTH ACB 1414 AND ACB 2414.

C Place ALL 4KV ESF loads except Bus 131X in pull out AND synch and close BOTH ACB 1414 AND ACB 2414.

D Emergency stop 1A DG, place ALL 4KV ESF loads except Bus 131X in pull out, AND synch and close BOTH ACB 1414 AND ACB 2414.

Answer:	Task No:	R-CA-001	Question Source:	Question Difficulty
D	Obj No:	T.CA1-05	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CA-XL-01, BwCA-0.0
1BwCA-0.0, Loss of All AC Power
2BwCA-0.3, Response to Opposite Unit Loss of All AC Power

Explanation: Question meets KA. Question requires examinee analyze plant conditions and determine actions necessary to restore power during a station blackout.
In order to restore power, 1A DG must be emergency stopped due to interlock with DG running at rated speed and volts, which disables closing ACB 1414. Procedurally directed actions are to place all ESF loads except 480 ESF bus feed in pull out and synchronize and close both unit ESF cross-tie breakers.
A is incorrect, closing ACB 1414 would not complete all required actions for cross-tie. See explanation above.
B is incorrect, closing ACB 1414 and ACB 2414 would not complete all required actions for cross-tie. See explanation above.
C is incorrect, must emergency stop 1A DG prior to completing actions. See explanation above.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
15	Both	1	1	000056	000056AA1.21	3.3	3.3	High

System/Evolution Name:
Loss of Offsite Power

Category Statement:
Ability to operate and/or monitor the following as they apply to the Loss of Offsite Power:

KA Statement:
Reset of the ESF load sequencers

UserID: Topic Line:
Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A loss of offsite power occurs.
- All systems respond as designed.
- The crew has implemented 1BwOA ELEC-4, LOSS OF OFFSITE POWER.

Which ONE of the actions listed below will allow the operators to place unnecessary 1A train ESF equipment in normal after trip (NAT) without the equipment automatically restarting?

A Place 1A DG EMER MODE SPEED/VOLT C/S in Manual Emergency Mode.

B Synch and close ACB 1414, Bus 241 Feed to 4KV Bus 141.

C Close ACB 1411, 4KV Bus Tie 141/143.

D Place 1A DG EMER MODE SPEED/VOLT C/S in Manual Test Mode.

Answer:	Task No:	R-OA-005	Question Source:	Question Difficulty
B	Obj No:	T.OA04-03	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-04, BwOA ELEC-4
1BwOA ELEC-4, Loss of Offsite Power

Explanation: Question meets KA. Question requires examinee analyze plant conditions and determine actions necessary to reset of the ESF load sequencers during a loss of offsite power.
In order to place ESF equipment in NAT with DG running following emergency start, must place either ACB 1412 or ACB 1414 in closed.

A is incorrect, see explanation above.
B is correct, see explanation above.
C is incorrect, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
16	Both	1	1	000057	000057AA2.20	3.6	3.9	High

System/Evolution Name:
Loss of Vital AC Electrical Instrument Bus

Category Statement:
Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus:

KA Statement:
Interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed to restore normal equipment operation

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- Control bank D rods are at 220 steps.

- A loss of ONE Instrument Bus occurs.
- The NSO places the rod bank select switch to MANUAL.

Which ONE of the following switches must be operated to bypass a CONTROL INTERLOCK caused by the loss of the instrument bus?

A Power Mismatch Bypass C/S

B Comparator Channel Defeat C/S

C Rod Stop Bypass C/S

D Tave Defeat C/S

Answer:	Task No:	R-OA-006	Question Source:	Question Difficulty
C	Obj No:	T.OA02-03	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(6)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-NI-XL-03, Power Range Nuclear Instrumentation
2BwOA ELEC-2, Loss of Instrument Bus
Systems big note NI-1, Power Range NI Drawer

Explanation: Question meets KA. Question requires examinee analyze plant conditions and determine and interpret interlocks in effect on loss of ac vital electrical instrument bus that must be bypassed.
With loss of an instrument bus, control rods are incapable of automatic withdrawal. Manual rod withdrawal is inhibited due to power range high flux rod stop, which will actuate due to loss of a power range NI. PR flux high rod stop can be bypassed to allow manual withdrawal of control rods.

A is incorrect, power mismatch bypass control switch is operated during loss of instrument bus to remove the failed PR channel from the rod control and SG level power mismatch circuitry, however switch is not associated with an interlock.
B is incorrect, comparator channel defeat switch is operated during loss of instrument bus to remove the failed PR channel from the PR deviation comparison circuitry, however switch is not associated with an interlock.
C is correct, see explanation above.
D is incorrect, Tave defeat switch is operated during RCS RTD failure to restore rod control, but is not affected by loss of single instrument bus.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
17	Both	1	1	00WE11	00WE112.4.6	3.1	4.0	Low

System/Evolution Name:
Loss of Emergency Coolant Recirculation

Category Statement:
Emergency Procedures/Plan

KA Statement:
Knowledge symptom based EOP mitigation strategies.

UserID:

Topic Line:

Question Stem:

Upon implementation of 1BwCA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, the FIRST action(s) the crew will perform is/are intended to…

A restore emergency coolant recirculation.

B raise/conserve RWST inventory.

C limit RCS leakage by cooling down the RCS.

D reduce RCS subcooling to limit break flow.

Answer:	Task No:	R-CA-003	Question Source:	Question Difficulty
A	Obj No:	T.CA2-04	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CA-XL-02, BwCA-1.1
WOG background document for BwCA-1.1

Explanation: Question meets KA. Question requires examinee knowledge of symptom based EOP mitigation strategies during loss of emergency coolant recirculation.
From ECA-1.1 background document, restoration of emergency coolant recirculation is first action taken in procedure.

A is correct, see explanation above.
B is incorrect, choice is subsequent operator action taken, but question asks for first action.
C is incorrect, choice is subsequent operator action taken, but question asks for first action.
D is incorrect, choice is subsequent operator action taken, but question asks for first action.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
18	Both	1	1	00WE05	00WE05EK3.3	4.0	4.1	Low

System/Evolution Name:
Loss of Secondary Heat Sink

Category Statement:
Knowledge of the reasons for the following responses as they apply to the Loss of Secondary Heat Sink:

KA Statement:
Manipulation of controls required to obtain desired operating results during abnormal, and emergency situations

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A reactor trip occurred.
- ALL FW pumps have tripped.

- The crew has implemented 1BwFR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, with the following conditions:
  - ALL SGs meet the dry SG criteria.
  - The startup FW pump is ready to start.

- Prior to starting the startup FW pump, the operators are instructed to close 1FW034A-D, Tempering Flow Control Valves.

The reason the operators close the 1FW034A-D valves is to minimize…

A runout of the Startup Feedwater Pump.

B loss of subcooling due to rapid RCS cooldown and depressurization.

C thermal stress on SG components.

D the challenge to reactor vessel integrity due to PTS.

Answer:	Task No:	R-FR-029	Question Source:	Question Difficulty
C	Obj No:	T.FR03-03	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee. Reference:
ILT lesson plan I1-FR-XL-03, BwFR-H.1
WOG background document for FR-H.1
1BwFR-H.1

Explanation: Question meets KA. Question requires examinee knowledge of the reasons for manipulation of controls required to obtain desired operating results during loss of secondary heat sink. Requires examinee knowledge of reason for isolating dry SG.
During 1BwFR-H.1, dry SG is isolated and feed flow is initiated at controlled rate to limit thermal stress on SG and prevent damage to SG internal components.

A is incorrect, flowpath is not large enough to run out startup feedwater pump if it were started with valves open.
B is incorrect, RCS pressure will drop when feedwater flow is initiated, but reason for isolation is prevent thermal stress on SG components.
C is correct, see explanation above.
D is incorrect, PTS is not reason for isolation of dry SG.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
19	Both	1	2	000005	000005AK1.03	3.2	3.6	High

System/Evolution Name:
Inoperable/Stuck Control Rod

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to Inoperable/Stuck Control Rod:

KA Statement:
Xenon transient

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 was at 100% power.
- All systems were normally aligned.
- Control bank D rods were at 215 steps.
- Control bank D rod M-12 dropped to 180 steps.
- Rod M-12 is located near the core periphery.

Assuming NO operator action, if left uncorrected, which ONE of the following correctly describes the operational implications associated with the misaligned rod?

A Xenon distribution in the core will be unaffected since the unaffected control rods will withdraw sufficiently to offset the effect of the misaligned rod.

B Xenon concentration in the area of the affected rod will rise until a new equilibrium concentration is reached, and AFD will become more positive.

C Xenon concentration in the area of the affected rod will lower until a new equilibrium concentration is reached and Xenon production in the remainder of the core will rise due to lower differential worth of the unaffected rods.

D Xenon concentration in the area of the affected rod will initially rise, then lower, and a radial flux tilt will result.

Answer:	Task No:	R-OA-067	Question Source:	Question Difficulty
D	Obj No:	A.RT6-09	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(1)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-034, BwOA ROD-3
ILT lesson plan I1-RT-XL-01, Control Rod Reactivity Effects

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of Xenon transient caused by inoperable/stuck control rod.
When control rod is misaligned, xenon production in the area of the stuck rod will initially rise due to lower burnout from flux, then lower due to lower production from flux, which is delayed. A radial flux tilt will occur as flux rises in other regions of the core.

B is incorrect, see explanation above.
C is incorrect, see explanation above.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
20	Both	1	2	000028	0000282.2.22	3.4	4.1	High

System/Evolution Name: Pressurizer (PZR) Level Control Malfunction

Category Statement: Equipment Control

KA Statement:
Knowledge of limiting conditions for operations and safety limits.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 8% power.
- Preparations for rolling the main turbine are in progress.
- PZR level channel 2LT-459 failed 30 minutes ago.
- The crew implemented 2BwOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL.
- ALL bistables have been tripped and all actions are complete in accordance with 2BwOA INST-2.
- IMD personnel are currently working on 2LT-459.

- PZR level channel 2LT-461 then fails HIGH.

Assuming the reactor remains critical and it will take AT LEAST 8 hours to repair either PZR level channel,
the crew will…

(Tech Spec Table 3.3.1-1 is attached)

A IMMEDIATELY trip the reactor due to the high pressurizer level reactor trip coincidence being met.

B initiate action within one hour to place Unit 2 in Mode 3 within seven hours.

C place 2LT-461 in BYPASS and continue the power ascension.

D maintain reactor power below P-7.

Answer:	Task No:	R-OA-078	Question Source:	Question Difficulty
D	Obj No:	T.OA11-24	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
Tech Spec Table 3.3.1-1 will be provided to examinee.
ILT lesson plan I1-RY-XL-01, Pressurizer
Tech Spec 3.3.1

Explanation: Question meets KA. Question requires examinee knowledge of limiting conditions for operations for PZR level control malfunctions.
With power less than P-7, the PZR high level reactor trip is blocked. LCO 3.3.1 for PZR level channels is applicable in mode 1 when power is above the P-7 interlock. With 2 PZR level channels inoperable, power must remain below P-7 until PZR level channels are restored to operable.

A is incorrect, PZR high level trip blocked below P-7. Reactor trip not required. Would be required > P-7.
B is incorrect, would be correct for 2 inoperable PZR level channels > P-7, since no TS condition exists (TS 3.0.3).
C is incorrect, can place one channel in bypass for testing if only one channel inoperable > P-7. Two channels are inoperable in question so condition is not applicable.
D is correct, maintaining power < P-7 would allow reactor to remain critical since TS is not applicable < P-7.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: Tech Spec Table 3.3.1-1

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
21	Both	1	2	000032	000032AK2.01	2.7	3.1	High

System/Evolution Name:
Loss of Source Range Nuclear Instrumentation

Category Statement:
Knowledge of the interrelations between the Loss of Source Range Nuclear Instrumentation and the following:

KA Statement:
Power supplies, including proper switch positions

UserID: Topic Line:

Question Stem:

Given:
- Unit 2 is in Mode 3.
- ALL shutdown banks are withdrawn.

- SR channel N32 is stable at 2.0 X 10+2 cps.
- SR channel N31 was responding erratically and the crew implemented 2BwOA INST-1, NUCLEAR INSTRUMENTATION MALFUNCTION with the following conditions:
  - SR channel N31 level trip bypass switch in in BYPASS.
  - SR channel N31 high flux at shutdown switch is in BLOCK.

- BOTH IR channels indicate 1.0 X 10-11 amps.

- Instrument Bus 211 then FAULTS and is DEENERGIZED.

Based on the above conditions…

A BOTH SR channel N31 and N32 will deenergize AND the reactor trip breakers will open.

B ONLY SR channel N-31 will deenergize AND the reactor trip breakers will remain closed.

C BOTH SR channel N31 and N32 will remain energized AND the reactor trip breakers will remain closed.

D ONLY SR channel N-31 will deenergize AND the reactor trip breakers will open.

Answer:	Task No:	R-OA-053	Question Source:	Question Difficulty
D	Obj No:	S.NI1-08A/B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(2)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-NI-XL-01, Source Range Nuclear Instrumentation
Systems big note NI-4, Source Range Detector

Explanation: Question meets KA. Question requires examinee knowledge of the interrelations between loss of source range nuclear instrumentation and subsequent switch positions and loss of power supply. Question requires examinee analyze plant conditions and alignments and predict response of NI system on loss of power supply.
Unit 2 is in Mode 3 with shutdown banks withdrawn. Reactor trip breakers are closed and power is <P6. SR high flux trip is active. With SR N31 level trip switch in bypass and high flux at shutdown blocked, loss of instrument bus 211 causes loss of 120 VAC control power to SR N31 and SR N31 deenergizes and reactor trip actuates on SR high flux trip. Additionally, when instrument bus 211 faults, IR channel N35 is deenergized, which generates an additional reactor trip signal.

A is incorrect, SR channel N32 will remain energized.
B is incorrect, reactor trip breakers will open. Would be correct for loss of instrument power.
C is incorrect, SR channel N31 will deenergize. Indications would be similar to loss of instrument power only.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
22	Both	1	2	000036	000036AK2.02	3.4	3.9	High

System/Evolution Name:
Fuel Handling Incidents

Category Statement:
Knowledge of the interrelations between the Fuel Handling Incidents and the following:

KA Statement:
Radiation monitoring equipment (portable and installed)

UserID:

Topic Line:

Question Stem:

Given:
- All systems are normally aligned for current plant conditions.
- Refueling is in progress on Unit 2 with the following conditions:
  - The containment equipment hatch is closed.
  - Containment mini-purge supply and exhaust fans are running.
  - Fuel Handling Building booster fans are in standby.
  - A fuel assembly inside the spent fuel pool has dropped and burst.

  - ALL Fuel Handling Building radiation monitors are in HIGH ALARM.
  - ALL other radiation monitors are currently below the ALERT setpoint.

Based on the above conditions, which of the following actuations/interlocks would occur?

1. Fuel Handling Building Booster Fans auto start.
2. Upward motion of the Fuel Handling Building Crane hoist is inhibited.
3. Containment Vent Isolation

A ONLY 1 & 2

B ONLY 2 & 3

C ONLY 1 & 3

D 1, 2, & 3

Answer:	Task No:	Question Source:	Question Difficulty
A	Obj No: T.OA29-07	New	Medium
Time: 1	Cross Ref: 10CFR55.41(b)(11)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-AR-XL-01, Radiation Monitors
ILT lesson plan I1-EF-XL-01, Engineered Safety Features

Explanation: Question meets KA. Question requires examinee knowledge of the interrelations between fuel handling incidents and radiation monitoring equipment. Question requires examinee analyze plant conditions and determine which actuations are caused by current radiation monitor trends.
Fuel handling building high radiation causes FHB booster fans to auto start due to high radiation condition of FHB fuel handling incident monitor (0AR55 & 56J) and inhibits upward motion of the fuel handling building crane due to high radiation condition of fuel handling building crane radiation monitor (0AR39J).
A is correct, see explanation above.
B is incorrect, 0AR39J would prevent upward motion of the fuel handling building crane, but containment vent would not actuate since the fuel handling incident monitor that causes containment vent isolation is located inside containment.
C is incorrect, 0AR55 & 56J would cause FHB fans to auto start, but containment vent would not actuate since the fuel handling incident monitor that causes containment vent isolation is located inside containment.
D is incorrect, FHB fans would auto start and FHB crane motion would be inhibited, but containment vent would not actuate since the fuel handling incident monitor that causes containment vent isolation is located inside containment.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
23	Both	1	2	000037	000037AA1.10	2.9	3.1	High

System/Evolution Name:
Steam Generator (S/G) Tube Leak

Category Statement:
Ability to operate and/or monitor the following as they apply to the Steam Generator Tube Leak:

KA Statement:
CVCS makeup tank level indicator

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A primary to secondary leak has developed in 1A SG.
- The crew has implemented 1BwOA SEC-8, STEAM GENERATOR TUBE LEAK, and is determining the 1A SG tube leak rate with the following conditions:
  - Normal charging and letdown are in service.
  - Pressurizer level is 60% and stable.
  - VCT level is 57%.

  - 10 minutes later VCT level is 52%.

Based on the above indications AND assuming PZR level remained stable, the 1A SG tube leakage is approximately…

A 5 gpm.

B 10 gpm.

C 20 gpm.

D 50 gpm.

Answer:	Task No:	R-OA-003	Question Source:	Question Difficulty
B	Obj No:	T.OA43-07	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
1BwOSR 3.4.13.1, RCS Water Inventory Balance Surveillance

Explanation: Question meets KA. Question requires examinee ability to monitor VCT level indications during steam generator tube leak and determine RCS leakage. Question requires examinee knowledge of VCT capacity and level indicator span of measurement.
VCT level indication = 20.169 gal/% in table D of 1BwOSR 3.4.13.1, RCS water inventory balance surveillance. VCT level dropped 5% in 10 minutes. VCT level has dropped approximately 100gal/10 min = 10gpm.

A is incorrect, see explanation above.
B is correct, see explanation above.
C is incorrect, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
24	Both	1	2	000068	0000682.1.30	3.9	3.4	Low

System/Evolution Name:
Control Room Evacuation

Category Statement:
Conduct of Operations

KA Statement:
Ability to locate and operate components, including local controls.

UserID:

Topic Line:

Question Stem:

Given:
- A fire has occurred in the Main Control Room envelope.
- BOTH Units in the main control room have been evacuated.
- 0/1/2BwOA PRI-5, MAIN CONTROL ROOM INACCESSIBILITY, have been implemented.
- Both Remote Shutdown Panels (RSDP) have been activated.
- The fire brigade is preparing to purge the MCR per BwOP VC-7, PURGE OF THE CONTROL ROOM WITH 100% OUTSIDE AIR.
- The fire chief requests operators start 0B VC supply and return fans.

The operators will start the 0B VC supply and return fans at…

A 0VC01JB, Control Room System HVAC Local Control Panel (451' L-26).

B 1PL04J, Division 11 RSDP (383' N-23).

C 1PL05JA Division 12 RSDP (364' M-23).

D 2PL04J, Division 21 RSDP (383' L-27).

Answer:	Task No:	R-OA-099	Question Source:	Question Difficulty
C	Obj No:	T.OA16-03	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RS-XL-01, Remote Shutdown Panel
1BwOA PRI-5, Control Room Inaccessibility

Explanation: Question meets KA. Question requires examinee ability to locate and operate local controls during control room evacuation.
0B VC supply and exhaust fans are locally operated from 1PL05JA at 364 M-23.

A is incorrect, panel is 0B VC train, but VC supply and return fans are not included at 0VC01JB.
B is incorrect, would be correct for train A VC components.
C is correct, see explanation above.
D is incorrect, Unit 0 component operated at Unit 1 RSDP panels.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
25	Both	1	2	000074	000074EK1.03	4.5	4.9	High

System/Evolution Name:
Inadequate Core Cooling

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the Inadequate Core Cooling:

KA Statement:
Processes for removing decay heat from the core

UserID: Topic Line:

Question Stem:

Given:
- Unit 2 was at 100% power.
- All systems were normally aligned.
- An RCS LOCA occurred.
- Conditions have degraded and the crew has implemented 2BwFR-C.1, RESPONSE TO INADEQUATE CORE COOLING, with the following conditions:
  - CETCs are 1255°F and slowly rising.
  - ALL RCPs are stopped.
  - ALL CV and SI pumps are stopped, but available.
  - ALL RH pumps are running.
  - ALL SG pressures are 1000 psig and stable.
  - RCS pressure is 850 psig and slowly rising.

Based on the above conditions, the MOST EFFECTIVE action the crew can take in regards to core decay heat removal is to…

A establish high head ECCS.

B depressurize ALL SGs.

C start RCP(s).

D open ALL PZR PORVs and Reactor Head Vent Valves.

Answer:	Task No:	R-FR-008	Question Source:	Question Difficulty
A	Obj No:	T.MI07-05	Bank: Braidwood LORT bank queston ID BWLC3DFR2004	High
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FR-XL-02, BwFR-C.1
WOG background document for FR-C.1

Explanation: Question meets KA. Question requires examinee knowledge of the processes and priority of actions for removing decay heat from the core during an inadequate core cooling.
During ICC, restoration of ECCS flow is most effective method of core decay heat removal and is priority action of recovery guideline.

A is correct, see explanation above.
B is incorrect, SG depressurization and SI accumulator injection is subsequent action when other method ineffective.
C is incorrect, RCP start is subsequent action when other method ineffective.
D is incorrect, PZR PORV operation is subsequent action when other method ineffective..

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
26	Both	1	2	00WE01	00WE01EA2.2	3.3	3.9	High

System/Evolution Name:
Rediagnosis

Category Statement:
Ability to determine and interpret the following as they apply to the Reactor Trip or Safety Injection/Rediagnosis:

KA Statement:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments

UserID:

Topic Line:

Question Stem:

Considering each of the events below separately, during which ONE event would entry into 1BwEP ES-0.0, REDIAGNOSIS, be allowed?

A. After completing the initial cooldown steps of 1BwEP-3, STEAM GENERATOR TUBE RUPTURE, operators cannot identify ANY ruptured SGs.

B. While depressurizing the RCS in 1BwEP ES-0.2, NATURAL CIRCULATION COOLDOWN, pressurizer level drops off scale low.

C. While responding to a leak in 1BwEP-1, LOSS OF REACTOR OR SECONDARY COOLANT, the STA discovers an orange path condition on the core cooling status tree.

D. Following a reactor trip, the crew is performing 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION, and is unable to stop pressure from dropping in the 1A SG.

Answer:	Task No:	R-EP-001	Question Source:	Question Difficulty
A	Obj No:	3C.EP-10-B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

No reference will be provided to examinee. Reference:
ILT lesson plan I1-EP-XL-01, BwEP-0
1BwEP ES-0.0, Rediagnosis
BwAP 340-1, Use of Procedures for the Operating Department

Question meets KA. Question requires examinee ability to determine and interpret adherence to appropriate procedures as they apply to
Explanation:
Rediagnosis. Question requires examinee analyze plant conditions and determine if entry into Rediagnosis procedure is warranted.
To implement 1BwEP ES-0.0, must have SI actuated and entry into another EP series procedure after EP-0.

A is correct, SI was actuated in 1BwEP-0 and transition has been made to 1BwEP-3 from 1BwEP-0.
B is incorrect, 1BwEP ES-0.2 OAS directs transition to 1BwEP-0 if conditions warrant SI.
C is incorrect, transition to 1BwFR-C.2 is directed from status trees.
D is incorrect, have not entered a procedure after 1BwEP-0.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
27	Both	1	2	00WE03	00WE03EK3.2	3.4	3.9	Low

System/Evolution Name:
LOCA Cooldown and Depressurization

Category Statement:
Knowledge of the reasons for the following responses as they apply to the LOCA Cooldown and Depressurization:

KA Statement:
Normal, abnormal and emergency operating procedures associated with LOCA Cooldown and Depressurization

UserID:

Topic Line:

Question Stem:

Prior to the ECCS flow reduction sequence of 1BwEP ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION, direction is provided to secure CV and SI pumps on alternate trains.

What is the reason for this direction?

A Ensure ECCS injection flow will continue if a single ECCS train failure occurs.

B Minimize possibility of RH pump runout if transfer to cold leg recirculation is needed.

C Ensure equal injection flow from each train of ECCS during the flow reduction sequence.

D Prevent overloading Diesel Generators in the event of a loss of offsite power.

Answer:	Task No:	R-EP-003	Question Source:	Question Difficulty
A	Obj No:	T.EP02-01-C	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EP-XL-02, BwEP-1
1BwEP ES-1.2, Post LOCA Cooldown and Depressurization
WOG background document for BwEP ES-1.2

Explanation: Question meets KA. Question requires examinee knowledge of the reasons for securing ECCS pumps on alternate trains prior to the flow reduction sequence of 1BwEP ES-1.2.
During performance of 1BwEP ES-1.2 a note prior to step 12 directs the operators to secure CV and SI pumps on alternate trains when possible. Per WOG background document, purpose of note is to ensure there will still be some ECCS flow will continue if a loss of one train occurs.

A is correct, see explanation above.
B is incorrect, RH train capacity is sufficient to accommodate full flow to two trains of ECCS during cold leg recirculation.
C is incorrect, during flow reduction sequence, ECCS injection flow will not be equal due to lowering RCS pressure causing a rise in CV and SI pump flows and lowering CV pump flow when normal charging is placed in service.
D is incorrect, in the event of a loss of offsite power, ESF buses will strip loads and sequence on ESF equipment and DGs will not overload.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
28	Both	2	1	003000	003000A4.07	2.6	2.6	High

System/Evolution Name: Reactor Coolant Pump System (RCPS)

Category Statement: Ability to manually operate and/or monitor in the control room:

KA Statement:
RCP seal bypass

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is in Mode 5.
- The RCS is being borated to the refueling boron concentration.
- 1A RH train is operating in shutdown cooling mode.
- RCS pressure is 375 psig and stable.
- VCT pressure is 25 psig.
- 1D RCP is operating with 10 gpm seal injection flow.
- 1RY455B, PZR Spray Valve, is in manual at 15% demand.
- ALL PZR backup heaters are off.
- 1CV8141D, RCP 1D Seal Leakoff Isolation Valve, is open.
- 1D RCP seal leakoff flow indicates 0.8 gpm and is slowly lowering.
- 1D RCP seal outlet temperature is 182°F and is slowly rising.
- 1D RCP pump bearing temperature is 168°F and is slowly rising.

Based on the above conditions, the operators will…

A lower demand on 1RY455B to 0% AND place ALL PZR backup heaters C/Ss to ON.

B place 1CV8142, No. 1 Seal Bypass Isolation Valve, C/S in OPEN.

C IMMEDIATELY trip 1D RCP AND place 1CV8141D C/S to CLOSE.

D ONLY place 1CV8141D C/S to CLOSE.

Answer:	Task No:	R-RC-006	Question Source:	Question Difficulty
B	Obj No:	S.RC2-09-A	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(3)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RC-XL-02, Reactor Coolant Pumps
BwOP RC-1, Reactor Coolant Pump Startup

Explanation: Question meets KA. Question requires examinee ability to manually operate the RCP seal bypass valve in the control room. Question requires examinee analyze plant conditions and determine operation of RCS seal bypass valve is appropriate action. RCP temperatures are rising in response to lowering seal leakoff flow. Procedurally directed action is to open seal bypass valve.

A is incorrect, procedurally directed action is to open the RCP seal bypass valve to raise RCP seal leak off flow and enhance RCP cooling. Raising RCS pressure is not desired due to RH pumps operating with suction pressure near relief valve setpoint. Raising RCS pressure would jeopardize RH integrity.
B is correct, see explanation above.
C is incorrect, would be correct for RCP temperatures exceeding trip setpoints.
D is incorrect, action would not enhance RCP cooling and is not procedurally directed.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
29	Both	2	1	004000	004000K5.37	2.6	3.1	High

System/Evolution Name:
Chemical and Volume Control System (CVCS)

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the CVCS:

KA Statement:
Effects of boron saturation on ion exchanger behavior

UserID: Topic Line:
Question Stem:

Given:
- Unit 1 is at 90% power, end of life.
- The 1A CV mixed bed demin vessel is loaded with anion resin.
- The crew placed the 1A CV mixed bed demin on line at 120 gpm one hour ago for RCS temperature control in accordance with BwOP CV-23, CV SYSTEM MIXED BED/CATION DEMINERALIZER OPERATION FOR DEBORATING.
- RCS Tave began rising at a steady rate.
- Over the last 15 minutes, the rate of change of RCS Tave has lowered.

Based on the above conditions, RCS Tave rate of change has lowered due to 1A CV mixed bed demin…

A becoming boron saturated.

B channeling due to high flow.

C lowering outlet boron concentration caused by rising RCS temperature.

D raising RCS conductivity due to silica release.

Answer:	Task No:	R-CV-006	Question Source:	Question Difficulty
A	Obj No:	A.CH3-03	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CH-XL-03, Water Treatment Methods

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of the effects of boron saturation on CVCS ion exchanger behavior. Question requires examinee analyze plant conditions and determining boron saturation of CVCS ion exchanger causing indications.
When deborating demin is placed in service, RCS temperature will rise as boron is removed from RCS. RCS temperature rate of change becomes less as demin becomes boron saturated.

A is correct, see explanation above.
B is incorrect, CVCS mixed bed demins can operate at 120 gpm without channeling.
C is incorrect, as RCS temperature rises, RCS boron concentration at demin outlet would also rise.
D is incorrect, silica release initially causes RCS conductivity to lower.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
30	Both	2	1	004000	004000A4.19	3.1	2.8	High

System/Evolution Name:
Chemical and Volume Control System (CVCS)

Category Statement:
Ability to manually operate and/or monitor in the control room:

KA Statement:
CVCS letdown orifice isolation valve and valve control switches

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- CV letdown is in service at 120 gpm.
- 1CV459 and 1CV460, Letdown Line Isolation Valves, are open
- 1CV8149A and 1CV8149B, Letdown Orifice Isolation Valves, are open.

- PZR level channel 1LT-459 failed to 14%.

Assuming NO operator actions, which ONE of the following combinations of indications would be present 30 seconds later on 1PM05J?

A 1CV459, 1CV460, AND 1CV8149 A-C CLOSED lights LIT.

B 1CV460 OPEN light LIT
1CV459 and 1CV8149 A-C CLOSED lights LIT.

C 1CV459 AND 1CV460 OPEN lights LIT
1CV8149 A-C CLOSED lights LIT.

D 1CV459, 1CV460, AND 1CV8149C CLOSED lights LIT
1CV8149A AND 1CV8149B OPEN lights LIT.

Answer:	Task No:	R-RY-015	Question Source:	Question Difficulty
B	Obj No:	S.RY1-21-F	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RY-XL-01, Pressurizer
Systems big note RY-3, PZR Level Control

Explanation: Question meets KA. Question requires examinee ability to monitor CVCS letdown orifice isolation valves in the control room.
Question requires examinee analyze plant conditions and determine response of CVCS letdown orifice isolation valves.
When 1LT-459 drops below 17%, signal is sent to close 1CV-459 and 1CV8149A-C. 1CV460 remains open, since signal to close is not present (1LT-460 remains > 17%).

A is incorrect, 1CV460 remains open.
B is correct, see explanation above.
C is incorrect, 1CV459 closes.
C is incorrect, would be correct if no close signal sent to 1CV8149A and B.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
31	Both	2	1	005000	005000K4.06	2.7	3.0	Low

System/Evolution Name:
Residual Heat Removal System (RHRS)

Category Statement:
Knowledge of RHRS design feature(s) and/or interlock(s) which provide for the following:

KA Statement:
Function of RHR pump miniflow recirculation

UserID: Topic Line:
Question Stem:

Which ONE of the following correctly describes the function of _RH610/611, RH Pump _A/_B Miniflow Valves?

A Provides a flowpath for pumping the refueling cavity to the RWST during refueling.

B Prevents radioactive water from being pumped to the RWST during the recirculation phase of a LOCA.

C Maintains total system flow stable during shutdown cooling operation.

D Prevents overheating and/or excessive vibration of the RH pumps when the discharge line is isolated.

Answer:	Task No:	R-RH-004	Question Source:	Question Difficulty
D	Obj No:	S.RH1-04-I	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(8)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RH-XL-01, Residual Heat Removal Systems big note RH-1, RHR Standby/Injection Mode

Explanation: Question meets KA. Question requires examinee knowledge of RHRS design feature for RHR pump miniflow recirculation valve. RH pump is equipped with miniflow recirculation valves that prevent excessive vibration or overheating of the RH pumps when the discharge line is isolated.

A is incorrect, function of _RH8735
B is incorrect, function of SI pump miniflow isol valves
C is incorrect, function of _RH618 & _RH619
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
32	Both	2	1	006000	006000K2.02	2.5	2.9	Low

System/Evolution Name:
Emergency Core Cooling System (ECCS)

Category Statement:
Knowledge of bus power supplies to the following:

KA Statement:
Valve operators for accumulators

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is in Mode 3.
- RCS pressure is 900 psig.
- The crew is preparing to open 2SI8808A-D, SI Accumulator 2A-D Discharge Valves.
- BOTH SVAG Valve 480 Bus Feed control switches are in TRIP.
- The local breakers for 2SI8808A-D, have been CLOSED.

Assuming the 480V Feed to Bus 232X1A/X2A control switch remains in TRIP, when the NSO places the 480V Feed to Bus 231X1A/X2A control switch to close…

A 2SI8808A-D will have power available.

B ONLY 2SI8808A and D will have power available.

C ONLY 2SI8808B and C will have power available.

D NO SI Accumulator Discharge Valves will have power available.

Answer:	Task No:	R-SI-005	Question Source:	Question Difficulty
B	Obj No:	S.EC1-11-B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EC-XL-01, Emergency Core Coolant System
BwOP SI-100, SVAG Valve Operation
20E-1-4030SI11 and 20E-4030SI12, Schematic Diagrams of Accumulator Discharge Isolation Valves

Explanation: Question meets KA. Question requires examinee knowledge of bus power supplies to the SI accumulator valve operators. 2SI8808A and D are from division 21 power supply and 2SI8808B and C are from division 22 power supply. With all local breakers closed, 2SI8808A-D are deenergized until the 480V feed control switch in closed. When NSO place 231X1A/X2A control switch to closed, division 21 power is applied to the accumulator valves and 2SI8808A & D are energized. 2SI8808B & C remain deenergized due to the 232X1A/X2A control switch remaining in trip.

A is incorrect, see explanation above.
B is correct, see explanation above.
C is incorrect, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
33	Both	2	1	006000	006000K5.06	3.5	3.9	High

System/Evolution Name:
Emergency Core Cooling System (ECCS)

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the ECCS:

KA Statement:
Relationship between ECCS flow and RCS pressure

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A small break RCS LOCA occurred.
- The crew is performing 1BwEP ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION.
- BOTH CV pumps are running.
- BOTH SI pumps are running.
- RCS pressure is 1780 psig and stable.
- The crew has determined that RCS subcooling is adequate to align normal charging.

When 1SI8801A & B, CV Pump to Cold Leg Injection Valves, are closed…

A ECCS flow will LOWER AND RCS pressure will RISE due to less core heat removal from the lower ECCS flow. Break flow will RISE and reach a new equilibrium as RCS pressure rises in response to the rising RCS temperature.

B ECCS flow AND RCS pressure will REMAIN THE SAME as injection flow from the SI pumps rises and reaches a balance with break flow.

C ECCS flow AND RCS pressure will LOWER. RCS pressure and break flow will stabilize at a lower value as SI pump flow rises.

D ECCS flow will remain the same as SI pump flow rises. Break flow will LOWER and reach a new equilibrium as RCS pressure lowers.

Answer:	Task No:	R-SI-005	Question Source:	Question Difficulty
C	Obj No:	S.EC1-03-B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EP-XL-02, BwEP-1

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of relationship between ECCS flow and RCS pressure following an RCS LOCA. Question requires examinee analyze plant conditions and predict plant response to lowering ECCS flow.
RCS pressure is initially above the shutoff head of both SI pumps. When 1SI8801A & B are closed, ECCS injection flow will lower. As ECCS flow lowers, RCS pressure will lower from less inventory addition with the same break flow. As RCS pressure lowers, RCS break flow will lower. RCS pressure will lower until the SI pumps begin injecting. SI pump injection will stabilize RCS pressure break flow at a lower value.

A is incorrect, RCS pressure will lower.
B is incorrect, SI pumps will not inject until pressure is below shutoff head.
C is correct, see explanation above.
D is incorrect, ECCS flow will lower initially.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
34	Both	2	1	007000	007000K4.01	2.6	2.9	Low

System/Evolution Name:
Pressurizer Relief Tank/Quench Tank System (PRTS)

Category Statement:
Knowledge of PRTS design feature(s) and/or interlock(s) which provide for the following:

KA Statement:
Quench tank cooling

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- Annunciator 1-12-C7, PRT TEMP HIGH, is lit.
- The crew has implemented BwOP RY-6, TEMPERATURE CONTROL OF THE PRESSURIZER RELIEF TANK.

In order to lower PRT temperature in accordance with BwOP RY-6, the operators will…

A fill the PRT from the PW system, then drain the PRT using an RCDT pump.

B drain the PRT directly to the RCDT while making up to the PRT from the PW system.

C drain the PRT directly to the Containment Recirc sump, then fill the PRT from the PW system

D isolate all inputs to the PRT and allow it to cool to containment ambient temperature.

Answer:	Task No:	R-RY-001	Question Source:	Question Difficulty
A	Obj No:	S.RY1-22	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RY-XL-01, Pressurizer
Systems big note RY-4, PRT and RCDT
BwOP RY-4, Temperature Control of the PRT
BwOP RY-6, Draining the PRT
BwAR 1-12-C1

Explanation: Question meets KA. Question requires examinee knowledge of PRTS design feature which provide for PRT cooling. Question requires examinee knowledge of process for cooling PRT.
In accordance with BwOP RY-6, PRT cooling is accomplished by filling PRT with primary water to a specified level, then pumping PRT contents to RHUT.

A is correct, see explanation above.
B is incorrect, PRT is filled prior to draining per BwOP RY-6.
C is incorrect, PRT can be drained to cnmt floor sump, but not to the cnmt recirc sump.
D is incorrect, method of cooling is describe in explanation above.

Date Written:	6/28/2007	Author:	Darren Stiles	App. Ref:	none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
35	Both	2	1	008000	0080002.1.32	3.4	3.8	Low

System/Evolution Name: Component Cooling Water System (CCWS)

Category Statement: Conduct of Operations

KA Statement:
Ability to explain and apply all system limits and precautions.

UserID:

Topic Line:

Question Stem:

During normal operations, CC flow through the Spent Fuel Pool heat exchanger is maintained greater than or equal to 1200 gpm.

What is the basis for this limit?

A Provide sufficient flow to prevent flow induced vibration in the CC heat exchangers at low system flows.

B Ensure maximum flow limit to RCP thermal barrier heat exchangers will NOT be exceeded during two pump operation.

C Ensure minimum flow requirement for TWO CC pumps will be met following a LOCA prior to establishing flow to the RH heat exchangers.

D Prevent CC system over pressurization during an accident when both CC pumps are running and CC to containment is isolated.

Answer:	Task No:	R-RC-003	Question Source:	Question Difficulty
C	Obj No:	3C.CC-01-A	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CC-XL-01, Component Cooling
BwOP CC-1, Component Cooling System Startup

Explanation:Question meets KA. Question requires examinee ability to explain and apply Component Cooling Water System limits and precautions.

1200 gpm flow is maintained to the Spent Fuel Pool heat exchanger to ensure minimum flow requirement for two CC pumps will be met following a LOCA prior to establishing flow to the RH heat exchangers.

A is incorrect, reason is for SX flow limitation in CC heat exchanger.
B is incorrect, reason is for interlock with _CC685 valves.
C is correct, see explanation above.
D is incorrect, reason is for CC system relief valves.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
36	Both	2	1	001000	0010002.1.2	3.0	4.0	Low

System/Evolution Name:
Control Rod Drive System

Category Statement:
Conduct of Operations

KA Statement:
Knowledge of operator responsibilities during all modes of plant operation.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- An initial RO candidate currently enrolled in the license training program is performing on-the job training in the Unit 1 control room.
- The Unit 1 NSO is preparing to manually position control rods for delta flux control.

Which ONE of the following describes the peer check requirement(s) for manually positioning the control rods?

A A second qualified operator will peer check control rod positions at 1PM05J AFTER all rod manipulations are complete.

B The Unit 1 Unit Supervisor will provide peer check of control rod manipulations while positioned at the Unit 1 Unit Supervisor desk.

C The RO in training can position the control rods while ONLY the Unit 1 NSO provides peer check at 1PM05J.

D A second qualified operator must peer check ALL control rod manipulations at 1PM05J as they occur.

Answer:	Task No:	R-AM-031	Question Source:	Question Difficulty
D	Obj No:	3E.AM-014-L	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
OP-AP-300-1001, PWR Control Rod Movement Requirements

Explanation: Question meets KA. Question requires examinee knowledge of operator responsibilities during operation of control rod drive system and requires knowledge of administrative requirements for positioning control rods.
In accordance with OP-AP-300-1001, a second qualified operator must peer check ALL control rod manipulations at 1PM05J as they occur.

A is incorrect, peer checks must occur as control rod positioning is performed, not after completion.
B is incorrect, the Unit 1 US may provide peer checks, but peer checks are performed at 1PM05J, NOT at the Unit 1 US desk.
C is incorrect, RO training can position control rods, but Unit NSO must provide oversight of trainee and second qualified individual must peer check control rod manipulations.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
37	Both	2	1	012000	012000K3.04	3.8	4.1	High

System/Evolution Name:
Reactor Protection System

Category Statement:
Knowledge of the effect that a loss or malfunction of the RPS will have on the following:

KA Statement:
ESFAS

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A small RCS LOCA occurs.
- An automatic SI actuation occurs.
- ALL systems respond as designed, with the exception of Reactor Trip Breaker B, which remains CLOSED.
- The crew has implemented 1BwEP ES-1.1, SI TERMINATION, and is preparing to reset SI with the following conditions:
  - RCS pressure is 1580 psig.
  - All steam line pressures are at 1070 psig.
  - Containment pressure is 1.4 psig.

- The operator then depresses BOTH SI reset pushbuttons.

Based on the above conditions, if NO other actions are taken…

A BOTH trains of SI are reset, AND ONLY A train SI is prevented from automatically reactuating.

B ONLY A train of SI is reset AND ONLY A train SI is prevented from automatically reactuating.

C NEITHER SI train is reset.

D BOTH trains of SI are reset and BOTH trains of SI are prevented from automatically reactuating.

Answer:	Task No:	R-EF-003	Question Source:	Question Difficulty
B	Obj No:	S.EF1-07-A	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EF-XL-01, Engineered Safety Features
Systems big note EF-2, ESF Setpoints

Explanation: Question meets KA. Question requires examinee knowledge of the effect that a loss or malfunction of the RPS will have on the ESFAS and requires examinee to analyze plant conditions and determine the response of the ESFAS.
When SI actuated, the train B reactor trip breaker did not open. Failure of RTB to open will not allow automatic SI on train B to be blocked. When the operator depresses the SI reset push buttons, train A SI will reset and will be prevented from reactuating. Automatic SI on train B will not reset due to pressurizer pressure below the SI setpoint, and automatic SI is not prevented due to the status of RTB.

A is incorrect, train B SI is not reset.
B is correct, see explanation above.
C is incorrect, train A SI is reset.
D is incorrect, B train SI is not reset and auto SI is not blocked on train B.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
38	Both	2	1	012000	012000K6.04	3.3	3.6	High

System/Evolution Name:
Reactor Protection System

Category Statement:
Knowledge of the effect of a loss or malfunction of the following will have on the RPS:

KA Statement:
Bypass-block circuits

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 32% power performing a plant shutdown per 2BwGP 100-4, PLANT SHUTDOWN.
- All systems are properly aligned for the current power level.
- As turbine power is lowered below 32% power, 2PT-505, Turbine First Stage Impulse Pressure detector, fails as is at 32%.

Assuming NO operator action(s) and the power descension progresses, which ONE of the following correctly describes the effect of the 2PT-505 failure?

A An automatic reactor trip will occur when the turbine is removed from service at 15% power.

B The reactor will automatically trip if PZR pressure lowers to 1850 psig with ALL PR NI channels at 8%.

C The SR NIs will have to be manually unblocked below P6.

D The reactor will NOT automatically trip if BOTH the 2A and 2B RCPs trip at 15% power.

Answer:	Task No:	R-EF-001	Question Source:	Question Difficulty
B	Obj No:	3C.EF-01-A-3	Modified: INPO bank question ID# 19459 Cook 1 5/21/2001, changed answer to new choice and removed distracter associatated with PR channel unblocking.	High
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EF-XL-01, Engineered Safety Features
ILT lesson plan I1-MS-XL-01, Main Steam
ILT lesson plan I1-NI-XL-03, Power Range Nuclear Instrumentation

Explanation: Question meets KA. Question requires examinee knowledge of the effect of a loss or malfunction of bypass-block circuits will have on the RPS. Question requires examinee analyze plant conditions and predict impact of loss of blocking signals will have on subsequent plant operation.
When 1PT-505 fails at 32%, permissive P13, turbine at power, will prevent P7 from blocking the six low power reactor trips. P7 is satisfied with both P10 and P13 being below their setpoints.

A is incorrect, P-8 setpoint is 30% NI power, which is not affected by the 1PT-505 failure.
B is correct, P7 will not block the low power reactor trips. The reactor would trip if PZR pressure dropped to below the Rx trip setpoint but remained above the SI setpoint.
C is incorrect, P10, which is based on 10% NI power, will not prevent the SR channels from energizing.
D is incorrect, RCP loss of flow is active > P7.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
39	Both	2	1	013000	013000K2.01	3.6	3.8	High

System/Evolution Name:
Engineered Safety Features Actuation System (ESFAS)

Category Statement:
Knowledge of bus power supplies to the following:

KA Statement:
ESFAS/safeguards equipment control

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- Instrument Bus 211 is deenergized.
- An SI signal is then actuated.

Assuming NO operator action, which ONE of the following describes the response the Solid State Protection System (SSPS) 2PA09J Logic Test and Output Test Panels?

A SSPS will NOT process the SI signal due to a loss of power to the input bays.

B The safeguards driver will process the SI signal, but BOTH the master relays AND the slave relays will NOT actuate.

C The safeguards driver will actuate the master relays, but the slave relays will NOT actuate.

D Power will be lost to one of the 48 volt power supplies, BUT SSPS will actuate ALL ECCS equipment using the redundant 48 volt power supply.

Answer:	Task No:	R-RP-002	Question Source:	Question Difficulty
C	Obj No:	3C.RP-01-B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RP-XL-01, Reactor Protection System
ILT lesson plan I1-EF-XL-01, Engineered Safety Features
Systems big note SSPS-1, SSPS Block Diagram

Explanation: Question meets KA. Question requires examinee knowledge of the bus power supplies to ESFAS/safeguards equipment control and requires examinee analyze plant conditions and determine the response of the ESFAS due to loss of bus power supply.
Instrument bus 211 provides power to the SSPS slave relays. On receipt of an SI signal, the SSPS will process the signal up to the slave relays, which will not actuate due to a loss of actuation power.

A is incorrect, signal will be processed by SSPS but actuation will not occur.
B is incorrect, master relays will actuate but slave relays will not.
C is correct, see explanation above.
D is incorrect, SSPS power supplies will not be affected and slave relays will not actuate.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
40	Both	2	1	013000	013000K6.01	2.7	3.1	High

System/Evolution Name:
Engineered Safety Features Actuation System (ESFAS)

Category Statement:
Knowledge of the effect of a loss or malfunction of the following will have on the ESFAS:

KA Statement:
Sensors and detectors

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- Containment pressure channel 2PT-934, is declared inoperable.
- Required actions per 2BwOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, have been completed.
- ALL Required Technical Specification Actions have been taken for Channel 2PT-934.
- CNMT pressure channels 2PT935, 936, and 937 remain operable.

Based on the above conditions, the remaining coincidence(s) for ESF actuations from the operable CNMT pressure channels are…

A 1/2 for SI actuation and 2/3 for CS actuation.

B 2/3 for SI actuation and 2/3 for CS actuation.

C 1/3 for SI actuation and 1/3 for CS actuation.

D 1/2 for SI actuation and 1/3 for CS actuation.

Answer:	Task No:	R-EF-013	Question Source:	Question Difficulty
A	Obj No:	3C.EF-01A	Bank: INPO Bank ID27671 Cook Unit 1 4/29/2004	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EF-XL-01, Engineered Safety Features
ILT lesson plan I1-CS-XL-01, Containment Spray
ILT lesson plan I1-OA-XL-11, BwOA INST-2
2BwOA INST-2, Operation With a Failed Instrument Channel

Explanation: Question meets KA. Question requires examinee knowledge of the effect of a loss or malfunction of sensors and detectors will have on the ESFAS and requires examinee analyze and determine subsequent logic for ESFAS actuation.
When 2PT-934 is failed, the containment pressure SI bistable is placed in trip, resulting in a 1/2 coincident for the remaining containment pressure SI channels (2PT-935 and 2PT-936). The containment spray bistable is placed in bypass, resulting in 2/3 coincidence for the remaining containment spray bistables (2PT-935, 2PT-936, and 2PT-937).

A is correct, see explanation above.
B is incorrect, choice is for 4 SI Cnmt pressure channels with one in bypass. Only 3 cnmt pressure channels used for SI (vs. 4 for CSAS)
C is incorrect, choice is for 4 SI Cnmt pressure channels with one in trip. Only 3 cnmt pressure channels used for SI (vs. 4 for CSAS) and CS bistable in trip.
D is incorrect, CS bistables placed in bypass vs. trip.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
41	Both	2	1	022000	022000A3.01	4.1	4.3	High

System/Evolution Name:
Containment Cooling System (CCS)

Category Statement:
Ability to monitor automatic operation of the CCS, including:

KA Statement:
Initiation of safeguards mode of operation

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- An SI has actuated.
- The crew has implemented 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION.
- While performing step 7 of 1BwEP-0, Verify RCFCs Running in Accident Mode, the Unit 1 Assist NSO reports the following indications are present at 1PM06J:
  - 1B, 1C, and 1D RCFC Accident Mode Lights are LIT.
  - 1A RCFC Accident Mode Light is NOT LIT.

Which ONE of the indications below would cause the above indications?

A 1SX112A OPEN light LIT.

B 1SX016A CLOSED light LIT.

C 1SX027A CLOSED light LIT.

D 1A RCFC Hi Speed RUN light LIT.

Answer:	Task No:	R-VP-007	Question Source:	Question Difficulty
D	Obj No:	3C.VP-06-D	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-VP-XL-01, Containment Vent and Purge
Systems big note VP-3, Containment Cooling

Explanation: Question meets KA. Question requires examinee ability to monitor automatic operation of the CCS, during initiation of safeguards mode of operation. Question requires examinee analyze plant conditions and determine reason for response of CCS.
1A RCFC accident mode light is lit if 1SX112A and 1SX114A are closed, 1SX147A, 1SX016A, and 1SX027A are open, and the 1A RCFC low speed breaker is closed. For the above conditions, the 1C RCFC accident mode light is lit, so the SX valves alignment would have to be correct to have the 1C RCFC accident mode light lit and the 1A RCFC accident mode light dark, since the contacts are in series with the lights. The 1A RCFC breaker indication is the only cause of the stated conditions.

A is incorrect, see explanation above.
B is incorrect, see explanation above.
C is incorrect, see explanation above.
D is correct, see explanation above.

Date Written:	6/28/2007	Author:	Darren Stiles	App. Ref:	none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
42	Both	2	1	026000	026000K1.01	4.2	4.2	Low

System/Evolution Name:
Containment Spray System (CSS)

Category Statement:
Knowledge of the physical connections and/or cause-effect relationships between the CSS and the following systems:

KA Statement:
ECCS

UserID:

Topic Line:

Question Stem:

Which ONE of the following valves being in the CLOSED position would prevent OPENING 1CS009A, 1A CS Pump Sump Suction Isolation Valve from the MCR?

A 1SI8812A, RH Pump 1A RWST Suction Isolation Valve.

B 1CS001A, CS Pump 1A RWST Suction Valve.

C 1RH8701A, RC Loop 1A to RH Pump 1A Suction Isolation Valve.

D 1SI8811A, CNMT Sump 1A Isolation Valve.

Answer:	Task No:	R-CS-002	Question Source:	Question Difficulty
D	Obj No:	S.CS1-08-A	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CS-XL-01, Containment Spray
Systems big note CS-1, Containment Spray

Explanation: Question meets KA. Question requires examinee knowledge of the physical connections and/or cause-effect relationships between the CSS and the ECCS and valve interlocks between the two systems.
In order to open 1CS009A, 1RH8701A must be closed and 1SI8811A must be open.

A is incorrect, 1SI8812A is not interlocked with 1CS009A.
B is incorrect, 1CS001A is not interlocked with 1CS009A.
C is incorrect, 1RH8701A is interlocked with 1CS009A, and must be closed to open 1CS009A.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
43	Both	2	1	026000	026000A2.07	3.6	3.9	High

System/Evolution Name:
Containment Spray System (CSS)

Category Statement:
Ability to (a) predict the impacts of the following malfunctions or operations on the CSS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

KA Statement:
Loss of containment spray pump suction when in recirculation mode, possibly caused by clogged sump screen, pump inlet high temperature exceeded cavitation, voiding), or sump level below cutoff (interlock) limit

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A large break RCS LOCA occurred inside containment.
- The crew transitioned to 1BwEP ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
- After completing alignment of ALL ECCS pumps and ALL CS pump suctions to the containment sump, debris has partially blocked the CNMT sump screens and BOTH RH pumps began cavitating.
- The crew has implemented 1BwCA-1.3, SUMP BLOCKAGE CONTROL ROOM GUIDELINE, with the following conditions:
  - RWST level is 5%.
  - CNMT pressure is 12 psig.
  - ALL CV and SI pumps are secured.
  - BOTH trains RH flow have been lowered to stabilize RH pump parameters.
  - BOTH CS pumps are running.

Of the actions listed below, the operators NEXT action will be to …

A reset the CS signal, stop BOTH CS pumps, and place BOTH CS pumps in standby due to an imminent loss of suction.

B align BOTH CS pump suctions to the RWST AND isolate BOTH CS pump suctions from the CNMT sump to allow CS flow to continue.

C start BOTH CV pumps and BOTH SI pumps to maximize core cooling.

D IMMEDIATELY transition to 1BwCA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION, to restore at least one train of emergency coolant recirculation.

Answer:	Task No:	R-CA-013	Question Source:	Question Difficulty
A	Obj No:	T.CA2A-03	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CA-XL-02A, BwCA-1.3
1BwCA-1.3, Sump Blockage Control Room Guideline

Explanation: Question meets KA. Question requires examinee ability to predict the impact of loss of containment spray pump suction when in recirculation mode caused by clogged sump screen and based on those predictions, determine correct procedural actions to control the consequences of the sum screen blockage. Question requires examinee determine operational status of CS system and subsequent procedure actions to be taken.
With sump blockage indicated, the CS pumps are stopped to prevent damage from loss of suction.

A is correct, see explanation above.
B is incorrect, cannot align CS pumps to RWST due to RWST level below minimum to support pump operation (7%).
C is incorrect, only one or one SI pump is started during performance of 1BwCA-1.3.
D is incorrect, 1BwCA-1.3 remains in effect until sump blockage addressed or transitions to SACRG-1 is warranted.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
44	Both	2	1	039000	039000K3.04	2.5	2.6	High

System/Evolution Name:
Main and Reheat Steam System (MRSS)

Category Statement:
Knowledge of the effect that a loss or malfunction of the MRSS will have on the following:

KA Statement:
MFW pumps

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A controller malfunctions and the 1C FW pump LP Governor valve fails closed, isolating the steam supply from the reheat steam system.

Assuming NO operator action, based on the above conditions, the 1C FW pump…

A will IMMEDIATELY trip.

B speed will lower until the 1C FW pumps shifts from BOILER control to SPEED control. The 1C FW pump will remain in SPEED control until the operator manually raises demand on the 1C FW pump speed controller.

C speed will continually lower and the 1C FW pump recirc valve will open. The operator will be required to manually trip the 1C FW pump.

D speed will initially lower, then the HP governor valve will open and restore FW pump speed to normal.

Answer:	Task No:	R-FW-006	Question Source:	Question Difficulty
D	Obj No:	3C.FW-04-A	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FW-XL-02, Main FW Pump Speed Control

Explanation: Question meets KA. Question requires examinee knowledge of the effect that a loss or malfunction of the MRSS will have on the MFW pumps and determine how MFW pumps will respond to MRSS malfunction.
When the LP governor valve closes, reheat steam to the 1C FW pump will be lost. 1C FW pump speed will lower. The 1C FW pump HP governor valve will open and supply main steam to the 1C FW pump and restore 1C FW pump speed.

A is incorrect, no 1C FW pump trip setpoint will be reached.
B is incorrect, speed will lower, but pump will not shift to boiler control and manual action is not required to restore 1C FW pump.
C is incorrect, speed will not lower to the recirc valve open setpoint.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
45	Both	2	1	039000	039000K5.08	3.6	3.6	Low

System/Evolution Name:
Main and Reheat Steam System (MRSS)

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the MRSS:

KA Statement:
Effect of steam removal on reactivity

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 99% power.
- All systems are normally aligned.
- ONE Main Steam Safety Valve (MSSV) fails open.

Based on the above indications and assuming NO operator action(s), the open MSSV will INITIALLY cause…

A Tave to lower due to lowering Thot caused by lowering steam quality. The RCS cooldown will add positive reactivity but reactor power will remain below 100%.

B reactor power to rise causing Thot to rise. The rise in Thot will cause Tave to rise and control rods and RCS temperature will maintain reactor power below 100%.

C Tave to lower due to lowering Tcold. The RCS cooldown will add positive reactivity causing reactor power to exceed 100%.

D reactor power to rise which will cause Tcold to lower. The lowering Tcold will add further positive reactivity and reactor power will exceed 100%.

Answer:	Task No:	R-MS-007	Question Source:	Question Difficulty
C	Obj No:	A.HT7-07	Bank: BWD LORT bank question ID BWLCAHT7001	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-HT-XL-07, Steady State, Normal, and Abnormal Operations

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of effect of MRSS steam removal on reactivity.
When a main steam safety valve opens, steam flow will rise in the affected SG. Rising steam flow in the affected loop will cause Tcold in that loop to lower. Tcold lowering will cause Tave to lower in response to the greater steam demand and reactor power will rise to offset the higher secondary load. Reactor power will exceed 100% power.

A is incorrect, Tave will lower, but Thot will not lower and reactor power will exceed 100% power.
B is incorrect. Reactor power will rise in response to Tave, not vice versa.
C is correct, see explanation above.
D is incorrect, reactor power will rise in response to Tave.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
46	Both	2	1	059000	059000A2.12	3.1	3.4	High

System/Evolution Name:
Main Feedwater (MFW) System

Category Statement:
Ability to (a) predict the impacts of the following malfunctions or operations on the MFW System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

KA Statement:
Failure of feedwater regulating valves

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 75% power.
- A power ascension to 80% power is in progress.
- All systems are normally aligned.
- ALL FW Regulating Valves are at 60% demand.
- 1FW510, FW Regulating Valve, becomes mechanically bound and will NOT move.

Based on the above conditions and assuming the power ascension continues, 1A SG level will…

A lower as the power ascension continues. The crew will align the tempering line and place 1FW034A, Tempering Flow Control Valve, in automatic to provide additional flow to the 1A SG.

B remain at program level as the main feedwater pumps speed rises to provide sufficient flow to the 1A SG during the power ascension.

C lower as the power ascension continues. The crew will place 1FW510A, FW Bypass Regulating Valve, in automatic to provide additional flow to restore 1A SG level.

D rise as SG level swells in response to the rising steam demand. The crew will manually lower main feedwater pump speed to lower 1A SG level.

Answer:	Task No:	R-FW-006	Question Source:	Question Difficulty
C	Obj No:	3C.FW-04-E-3	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-GP-XL-03, BwGP 100-3
1BwGP 100-3, Power Ascension

Explanation:Question meets KA. Question requires examinee predict the impacts of feedwater regulating valve failure on SG level and determine actions required to correct and control secondary parameters during power ascension.
As power is raised, steam flow from the SGs will rise. Rising steam flow will require rising FW flow to maintain SG level at program level. When 1FW510 becomes mechanically bound, SG level will lower as power is raised. 1BwGP 100-3, step E.4.h provides guidance on base loading feed reg valve and placing feed regulating bypass valve in automatic if a FW reg valve will not move to compensate for reduced FW flow. 1FW510A will respond in automatic and control SG level at program.

A is incorrect, 1A SG level will lower, however 1FW034A is already open in auto at 100 gpm to provide FW tempering line cooling during power operations.
B is incorrect, main FW pump speed will rise, but 1A SG level will lower as power rises due to rising steam flow without rising FW flow.
C is correct, see explanation above.
D is incorrect, 1A SG level will lower.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
47	Both	2	1	061000	061000K2.03	4.0	3.8	High

System/Evolution Name:
Auxiliary / Emergency Feedwater (AFW) System

Category Statement:
Knowledge of bus power supplies to the following:

KA Statement:
AFW diesel driven pump

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- DC bus 212 deenergizes.
- The reactor then trips.

As steam generator levels lower, the 2B AF pump will…

A automatically start when required.

B NOT automatically start, but can be manually started from the MCR, the RSDP, and the 383' and 364' local control panels.

C NOT automatically start and CANNOT be manually started from ANY control panels.

D NOT automatically start, but can be manually started from ONLY the 383' and 364' local control panels.

Answer:	Task No:	R-AF-001	Question Source:	Question Difficulty
D	Obj No:	3C.AF-01-F	Bank: Braidwood LORT Bank question ID BWLC3CAF1015	High
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-AF-XL-01, Auxiliary Feedwater

Explanation: Question meets KA. Question requires examinee knowledge of bus power supplies to the AFW diesel driven pump and requires examinee analyze plant conditions and determine response of DDAFW pump based on power supply failure.
Loss of 125V DC bus 212 will cause loss of control power to DDAFW pump starting relay K15. Loss of power to starting relay circuitry will disable manual start from MCR and RSDP and all automatic starts. Starting circuitry from 364' and 383' start switches is powered from DDAFW pump local battery banks, which are unaffected by the loss of 125V DC bus 212.

A is incorrect, auto starts are disabled on loss of 125V DC bus 212.
B is incorrect, MCR and RSDP starts are disabled on loss of 125V DC bus 212.
C is incorrect, local stats are not impacted by loss of 125V DC bus 212.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
48	Both	2	1	061000	061000K4.01	4.1	4.2	Low

System/Evolution Name:
Auxiliary / Emergency Feedwater (AFW) System

Category Statement:
Knowledge of AFW System design feature(s) and/or interlock(s) which provide for the following:

KA Statement:
Water sources and priority of use

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- An SI actuation occurs.

Based on the above conditions, BOTH AF pumps are aligned to the…

A CST AND will automatically swap to the SX system on LOW CST level alarm.

B CST AND will automatically swap to the SX system on LOW-LOW pump suction pressure.

C CST AND can ONLY be manually aligned to the SX system as CST level lowers.

D SX system AND can ONLY be manually aligned to the CST if the SX system is unavailable.

Answer:	Task No:	R-AF-003	Question Source:	Question Difficulty
B	Obj No:	S.AF1-10	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-AF-XL-01, Auxiliary Feedwater
BwOP AF-5, Motor Driven Aux Feedwater Pump Startup on Recirc
BwOP AF-7, Diesel Driven Aux Feedwater Pump Startup on Recirc
BwAR 1-3-E7

Question meets KA. Question requires examinee knowledge of AFW water sources and priority of use. Explanation:
Both AF pumps are normally aligned to the CST and AF pump suction will swap to the SX system if a pump low-low suction pressure exists concurrent with an automatic pump start.

A is incorrect, pump low-low suction pressure causes swap over.
B is correct, see explanation above.
C is incorrect, alignment is done automatically.
D is incorrect, CST is normal alignment.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
49	Both	2	1	062000	062000A1.01	3.4	3.8	High

System/Evolution Name:
A.C. Electrical Distribution System

Category Statement:
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the A.C. Distribution System controls including:

KA Statement:
Significance of D/G load limits

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- 1B DG is out of service.
- All other systems are normally aligned.
- A dual unit loss of offsite power occurred.
- Unit 2 has implemented 2BwCA-0.0, LOSS OF ALL AC POWER.
- 1A DG has been aligned for limited crosstie to Bus 241.
- The Unit 1 Assist NSO is monitoring 1A DG operation.
- The 1A DG has the following parameters:
  - 5700 KW
  - 800 Amps
  - 600 KVA out

- Unit 2 is preparing to start the 2A CC pump, which requires 360 KW at 60 amps while running.

Based on the above conditions, the Unit 1 Assist NSO will recommend that Unit 2…

A OT start the 2A CC pump. Starting the 2A CC pump would cause the crosstie breaker cabling to exceed its load limit and may cause a loss of all AC to Unit 2.

B NOT start the 2A CC pump. Starting the 2A CC pump would cause the 1A DG load to exceed its load limit and may lead to complete loss of all AC to BOTH units.

C start the 2A CC pump. Starting the 2A CC pump will allow Unit 2 to restore RCS seal cooling to minimize the possibility of a LOCA from the Unit 2 RCP seals.

D manually lower KVARS on the 1A DG using the voltage adjust switch prior to starting the 2A CC pump. Lowering KVARS will allow the operators to start the 2A CC pump AND maintain operation of the 1A DG within limits.

Answer:	Task No:	R-DC-003	Question Source:	Question Difficulty
B	Obj No:	T.OA1-02	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(8)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-DC-XL-01, 125V DC

Explanation:
Question meets KA. Question requires examinee predict and monitor changes in DG parameters to prevent exceeding DG load limits and requires examinee knowledge of DG load limit values and significance of DG load limits.
When operating the DGs in limited cross-tie mode, DG load is limited to the 2000 hour load limit of 5935 KW at 1030 amps and cross-tie cabling is limited to 925 amps. Starting the 2A CC pump would place 1A DG load at 6060 KW and cross-tie breaker cabling at 860 amps. DG load would exceed the 2000 hour load limit and could lead to a complete loss of all AC to both units if the 1A DG is overloaded.

A is incorrect, cross-tie breaker cabling would be below the 925 amp limit (800 + 60) = 860 amps < 925 amps.
B is correct, see explanation above.
C is incorrect, starting the 2A CC pump could overload the 1A DG.
D is incorrect, KVARs are a function of DG load and cannot be lowered with the DG in emergency mode.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
50	Both	2	1	063000	063000K3.02	3.5	3.7	Low

System/Evolution Name:
D.C. Electrical Distribution System

Category Statement:
Knowledge of the effect that a loss or malfunction of the D.C. Electrical System will have on the following:

KA Statement:
Components using DC control power

UserID:

Topic Line:

Question Stem:

iven:
- Unit 2 is at 100% power.
- All systems are normally aligned.

- 125 VDC Bus 212 to non-ESF Bus 214 Isolation Fuses have blown.
- A reactor trip then occurs.

Based on the above conditions and assuming NO operator action, which one of the following correctly describes the effect of the loss of DC Bus 214?

A ormal CV letdown will NOT be available.

B B reactor trip breaker shunt trip did NOT actuate.

C team dumps will control RCS temperature at 550°F.

D MG output breaker will NOT open when the main generator trips.

Answer:	Task No:	R-DC-003	Question Source:	Question Difficulty
A	Obj No:	S.DC1-09	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-DC-XL-01, 125V DC Power System.

Explanation: Question meets KA. Question requires examinee knowledge of the effect that a malfunction of the DC electrical system will have on plant component that use DC power.
Loss of DC bus 214 will cause loss of control power to 2CV459, CV460, and 2CV8149A-C, which will fail closed and isolate the normal letdown flowpath. Normal letdown will not be available with DC Bus 214 deenergized.

A is correct, see explanation above.
B is incorrect, would be correct for loss of 125 VDC bus 212.
C is incorrect, DC bus 214 is power supply to steam dump P-12 solenoid, but loss of DC bus 214 causes P-12 solenoid to fail closed and steam dumps will not open. RCS temperature would be controlled at 561°F by the SG PORVs.
D is incorrect, would be correct for loss of 125 VDC bus 213.

Date Written: 10/8/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
51	Both	2	1	064000	064000K1.05	3.4	3.9	High

System/Evolution Name:
Emergency Diesel Generator (ED/G) System

Category Statement:
Knowledge of the physical connections and/or cause-effect relationships between the ED/G System and the following systems:

KA Statement:
Starting air system

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- A loss of offsite power occurs.
- BOTH Unit 1 DGs start and energize their respective buses.
- A large air line break occurs on the 1B DG air system and completely depressurizes the 1B DG air system

Based on the above conditions and assuming NO operator action, the 1B DG engine will…

A IMMEDIATELY trip.

B continue to run AND CANNOT be tripped.

C continue to run AND will automatically trip if generator differential current occurs.

D continue to run AND will automatically trip if engine overspeed occurs.

Answer:	Task No:	R-DG-003	Question Source:	Question Difficulty
D	Obj No:	S.DG1-09-E	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-DG-XL-01, Diesel Generator
Systems big note DG-6, DG Air Start

Explanation: Question meets KA. Question requires examinee knowledge of the cause-effect relationships between the DG and the starting air system and requires examinee determine impact of loss of air on DG running in emergency mode.
On loss of air with DG running, the fuel control cylinder returns to the retracted position. The DG will continue to run with only the engine overspeed trip available to automatically trip the DG by closing the air intake butterfly valve.

A is incorrect, the DG will continue to run on a loss of air due to the fuel control cylinder retracting and maintaining the fuel racks in the open position.
B is incorrect, the DG can be tripped by closing the air intake butterfly valve either automatically on engine overspeed or manually at DG.
C is incorrect, with DG in emergency mode, normally only engine overspeed, generator differential overcurrent, and emergency stop pushbutton are available. On loss of air, generator differential trip and emergency stop pushbutton are not available.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
52	Both	2	1	073000	073000A1.01	3.2	3.5	Low

System/Evolution Name:
Process Radiation Monitoring (PRM) System

Category Statement:
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRM System controls including:

KA Statement:
Radiation levels

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- An event occurred, followed by a reactor trip and SI.
- A radioactive release is in progress from the Aux Building Vent Stack.
- Radiation levels in the Aux Building Vent Stack have just begun slowly rising from their pre-transient values.
- The following indications are present on the RM-11 for 1PR30J, Vent Stack 0A Effluent Aux Building Vent Wide Range Gas Monitor:
  - 1PA130, LOW GAS channel, is GREEN.
  - 1PA230, MID GAS channel, is DARK BLUE.
  - 1PA330, HIGH GAS channel, is DARK BLUE.
  - 1PA430, RELEASE RATE channel, is GREEN.

Based on the above indications, 1PR30J is…

A responding properly to current plant conditions. As radiation levels rise the WRGM will automatically shift to the MID AND HIGH GAS channels when required.

B NOT responding properly to current plant conditions. The control room crew will dispatch Radiation Protection personnel to perform local grab sampling.

C responding properly to current plant conditions. As radiation levels rise, the control room crew will manually place the MID AND HIGH GAS channels in service at the RM-11.

D responding properly to current plant conditions. As radiation levels rise, local operators will place the MID AND HIGH GAS channels in service at the 1PR30J skid.

Answer:	Task No:	R-AR-002	Question Source:	Question Difficulty
A	Obj No:	S.AR1-09	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(11)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-AR-XL-01, Radiation Monitors

Explanation: Question meets KA. Question requires examinee predict how changes in radiation levels will impact operation of the PRM system wide range gas monitor.
During normal operation at normal radiation levels, the WRGM low gas and release rate channels are on line. As radiation levels rise, the mid gas channel will come on line automatically and the low gas channel will shutdown. As radiation levels continue to rise, the high gas channel will come on line. The release rate channel stays on line throughout.

A is correct, see explanation above.
B is incorrect, WRGM indications are correct for current plant conditions.
C is incorrect, mid and high gas channels comes on line automatically.
D is incorrect, mid and high gas channels comes on line automatically.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
53	Both	2	1	076000	076000A4.01	2.9	2.9	Low

System/Evolution Name: Service Water System (SWS)

Category Statement: Ability to manually operate and/or monitor in the control room:

KA Statement:
SWS pumps

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- 1A SX pump is running.
- 1B SX pump is in standby.
- The following valves are OPEN:
  - 1SX001A & B, SX pump 1A and 1B suction valves.
  - 1SX016A & B, RCFC 1A - 1D SX inlet valves.
  - 1SX027A & B RCFC 1A - 1D SX outlet valves.

- Annunciator 1-2-A1, SX PUMP TRIP, has just alarmed.

In accordance with BwAR 1-2-A1, in order to restore SX flow, the operator will…

A place the 1A SX pump in PULL OUT. The 1B SX pump will automatically start on lowering SX system pressure.

B momentarily place the 1B SX pump control switch to START at 1PM06J AND release the control switch. The pump RUN light will illuminate after the aux oil pump supplies adequate lube oil pressure.

C dispatch an operator to locally start the aux oil pump. After the aux oil pump run light is LIT, momentarily place the 1B SX pump control switch to START at 1PM06J AND release the control switch.

D place the 1B SX pump control switch to START at 1PM06J AND HOLD the control switch in start until the 1B SX pump RUN light is LIT.

Answer:	Task No:	R-SX-002	Question Source:	Question Difficulty
D	Obj No:	S.SX1-06	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-SX-XL-01, Essential Service Water
BwAR 1-2-A1

Explanation: Question meets KA. Question requires examinee ability to manually operate the essential service water pumps in the main control room.
To start SX pumps, must have valve interlocks met (all systems normally aligned) and oil pressure interlock met. Placing SX pump control switch in start will start the SX pump's aux oil pump. Control switch must be held in start until aux oil pump develops pressure and oil pressure interlock is met, at which time the SX pump will start.

A is incorrect, would be correct for non-essential service water pumps, which have a low header pressure auto start.
B is incorrect, momentarily placing control switch in start will not allow aux oil pump to develop sufficient pressure to meet oil pressure interlock.
C is incorrect. Aux oil pump can be started locally, but action would delay restoration of cooling to safety related equipment cooling.
BwAR 1-2-A1 directs placing SX pump control switch in start and hold to start aux oil pump vs. local start as directed in SX pump swap procedure.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
54	Both	2	1	078000	078000K1.01	2.8	2.7	Low

System/Evolution Name:
Instrument Air System (IAS)

Category Statement:
Knowledge of the physical connections and/or cause-effect relationships between the IAS and the following systems:

KA Statement:
Sensor air

UserID:

Topic Line:

Question Stem:

Given:
- BOTH Units were at 100% power.
- A loss of Instrument Air occurred.
- Instrument Air pressure is 45 psig and dropping.
- The crew is preparing to start the Unit 1 SAC using a Nitrogen bottle as the control air supply.

Why is a Nitrogen bottle used to start the SAC under these conditions?

A To close BOTH the compressor unloader valve AND compressor discharge valve to prevent an overcurrent condition on the SAC.

B To satisfy the SAC control air pressure interlock.

C To provide motive force to open the compressor cooling water valves.

D To close the compressor unloader valve AND open the compressor discharge valve to pressurize the IA system.

Answer:	Task No:	R-SA-002	Question Source:	Question Difficulty
D	Obj No:	S.SA1-10	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-SA-XL-01, Service Air and Instrument Air

Explanation: Question meets KA. Question requires examinee knowledge of the physical connections and cause-effect relationships between the IA system and sensor air.
The instrument air (IA) system provides control air to the station air compressors (SACs). With low IA pressure (< 50 psig per 0BwOA SEC-4), a nitrogen bottle must be attached to the SAC to provide control air. Without control air, the SAC unloader valve will fail open and discharge valve will fail closed, which will prevent pressurization of the IA system and may cause SAC damage if the SAC is started without proper control air pressure.

A is incorrect, compressor discharge valve is opened by control air.
B is incorrect, control air pressure is not a starting circuit interlock.
C is incorrect, compressor cooling water valves are electrical solenoid valves and are not impacted by loss of control air.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
55	Both	2	1	103000	103000A3.01	3.9	4.2	Low

System/Evolution Name:
Containment System

Category Statement:
Ability to monitor automatic operation of the Containment System, including:

KA Statement:
Containment isolation

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- An inadvertent train A containment phase A isolation has occurred.

Which ONE of the valves listed below would indicate CLOSED as a DIRECT RESULT of the containment phase A actuation?

A 2FW009A, 2A Feedwater Isolation Valve

B 2CC9438, CC From RC Pumps Thermal Barrier Isolation Valve

C 2CV8152, Letdown Line Containment Isolation Valve

D 2MS001A, 2A Main Steam Isolation Valve

Answer:	Task No:	R-EF-001	Question Source:	Question Difficulty
C	Obj No:	S.EF1-07-D	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CC-XL-01, Componentn Cooling
ILT lesson plan I1-CD-XL-01, Condensate and Feedwater
ILT lesson plan I1-CV-XL-01, Chemical and Volume Control System
ILT lesson plan I1-MS-XL-01, Main Steam
2BwOA PRI-13

Explanation: Question meets KA. Question requires examinee ability to monitor automatic operation of the containment isolation system.
Question requires examinee analyze plant conditions and determine response of containment isolation system.
Inadvertent train A phase A isolation causes closure of 2CV8152, letdown line containment isolation valve.

A is incorrect, 2FW009A is a containment isolation valve, but valve is closed by feedwater isolation signal.
B is incorrect, 2CC9438 is a containment isolation valve, but valve is closed by phase B isolation signal.
C is correct, see explanation above.
D is incorrect, 2MS001A is a containment isolation valve, but valve is closed by main steamline isolation signal.

Date Written: 10/8/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
56	Both	2	2	001000	001000K2.05	3.1	3.5	Low

System/Evolution Name:
Control Rod Drive System

Category Statement:
Knowledge of bus power supplies to the following:

KA Statement:
M/G sets

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- BOTH Rod Drive MG sets are running in parallel.

- Bus 144 then becomes deenergized due to a bus fault.

Based on the above conditions, which ONE of the following correctly describes the status of the Rod Drive MG sets?

A 1A Rod Drive MG set will be deenergized
1B Rod Drive MG set will remain running.

B 1A Rod Drive MG set will remain running
1B Rod Drive MG set will be deenergized.

C BOTH rod drive MG sets will be deenergized.

D BOTH Rod Drive MG sets will remain running.

Answer:	Task No:	R-RD-001	Question Source:	Question Difficulty
B	Obj No:	S.RD1-11-A	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RD-XL-01, Control Rod Drive System big note AC-7, AC One-Line Diagram

Explanation: Question meets KA. Question requires examinee knowledge of bus power supplies to the control rod drive MG sets. Control rod drive MG set 480 volt power supplies are: 1A is 133Y cubicle 3C and 1B is 134Y cubicle 2A. Bus 133Y is powered from 4KV non-ESF bus 143 and Bus 134Y is powered from 4KV non-ESF bus 144. When bus 144 is deenergized, power is lost to only the 1B MG set. The 1A MG set will remain running.

A is incorrect, see explanation above.
B is correct, see explanation above.
C is incorrect, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
57	Both	2	2	002000	002000K3.02	4.2	4.5	Low

System/Evolution Name:
Reactor Coolant System (RCS)

Category Statement:
Knowledge of the effect that a loss or malfunction of the RCS will have on the following:

KA Statement:
Fuel

UserID:

Topic Line:

Question Stem:

What is the basis for the RCP trip criteria during an RCS small break loss of coolant accident?

A The RCPs are tripped to form a phase separation of RCS mass, which will then show RCS voiding on RVLIS for verification of Inadequate Core Cooling conditions.

B The RCPs are tripped to prevent masking of Inadequate Core Cooling conditions which would delay implementation of functional recovery guideline actions.

C The RCPs are tripped to prevent depletion of RCS water inventory which could lead to core uncovery if the RCPs were tripped later in the accident.

D The RCPs are tripped prior to the hot leg saturation temperature being met to ensure natural circulation can be achieved during the LOCA cooldown and depressurization.

Answer:	Task No:	R-EP-040	Question Source:	Question Difficulty
C	Obj No:	T.EP01A-01-A	Bank: INPO bank ID# 27315, Ginna Unit 1 4/27/2004	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-EP-XL-01A, RCP Trip/Restart.

Explanation: Question meets KA. Question requires examinee knowledge of the effect that a RCS malfunction will have on the fuel. Question requires examinee knowledge of small break LOCA accident analysis and RCP trip criteria.
During small break LOCA analysis, failure to trip the RCPs when trip criteria are met would cause excessive depletion of RCS water inventory which could lead to a severe core uncovery if the RCPs were tripped later in the accident.

A is incorrect, see explanation above.
B is incorrect, see explanation above.
C is correct, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
58	Both	2	2	014000	014000A4.01	3.3	3.1	High

System/Evolution Name: Rod Position Indication System (RPIS)

Category Statement: Ability to manually operate and/or monitor in the control room:

KA Statement
Rod selection control

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 97% power.
- 1A Tave channel failed 10 minutes ago.
- The crew has implemented 1BwOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL.
- The following indications are present on 1PM05J:
  - DRPI and Group Step Counters for Control Bank D are at 198 steps.
  - Rod Bank Select Switch is in MANUAL.
  - Tave Defeat Switch is in 1A.
  - Delta T Defeat Switch is in 1A.
  - 1TI-412, 1A Tave, is 592°F.
  - 1TI-422, 1B Tave, is 584°F.
  - 1TI-432, 1C Tave, is 584°F.
  - 1TI-442, 1D Tave, is 584°F.
  - 1TR-412, Tref, is 587.5°F.

If the Rod Bank Select Switch is placed in AUTO, which of the of indications below would initially be present on 1PM05J?

A The RODS OUT light would be lit AND 1SI-412, Rod Speed, would indicate 24 steps per minute.

B The RODS IN light would be lit AND 1SI-412, Rod Speed, would indicate 56 steps per minute.

C BOTH RODS OUT AND RODS IN light would be dark.

D The RODS OUT light would be lit AND 1SI-412, Rod Speed, would indicate 50 steps per minute.

Answer:	Task No:	R-RD-001	Question Source:	Question Difficulty
A	Obj No:	S.RD1-04	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(6)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-RD-XL-01, Control Rod Drive
System big note RD-2, Reactor Control Unit
Explanation: Question meets KA. Question requires examinee ability to monitor control rod selection control in the main control room. Question requires examinee to analyze plant conditions and determine which rod control indications would be present in the main control room. 1A Tave channel has failed to 592°F. Control rods initially stepped in and the non-failed Tave channels dropped to 584°F. Control rods are in manual to stop unwarranted rod motion from failed instrument. When Tave and delta T defeat switches are placed in 1A position, 1A Tave channel and delta T channels are removed from the rod control circuit. Highest of remaining 3 Tave channels would then be auctioneered high Tave. If rods are placed in auto, Tave/Tref difference is 584°F - 587.5°F = -3.5°F. From -1°F to -3°F, automatic rod withdrawal occurs at 8 steps per minute. From -3°F to -5°F, automatic rod control varies linearly from 8 - 72 spm. -3.5°F error = 24 spm (72-8 = 64/2 = 32spm /°F error X 0.5°F = 16 spm + 8 spm). Control rods withdraw at 24 spm.
A is correct, see explanation above.
B is incorrect, would be correct if 1A Tave channel was not defeated. (72-8 = 64/2 = 32spm /°F error X 1.5°F = 48 spm + 8 spm)
C is incorrect, correct for control rod select switch in manual.
D is incorrect, would be correct for -3.5°F error without 1°F - 3°F dead band figured in. (72/5 X 3.5°F) = 50.4 spm

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
59	Both	2	2	027000	0270002.1.33	3.4	4.0	High

System/Evolution Name: Containment Iodine Removal System (CIRS)

Category Statement: Conduct of Operations

KA Statement:
Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- Annunciator 1-3-C3, SPRAY ADD TANK LEVEL HIGH LOW, is LIT.
- 1LI-CS021, Spray Add Tank Level, is 75%.
- Chemistry reports Unit 1 Spray Add Tank NaOH sample is 28.6% by weight.

Based on the above conditions, the LCO for Spray Additive System is…

A NOT met. ONLY the Spray Add Tank level must be raised to meet the Spray Add System LCO.

B NOT met. ONLY the Spray Add Tank NaOH concentration must be raised to meet the Spray Add System LCO.

C NOT met. BOTH the Spray Add Tank level and NaOH concentration must be raised to meet the Spray Add System LCO.

D met. The Spray Add Tank level should be raised to clear annunciator 1-3-C3.

Answer:	Task No:	R-CS-002	Question Source:	Question Difficulty
C	Obj No:	S.CS1-13	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CS-XL-01, Containment Spray
Technical Specification 3.6.7, Spray Additive System

Explanation: Question meets KA. Question requires examinee ability to recognize indications for containment iodine removal system operating parameters which are entry-level conditions for technical specifications.
Tech spec 3.6.7, spray additive system requires spray add tank level to be 78.0% - 90.3% and NaOH concentration to be 30% - 36% by weight. Neither condition is met.

A is incorrect, NaOH concentration is also outside T.S. entry conditions.
B is incorrect, spray add tank level is also outside T.S. entry conditions.
C is correct, see explanation above.
D is incorrect, spray add tank level and NaOH concentration are outside T.S. entry conditions.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
60	Both	2	2	029000	029000A3.01	3.8	4.0	High

System/Evolution Name:
Containment Purge System (CPS)

Category Statement:
Ability to monitor automatic operation of the Containment Purge System, including:

KA Statement:
CPS isolation

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.
- A containment purge is in progress with the following indications present on 0PM02J:
  - 2VQ05C, Unit 2 Containment Mini-Flow Purge Exhaust Fan, RUN light is LIT.
  - 2VQ005A, Mini-Flow Purge Exhaust Inside Isolation Valve, OPEN light is LIT.
  - 2VQ005B, Mini-Flow Purge Exhaust Outside Isolation Valve, OPEN light is LIT.
  - 2VQ005C, Mini-Flow Purge Exhaust Outside Isolation Valve, OPEN light is LIT.

- A high radiation alarm is received on 2AR11J, Containment Fuel Handling Incident Rad Monitor.

Based on the above conditions and assuming NO operator action, which ONE of the following sets of indications would be present on 0PM02J 30 seconds later?

A 2VQ05C TRIP AND STOP lights LIT
2VQ005A, 2VQ005B, AND 2VQ005C CLOSED lights LIT

B 2VQ05C TRIP AND STOP lights LIT
2VQ005B OPEN light LIT
2VQ005A AND 2VQ005C CLOSED lights LIT

C 2VQ05C RUN light LIT
2VQ005B OPEN light LIT
2VQ005A AND 2VQ005C CLOSED lights LIT

D 2VQ05C RUN light LIT
2VQ005B CLOSED light LIT
2VQ005A AND 2VQ005C OPEN lights LIT

Answer:	Task No:	R-VQ-006	Question Source:	Question Difficulty
B	Obj No:	S.VP1-09-B	New	High
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-VP-XL-01, Containment Vent and Containment Purge
ILT lesson plan I1-AR-XL-01, Radiation Monitors
BwOP AR/PR-11T1, Radiation Monitor Interlock Function Table
System big note VP-2, Containment Purge

Explanation: Question meets KA. Question requires examinee ability to monitor automatic operation of the containment purge system, during containment purge system isolation. Question requires examinee analyze plant conditions and determine response of containment purge system and subsequent main control room indications.
When high radiation is received on 2AR11J, a Train A containment ventilation actuation occurs, closing 2VQ005A and C. 2VQ005B receives closed signal from Train B containment vent isolation and remains open. 2VQ05C does not receive trip signal directly from containment vent actuation, but will trip when 2VQ005C begins closing (comes off open limit switch contact).
A is incorrect, 2VQ005B is train B containment vent actuation and would remain open.
B is correct, see explanation above.
C is incorrect, would be correct for components actuated directly by containment vent actuation. 2VQ05C is interlocked with 2VQ005C position.
D is incorrect, would be correct for components actuated directly by train B containment vent actuation.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
61	Both	2	2	035000	035000K6.01	3.2	3.6	High

System/Evolution Name:
Steam Generator System (S/GS)

Category Statement:
Knowledge of the effect of a loss or malfunction of the following will have on the S/GS:

KA Statement:
MSIVs

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 50% power.
- All systems are normally aligned.
- 1D MSIV fails closed.

Based on plant conditions and assuming NO operator action, which ONE of the following will occur in the first 30 seconds of the transient?

A The 1A, 1B, & 1C SG levels will initially rise due to lower steam pressure in the 1A, 1B, & 1C SGs.

B The 1D SG level will initially rise due to rising Thot in the 1D RCS loop.

C 1D SG pressure will rise but will remain below the 1D SG PORV lift setpoint.

D FW flow to the 1D SG will rise due to 1FW540, FW Regulating Valve, throttling open.

Answer:	Task No:	R-FW-006	Question Source:	Question Difficulty
A	Obj No:	A.HT7-09-C	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FW-XL-01, Steam Generator Water Level Control
ILT lesson plan I1-HT-XL-07, Steady State, Normal, and Abnormal Operation

Explanation: Question meets KA. Question requires examinee knowledge of the effect of a MSIV malfunction will have on the steam generators. When 1D MSIV closes, steam pressure in the unaffected SGs will drop due to higher steam demand from the unaffected SGs. Lowering steam pressure will cause an initial swell in unaffected SG level.

A is correct, see explanation above.
B is incorrect, Thot in the affected loop will drop and 1D SG level will drop.
C is incorrect, 1D SG pressure is initially approximately 1040 psig with RCS hot leg temperature at approximately 587°F. Closure of the 1D MSIV will cause 1D SG pressure to attempt to rise to the saturation pressure (approximately 1400 psig at 587°F). 1D SG pressure will rise above the 1D SG PORV lift setpoint approximately 15 seconds after the 1D MSIV closes.
D is incorrect, FW flow to the 1D SG will drop due to rising pressure in the 1D SG.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
62	Both	2	2	041000	041000A1.01	2.9	2.9	High

System/Evolution Name:
Steam Dump System (SDS) and Turbine Bypass Control

Category Statement:
Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the SDS controls including:

KA Statement:
T-ave., verification above low/low setpoint

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A steam generator tube rupture occurred in the 1D SG.
- The crew has initiated an RCS cooldown with the following conditions:
  - ALL RCPs are running.
  - Steam dumps are in STEAM PRESSURE mode.
  - Bypass Permissive LO-2 TAVE STM DUMP INTLK P-12 is DARK.
  - 1PK-507, MS Header Pressure Controller, is in MANUAL at 35% demand.
  - BOTH Steam Dump Bypass Interlock switches are in ON.

Based on the above conditions and assuming NO operator action,…

A ALL steam dumps would be FULL CLOSED.

B ALL group one steam dumps would be PARTIALLY OPEN AND ALL other steam dumps would be CLOSED.

C ALL group one steam dumps would be FULL OPEN AND ALL other steam dumps would be CLOSED.

D ALL group one steam dumps would be FULL OPEN AND ALL group two steam dumps would be PARTIALLY OPEN.

Answer:	Task No:	R-DU-001	Question Source:	Question Difficulty
D	Obj No:	3C.DU-01-A-2	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-DU-XL-01, Steam Dumps
System big note MS-4, Steam Dumps
System big note MS-5, Steam Dumps

Explanation: Question meets KA. Question requires examinee ability to monitor parameters associated with operating the steam dump system including Tave and verification of Tave above low-low setpoint. Question requires examinee interpret plant indications and determine which additional indications would be present.
With steam dump bypass interlock switches to on, all steam dumps are enabled. With P-12 dark, RCS Tave is above the low-low Tave setpoint. With 1PK-507 at 35%, group one steam dumps would be full open and group 2 would be partially open.

A is incorrect, would be correct for either RCS Tave below P-12 and bypass interlock switches in on or bypass interlock switches in off.
B is incorrect, would be correct for 1PK-507 < 25% demand and either RCS Tave below P-12 with bypass interlock switches in on after being placed in bypass interlock below P-12.
C is incorrect, would be correct for RCS Tave below P-12 with bypass interlock switches in on after being placed in bypass interlock below P-12.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
63	Both	2	2	056000	056000A2.04	2.6	2.8	High

System/Evolution Name:
Condensate System

Category Statement:
Ability to (a) predict the impacts of the following malfunctions or operations on the Condensate System and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

KA Statement:
Loss of condensate pumps

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- 1D CD/CB pump is OOS.
- All other systems are normally aligned.
- 1C CD/CB pump has just tripped.

Based on the above conditions, the crew will…

A start an additional HD pump to lower HD tank level to maintain the HD Tank rupture disk integrity.

B IMMEDIATELY trip the reactor due to an inadequate number of CD/CB pumps running.

C initiate a turbine runback to ensure adequate suction pressure can be supplied to the main feedwater pumps.

D open the CB pump recirc valves to lower CB pressure and allow the HD pumps to supply the FW pumps.

Answer:	Task No:	R-OA-030	Question Source:	Question Difficulty
C	Obj No:	T.OA36-05	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-36, BwOA SEC-1
ILT lesson plan I1-CD-XL-01, Condensate and Feedwater
1BwOA SEC-1, Secondary Pump Trip

Explanation: Question meets KA. Question requires examinee ability to predict the impact of loss of condensate pump and determine procedural actions required to mitigate the consequences of the condensate pump trip.
With 1D CD/CB pump oos, only 3 CD/CB pumps are available and all would be in operation. When 1C CD/CB pump trips, 1BwOA SEC-1, SECONDARY PUMP TRIP, directs starting a standby CD/CB pump (none available) or initiating a turbine runback due to inadequate suction flow to the main FW pumps.

A is incorrect, starting an additional HD pump would not lower HD tank level, since CB header pressure is high (HD pump would not add more outflow). Action to control HD tank level is to open HD tank overflow valve.
B is incorrect, would be correct for < 2 CD/CB pumps running.
C is correct, see explanation above.
D is incorrect, opening CD/CB pump recirc valves would lower CB header pressure, but would also lower flow to FW pumps.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
64	Both	2	2	071000	071000K5.04	2.5	3.1	High

System/Evolution Name:
Waste Gas Disposal System (WGDS)

Category Statement:
Knowledge of the operational implications of the following concepts as they apply to the Waste Gas Disposal System:

KA Statement:
Relationship of hydrogen/oxygen concentrations to flammability

UserID:

Topic Line:

Question Stem:

Given:
- BOTH Units are at 100% power
- All systems are normally aligned.
- The following sample results are obtained:
  - On-line Gas Decay Tank (GDT) Oxygen is 4.5%.
  - On-line Gas Decay Tank (GDT) Hydrogen is 5.1%.

Based on the above conditions, the FIRST action the crew will take is…

A TRANSFER a portion of the affected GDT contents to another GDT.

B STOP ALL additions of waste gas to the GW system.

C DILUTE the affected GDT with nitrogen.

D RELEASE the affected GDT to the environment.

Answer:	Task No:	R-OA-092	Question Source:	Question Difficulty
B	Obj No:	T.OA19-03	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-19, 0BwOA PRI-9
0BwOA PRI-9, Oxygen/Hydrogen Explosive Mixture

Explanation: Question meets KA. Question requires examinee knowledge of the operational implications of the relationship of hydrogen/oxygen concentrations to flammability as they apply to the Waste Gas Disposal System. Question requires examinee analyze plant conditions and determine procedurally directed actions in response to flammable mixture in GDT.
With oxygen > 4% and hydrogen > 4%, explosive mixture exists in GDT. 0BwOA PRI-9, OXYGEN/HYDROGEN EXPLOSIVE MIXTURE, directs first stopping all additions of waste gas to the GW system.

A is incorrect, would be correct for high activity in a GDT. Transferring a portion of affected GDT to another would create potential for 2 GDTs with explosive mixture.
B is correct, see explanation above.
C is incorrect, subsequent action may be to purge GDT with nitrogen in response to explosive mixture, but only after additions to the GW system are stopped. Question asks for first action.
D is incorrect, subsequent action may be to release GDT in response to explosive mixture, but only after additions to the GW system are stopped. Question asks for first action.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
65	Both	2	2	086000	086000K4.05	3.0	3.4	Low

System/Evolution Name:
Fire Protection System (FPS)

Category Statement:
Knowledge of Fire Protection System design feature(s) and/or interlock(s) which provide for the following:

KA Statement:
Halon

UserID: Topic Line:

Question Stem: Automatic Halon suppression actuation to an Upper Cable Spreading Room (UCSR) will occur if…

A one thermal detector AND one particles of combustion detector in the same UCSR zone detect a fire.

B one thermal detector AND one particles of combustion detector in two different UCSR zones detect a fire.

C either a thermal detector OR a particles of combustion detector in any UCSR zone detects a fire.

D either a thermal detector OR a particles of combustion detector in two different UCSR zones detect a fire.

Answer:	Task No:	R-FP-001	Question Source:	Question Difficulty
A	Obj No:	S.FP1-08	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FP-XL-01, Fire Protection System big note FP-1, Halon Subsystem

Explanation: Question meets KA. Question requires examinee knowledge of the fire protection system design features and interlocks which provide for the Halon subsystem actuation.
Halon subsystem is actuated by 2/2 coincidence between one thermal detector AND one particles of combustion detector in the same UCSR zone detect a fire.

A is correct, see explanation above.
B is incorrect, see explanation above.
C is incorrect, see explanation above.
D is incorrect, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
66	Both	3		194001	1940012.1.1	3.7	3.8	Low

System/Evolution Name: Generic

Category Statement: Conduct of Operations

KA Statement:
Knowledge of conduct of operations requirements.

UserID: Topic Line:

Question Stem:

Given:
- The current date is 3/28/2007.
- An NSO was assigned to the clearance order group on 01/01/2007.
- The NSO's license was active at the time of assignment to the clearance order group.
- Since being assigned to the clearance order group, the NSO worked 6 eight hour shifts as Unit 1 NSO.

Based on the above conditions, the NSO's license status currently is…

A INACTIVE. The NSO's license became inactive when the NSO was assigned to the clearance order group.

B ACTIVE, and will remain active provided the NSO works ONE more 8 hour shift in the MCR prior to 4/01/2007.

C ACTIVE, and will remain active until 6/30/2007.

D ACTIVE, and will remain active provided the NSO works ONE more 8 hour shift in the MCR prior to 7/01/2007.

Answer:	Task No:	R-AM-075	Question Source:	Question Difficulty
B	Obj No:	T.AM29-07	Bank: INPO bank question ID# 24024 Cooper Unit 1 8/2/2002	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
OP-AA-105-102, Active License Maintenance

Explanation: Question meets KA. Question requires examinee knowledge of the conduct of operations requirements for NRC active license maintenance.
In order to maintain an active NRC RO license, license holders must stand 7 eight hour shifts per calendar quarter in the main control room. Currently the RO has 6 shifts for current quarter and will remain active if one more shift watch is completed prior to expiration of the first quarter 2007 (3/31/2007).

A is incorrect, off-shift personnel maintain license active by standing required watches in MCR.
B is correct, see explanation above.
C is incorrect, would be correct if RO had stood required number of watches for current quarter.
D is incorrect, would be correct if requirement was semi-annual vs. current quarterly requirement.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
67	Both	3		194001	1940012.1.22	2.8	3.3	High

System/Evolution Name: Generic

Category Statement: Conduct of Operations

KA Statement:
Ability to determine Mode of Operation.

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is shutdown, preparing for refueling.
- All systems are normally aligned for the current plant conditions.
- At 0600, the following conditions are noted:
  - ALL Cold Leg WR Temperature indicators are 175°F.
  - ALL WR RCS Pressure indicators are 100 psig.
  - ALL reactor vessel head closure bolts are fully tensioned.

- RHR is lost and ALL Cold Leg WR Temperature indicators begin rising at 3°F/minute.

Based on the above indications and assuming the above conditions and trends continue, which ONE of the following correctly identifies the Unit 1 MODE at 0600 and Unit 1 MODE at 0700?

	MODE at 0600	MODE at 0700
A	MODE 5	MODE 3
B	MODE 5	MODE 4
C	MODE 6	MODE 3
D	MODE 6	MODE 4

Answer:	Task No:	R-AM-012	Question Source:	Question Difficulty
A	Obj No:	S.TS1-02	Modified: INPO bank question ID# 30345 Point Beach Unit 1 1/20/2006, changed question stem to make a different distracter correct answer	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
Technical Specification table 1.1-1, Definitions

Explanation: Question meets KA. Question requires examinee ability to determine Mode of Operation based on plant indications and procedures. At 0600, Unit 1 is initially in Mode 5 (RCS temp < or equal to 200°F, Keff < 0.99). At 0700, RCS temperature will be 355°F, which is Mode 3 (RCS temp > 350°F.

A is correct, see explanation above.
B is incorrect, Unit 1 is in Mode 5 initially. Unit 1 is in Mode 4 from approximately 0608 until approximately 0658.
C is incorrect, Unit 1 is in Mode 5 initially. Unit 1 would be in Mode 6 initially if one or more reactor vessel head bolts was less than fully tensioned and Unit 1 will enter Mode 3 at 0719 if current trends continue.
D is incorrect, Unit 1 is in Mode 5 initially. Unit 1 would be in Mode 6 initially if one or more reactor vessel head bolts was less than fully tensioned.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
68	Both	3		194001	1940012.1.24	2.8	3.1	Low

System/Evolution Name:
Generic

Category Statement:
Conduct of Operations

KA Statement:
Ability to obtain and interpret station electrical and mechanical drawings.

UserID:

Topic Line:

Question Stem:

Referring to the attached valve diagram, which ONE of the following is correct concerning the valve?

The valve…

(The valve diagram is attached as the next page)

A will allow flow in ONLY ONE direction.

B is a globe valve.

C will open if power is removed from its solenoid.

D is normally closed at 100% power.

Answer:	Task No:	R-AM-076	Question Source:	Question Difficulty
C	Obj No:	A.BP2-01	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(4)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-BP-XL-02, P & ID and C & ID
M-34, sheet 2, P & ID Index and Symbols

Explanation: Question meets KA. Question requires examinee ability to interpret station electrical drawings.
Valve shown is solenoid operated gate valve, which is shown in its normally open at full power position. Solenoid as shown is deenergized (valve is energized to close). Valve will be in position shown when power is removed from solenoid.

A is incorrect, valve is a gate valve and will allow flow in both directions. Would be correct for stop check valve which has similar valve symbol.
B is incorrect, valve is gate valve.
C is correct, see explanation above.
D is incorrect, valve is normally open at 100% power.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
69	Both	3		194001	1940012.2.4	2.8	3.0	High

System/Evolution Name: Generic

Category Statement: Equipment Control

KA Statement:
(multi-unit) Ability to explain the variations in control board layouts, systems, instrumentation and procedural actions between units at a facility.

UserID: Topic Line:

Question Stem:

Concerning Unit differences in the MCR, which of the following controls/indications are located ONLY on the Unit 2 main control boards?

A Spent Fuel Pit Level High Low Annunciator (_-1-C1)

B Feedwater Isolation Valve Bypass Flow Controllers (_FW046A-D)

C RSH Transformer Feed to 4KV Bus 045 control switch (ACB 0451) .

D Unit 0 CC Hx Outlet Temperature Indicator (0TI-675)

Answer:	Task No:	R-AM-076	Question Source:	Question Difficulty
B	Obj No:	TU1U201-01D	Modified: Braidwood 2006 NRC exam. Changed unit, distractors, and answers	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(7)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-U1U2-XL-01, Unit 1 and Unit 2 Differences
Photos of Unit 1 and Unit 2 MCB panels.

Explanation: Question meets KA. Question requires examinee ability to explain the variations in control board layouts between Units 1 & 2 at Braidwood Station.
2FW046A-D controllers are located on Unit 2 MCB only. 1FW046A-D were removed when Unit 1 SGs were replaced.

A is incorrect, spent fuel pit level high annunciator is located on 1PM06J.
B is correct, see explanation above.
C is incorrect, ACB 0451 control switch is located on 1PM01J.
D is incorrect, 0TI-675 is located on 1PM06J.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
70	Both	3		194001	1940012.2.13	3.6	3.8	High

System/Evolution Name: Generic

Category Statement: Equipment Control

KA Statement:
Knowledge of tagging and clearance procedures.

UserID: Topic Line:

Question Stem:

Given:
- A Clearance Order (C/O) for taking a pump discharge valve OOS for discharge valve replacement is being developed and is ready for approval.
- The following SEQUENCE for the First Hang Checklist was developed to remove the pump discharge valve from service:

1. Pump control switch was INFO CARDED in the PULL OUT position.
2. Pump 480V MCC breaker was DANGER TAGGED in the OFF position.
3. A fail open Air Operated Valve (AOV) downstream of the discharge valve to be repaired was DANGER TAGGED in the BLOCKED CLOSED position.
4. Pump suction valve was DANGER TAGGED in the CLOSED position.
5. System vent valve was INFO CARDED as "OPEN as needed to vent system".
6. System drain valve was INFO CARDED as "OPEN as needed to drain system".

The C/O was NOT designated as EXCEPTIONAL since the affected portion of the system can be adequately vented and drained.

Based on the above conditions, the C/O…

A can be approved as written.

B pump suction valve MUST be sequenced BEFORE the pump discharge AOV step prior to approval.

C system vent AND drain valves MUST be changed to DANGER TAGS prior to approval.

D MUST be designated as EXCEPTIONAL prior to approval.

Answer:	Task No:	R-AM-010	Question Source:	Question Difficulty
D	Obj No:	T.AM33-04	Bank: Braidwood LORT bank question ID# BWLC3EAM6007	Medium
Time:	Cross Ref:	10CFR55.41(b)(10)		
1				

No reference will be provided to examinee. Reference:
OP-AA-109-101, Clearance and Tagging

Explanation: Question meets KA. Question requires examinee knowledge of tagging and clearance procedures.
OP-AA-109-101, CLEARANCE AND TAGGING, requires a checklist to be specified as exceptional if a blocking or gagging device is used for isolation. The fail open air operated valve is blocked closed.

A is incorrect, checklist must be designated as exceptional due to use of a gagging or blocking device.
B is incorrect, pump discharge is sequenced prior to suction.
C is incorrect, info cards are used for vent and drain valves.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
71	Both	3		194001	1940012.3.1	2.6	3.0	High

System/Evolution Name:
Generic

Category Statement:
Radiological Controls

KA Statement:
Knowledge of 10 CFR: 20 and related facility radiation control requirements.

UserID:

Topic Line:

Question Stem:

Given:
- A male radiation worker at Braidwood Station returned 2 weeks ago from outage support at Byron Station.

- His Total Effective Dose Equivalent (TEDE) received at Byron was 120 mrem.
- As a result of an injury, the worker had a wrist x-ray one week ago estimated at 15 mrem exposure to the wrist.
- The worker's current TEDE from Braidwood for this year is 35 mrem.

Based on the above information, what is the calculated MAXIMUM annual non-emergency TEDE that he can receive at Braidwood for the remainder of this year without exceeding the Federal Exposure Limits?

A 4965 mrem

B 4880 mrem

C 4845 mrem

D 4830 mrem

Answer:	Task No:	R-AM-027	Question Source:	Question Difficulty
C	Obj No:	T.AM46-01	Modified: Braidwood 2006 NRC exam. Changed stem, distractors, and answers	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(12)		

Reference:
No reference will be provided to examinee.
RP-AA-203, Exposure Control and Authorization

Explanation: Question meets KA - question requires examinee knowledge of 10CFR20 exposure requirements and requires examinee determine total exposure.
Workers TEDE limit is 5000 mrem/year. Worker accumulated 120 mrem at another Exelon site, which counts toward his yearly total.
Worker has accumulated 35 mrem at Braidwood. 15 mrem from X-ray is not occupational exposure and does not count towards TEDE.
Total remain TEDE is 5000 - [120 + 35] = 4845 mrem

A is incorrect, only accounts for exposure at Braidwood.
B is incorrect, only accounts for exposure at other Exelon site.
C is correct, accounts for total occupational exposure.
D is incorrect, accounts for non-occupational exposure in addition to occupational exposure.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
72	Both	3		194001	1940012.3.11	2.7	3.2	High

System/Evolution Name:
Generic

Category Statement:
Radiological Controls

KA Statement:
Ability to control radiation releases.

UserID:

Topic Line:

Question Stem:

Given:
- An 0F Gas Decay Tank release is being performed in accordance with BwOP GW-500T1, GAS DECAY TANK RELEASE FORM.
- 0GW014, Waste Gas Discharge Valve, is 100% OPEN.
- The Unit 1 and Unit 2 RM-11s are alarming with following indications:
  - 2PB128, Vent Stack Effluent 0A Gas Channel, is RED.
  - 2PC328, Vent Stack Effluent 0A Iodine Channel, is YELLOW.
  - ALL other 1PR28J channels are GREEN.
  - ALL 0PR02J, Gas Decay Tank Effluent, channels are GREEN.

Based on the above conditions, the control room operator(s) will…

A direct the Rad Waste Control Room operator to IMMEDIATELY close 0GW014.

B direct the Rad Waste Control Room operator to lower demand on 0GW014 to lower the release rate.

C direct the Rad Waste Control Room operator to verify 0GW014 has automatically closed.

D verify the Aux Building Charcoal Booster Fans have automatically started at 0PM02J.

Answer:	Task No:	R-GW-001	Question Source:	Question Difficulty
A	Obj No:	3C.GW-01-B	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(13)		

Reference:
No reference will be provided to examinee.
BwAR 2-2PR28J

Explanation: Question meets KA. Question requires examinee ability to control radiation releases by interpreting plant indications and determining correct action to be taken.
With vent stack effluent channel in alert or high alarm (red or yellow on the RM-11) BwAR 2-2PR28J subsequent operator action is to stop any gas decay tank release in progress, regardless of gas decay effluent channel readings.

A is correct, see explanation above.
B is incorrect, release rate is not lowered, release is terminated.
C is incorrect, 0GW014 automatically closes on 0PR02J actuation.
D is incorrect, subsequent action of BwAR 2-2PR28J is to consider manually starting aux building charcoal fans. They do not auto start on 1PR28J high rad condition.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
73	Both	3		194001	1940012.4.1	4.3	4.6	Low

System/Evolution Name: Generic

Category Statement: Emergency Procedures/Plan

KA Statement:
Knowledge of EOP entry conditions and immediate action steps.

UserID: Topic Line:

Question Stem:

Which ONE of the following actions/responses IS listed in 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION, step 1, but IS NOT listed in 1BwCA-0.0, LOSS OF ALL AC POWER, step 1?

A Rod at bottom lights - ALL LIT

B Reactor trip and bypass breakers - OPEN

C Neutron flux - dropping

D Manually trip the reactor

Answer:	Task No:	R-AM-022	Question Source:	Question Difficulty
A	Obj No:	T.EP00-04-E	Modified: INPO bank question ID# 26792 Kewaunee Unit 1 2/2/2004. Modified question to change comparison between E-0 and	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)	FR-S.1 actions to comparison between E-0 and ECA-0.0 actions.	

New answer and one new distracter added.

Reference:
No reference will be provided to examinee.
1BwEP-0, Reactor Trip or Safety Injection
1BwCA-0.0, Loss of All AC Power

Explanation: Question meets KA. Question requires examinee knowledge of EOP immediate action steps.
1BwCA-0.0 does not contain step to check rod at bottom lights lit due to loss of all ac causing loss of rod at bottom indication.

A is correct, see explanation above.
B is incorrect, contained in both 1BwEP-0 and 1BwCA-0.0 step 1.
C is incorrect, contained in both 1BwEP-0 and 1BwCA-0.0 step 1.
D is incorrect, contained in both 1BwEP-0 and 1BwCA-0.0 step 1.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
74	Both	3		194001	1940012.4.3	3.5	3.8	Low

System/Evolution Name: Generic

Category Statement: Emergency Procedures/Plan

KA Statement:
Ability to identify post-accident instrumentation.

UserID: Topic Line:

Question Stem:

A black dot in the upper right hand corner of an MCR instrumentation placard/label signifies that the instrument…

A is NOT environmentally qualified.

B has a remote shutdown instrument.

C is intended for use under accident conditions.

D is being evaluated to be abandoned in place.

Answer:	Task No:	R-AM-014	Question Source:	Question Difficulty
C	Obj No:	T.AM71-01	New	Low
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
Regulatory Guide 1.97
1/2BwOSR 3.3.4.1, Remote Shutdown Panel Instrumentation Monthly Surveillance
CC-A-109, Interim Abandoned Equipment Identification, Evaluation, and Control
CC-AA-304, Component Classification

Explanation: Question meets KA. Question requires examinee ability to identify post-accident instrumentation in the main control room. MCR post accident instrumentation placards have a black dot in the upper right hand corner to signify the instrument is post-accident instrumentation.

A is incorrect, non-environmentally qualified instrumentation is marked in passport, but not marked in the MCR.
B is incorrect, RSDP instrumentation is specified in 1/2BwOSR 3.3.4.1
C is correct, see explanation above.
D is incorrect, abandoned in place items have a separate placard stating component abandoned in place per CC-AA-109.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
75	Both	3		194001	1940012.4.29	2.6	4.0	Low

System/Evolution Name:
Generic

Category Statement:
Emergency Procedures/Plan

KA Statement:
Knowledge of the emergency plan.

UserID:

Topic Line:

Question Stem:

Given:
- An event has occurred and an emergency plan declaration at the ALERT level has been made.

Assuming ALL agencies below are fully staffed, in accordance with EP-MW-114-100, MIDWEST REGION OFFSITE NOTIFICATIONS, which of the following offsite agencies will respond to the initial roll call during the INITIAL NARS transmittal?

NOTE:
Illinois Emergency Management Agency = Illinois EMA
Illinois Radiological Emergency Assessment Center = Illinois REAC

A ONLY Illinois EMA AND Illinois REAC

B ONLY Illinois EMA, Illinois REAC, AND NRC operations center

C ONLY Illinois EMA, Illinois REAC, AND Grundy, Kankakee, and Will County Sheriffs

D Illinois EMA, Illinois REAC, NRC operations center, AND Grundy, Kankakee, and Will County Sheriffs

Answer:	Task No:	R-ZP-004	Question Source:	Question Difficulty
A	Obj No:	T1.ZP-34	New	Medium
Time: 1	Cross Ref:	10CFR55.41(b)(10)		

Reference:
No reference will be provided to examinee.
EP-MW-114-100, Midwest Region Offsite Notifications
EP-MW-114-100-F-01, Nuclear Accident Reporting System Form

Explanation: Question meets KA. Question requires examinee knowledge of the emergency plan.
Following Alert classification, station will contact state authorities using NARS code 20, which will connect the NARS phone to IEMA and REAC for initial roll call in accordance with EP-MW-114-100.

A is correct, see explanation above.
B is incorrect, NRC operations center must be notified as soon as possible and within 1 hour, but NRC is not included on NARS call transmittal.
C is incorrect, Grundy, Will, and Kankakee County Sheriffs are contacted if initial classification is General Emergency by dialing NARS code 38.
D is incorrect, NRC is not included on initial NARS call transmittal and Will, and Kankakee County Sheriffs are contacted if initial classification is General Emergency by dialing NARS code 38.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
76	SRO	1	1	000038	0000382.4.6	3.1	4.0	High

System/Evolution Name:
Steam Generator Tube Rupture (SGTR)

Category Statement:
Emergency Procedures/Plan

KA Statement:
Knowledge symptom based EOP mitigation strategies.

UserID:

Topic Line:

Question Stem:

Given:
- 1BwEP-3, STEAM GENERATOR TUBE RUPTURE, is in progress due to a rupture on the 1A SG.
- The crew has just completed terminating high head ECCS flow.
- Normal charging and letdown are in service.
- ALL RCPs are running.
- The following conditions are then noted:
  - 1A SG NR level is off scale high.
  - 1A SG pressure is 1050 psig and stable.
  - 1B, 1C, and 1D SG NR levels are 45% and stable.
  - 1B, 1C, and 1D SG pressures are 700 psig and stable.

  - RCS pressure is 850 psig and slowly dropping.
  - Iconics subcooling has lowered to 0°F.
  - PZR level is 35% and lowering at 2% per minute.
  - CNMT pressure is 1.6 psig and slowly rising.

Based on the above conditions, in order to mitigate the transient in progress, the NEXT action(s) the Unit Supervisor will direct the crew to perform is/are…

A immediately transition to 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION.

B raise demand on 1CV121, Charging Pump Flow Control Valve, AND turn on ALL PZR heaters.

C immediately trip ALL RCPs.

D manually start and align ECCS pumps AND transition to 1BwCA-3.1, SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY DESIRED.

Answer:	Task No:	S-EP-055	Question Source:	Question Difficulty
D	Obj No:	T.EP04-08	New	High
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
1BwEP-3, Steam Generator Tube Rupture

Explanation: Question meets KA. Question requires examinee knowledge symptom based EOP mitigation strategies and question requires examinee ability to determine and interpret facility conditions and select appropriate procedure actions during SGTR.
With above conditions, RCS LOCA has occurred concurrent with SGTR. Subcooling has been lost and PZR level is lowering at approximately 250 gpm. 1BwEP-3 OAS actions are to start and align ECCS pumps and transition to 1BwCA-3.1 if either RCS subcooling is lost or PZR level cannot be maintained > 15% following high head ECCS flow termination.

A is incorrect, faulted SG would cause RCS pressure and PZR level to lower and containment pressure to rise, however, RCS subcooling would rise and intact SG pressures are stable as stated in stem, indicating no faulted SG is present.
B is incorrect, raising demand on 1CV121 and energizing PZR heaters may mitigate imbalance in primary to secondary leakage if magnitude of leakage was smaller. These actions would not effectively mitigate the transient in progress since PZR level is dropping greater than the capacity of one charging pump in the charging alignment and ruptured SG pressure is > RCS pressure, indicating flow from the RCS to the ruptured SG is occurring. Flow is occurring from ruptured SG to RCS.
C is incorrect, RCP trip is part of small break LOCA mitigation strategy, however, 1BwEP-3 OAS RCP trip criteria is not met. RCS pressure is below RCP trip criteria, but controlled cooldown has been previously initiated and SI flow would not be indicated since ECCS is terminated. Once controlled cooldown is completed, RCS pressure RCP trip criteria does not apply and 1BwCA-3.1 does not contain RCP trip criteria.
D is incorrect, see explanation above.

Date Written: 6/28/07 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
77	SRO	1	1	000054	000054AA2.01	4.3	4.4	High

System/Evolution Name:
Loss of Main Feedwater (MFW)

Category Statement:
Ability to determine and interpret the following as they apply to the Loss of Main Feedwater (MFW):

KA Statement:
Occurrence of reactor and/or turbine trip

UserID: Topic Line:
Question Stem:

Given:
- Unit 1 was at 100% power, preparing to enter coast down for an end of cycle refueling outage.
- 1A FW pump is OOS.
- All other systems were normally aligned.
- An inadvertent FW isolation occurred.
- ALL FW isolation monitor lights are LIT at 1PM04J.

- The following conditions are present 60 seconds after the FW isolation:
  - ALL PR NIs are 0%.
  - IR SUR is -0.5 dpm.
  - ALL MSIVs are open.
  - Annunciator 1-18-C3, EMERGENCY TRIP HEADER PRESSURE LOW TRIP, is NOT LIT.
  - SG 1A - 1D Train B Flow > 160 gpm lights are ALL lit at 1PM06J.
  - ALL SG WR levels are 25% and lowering.
  - RCS temperature is 480°F and lowering.

Based on the above indications,…

A BOTH the reactor AND turbine are NOT tripped. RCS pressure will exceed the accident analysis limits during the event.

B the reactor is tripped BUT the turbine is NOT tripped. RCS pressure will NOT exceed the accident analysis limits during the event.

C Aux Feed flow is NOT occurring to the SGs. RCS pressure will exceed the accident analysis limits during the event.

D BOTH the reactor AND turbine are tripped. RCS pressure will NOT exceed the accident analysis limits during the event.

Answer:	Task No:	S-FR-007	Question Source:	Question Difficulty
B	Obj No:	T.FR01-07	New	High
Time: 1	Cross Ref:	10CFR55.43(b)(1)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FR-XL-01, BwFR-S.1
ILT lesson plan I1-AF-XL-01, Auxiliary Feedwater
1BwFR-S.1, Response to Nuclear Generation ATWS
BwAR 1-18-C3

Explanation: Question meets KA. Question requires examinee determine and differentiate between reactor and turbine trip during a loss of main feedwater and requires examinee knowledge of accident analysis for loss of main feedwater. Question is SRO level because SRO is required to determine overall plant conditions and apply the appropriate mitigation strategy.
Based on the above stated conditions, the reactor is tripped but the turbine is not tripped. PR NI's are 0% power and IR SUR indicates subcriticality (< -0.3 dpm per EOPs). Turbine is not tripped based on lowering SG levels, lowering RCS temperature, and PR NI level. RCS pressure would exceed the accident analysis limit if loss of FW ATWS occurred (reactor not tripped).

A is incorrect, the reactor is tripped.
B is correct, see explanation above.
C is incorrect, with all systems normally aligned, AF pumps would start and deliver flow to the SGs. SG level is lowering due to no turbine trip.
D is incorrect, the reactor is tripped.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
78	SRO	1	1	000058	0000582.4.30	2.2	3.6	High

System/Evolution Name:
Loss of DC Power

Category Statement:
Emergency Procedures/Plan

KA Statement:
Knowledge of which events related to system operations/status should be reported to outside agencies.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- All systems are normally aligned.

Which ONE of the conditions below would require notification of the NRC in accordance with 10 CFR 50.72?

(The Exelon Reportability Reference Manual is available for reference)

A The SPDS Iconics display in the MCR has been unavailable for the last 6 hours.

B PZR PORV 2RY455A indicated seat leakage. RCS pressure lowered to 2215 psig. 2RY8000A, PORV Isolation Valve, was closed and RCS pressure has returned to NOP.

C During performance of a slave relay surveillance, 2A CV pump inadvertently starts due to a faulty relay.

D DC bus 212 faults and deenergizes. All systems respond as designed.

Answer:	Task No:	S-AM-102	Question Source:	Question Difficulty
D	Obj No:	T.AM43-05	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(1)		

Reference:
Exelon Reportability Reference Manual will be provided to examinee.
LS-AA-1110, Exelon Reportability Reference Manual

Explanation: Question meets KA. Question requires examinee knowledge of which events related to system operations/status should be reported to outside agencies and requires examinee interpret plant conditions and determine reportability requirements.
When DC bus 212 faults at 100% power, a reactor trip will occur on lowering SG level. Valid RPS actuation with the reactor critical is reportable within 4 hours in accordance with LS-AA-1110, SAF 1.6. Also, AF actuation would occur when SG low-2 level is reached and would be reportable in accordance with LS-AA-1110, SAF 1.7.

A is incorrect, would be correct if SPDS was lost for 8 hours in accordance with LS-AA-1110, SAF 1.10.
B is incorrect, would be correct if PZR PORV led to Tech Spec required shutdown in accordance with LS-AA-1110, SAF 1.2. From stated conditions, TS shutdown not required.
C is incorrect, 2A CV pump start is not a valid actuation per SAF 1.5, as actuation resulted from testing. Would be correct if system actuated due to valid actuation signal.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: Exelon Reportability Reference Manual

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
79	SRO	1	1	000062	000062AA2.01	2.9	3.5	High

System/Evolution Name:
Loss of Nuclear Service Water

Category Statement:
Ability to determine and interpret the following as they apply to the Loss of Nuclear Service Water:

KA Statement:
Location of a leak in the SWS

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- Unit 0 CC Hx is aligned to Unit 2.
- 1SX005, CC HX 0 Inlet Valve, is CLOSED.
- 2SX005, CC HX 0 Inlet Valve, is OPEN.
- 1A SX pump is running.
- 1B SX pump is in standby.

- A piping break occurs in the plant and the following conditions are present one minute later:
  - ALL Aux Building Floor Drain sump pumps are running.
  - Annunciator 1-2-A2, SX PUMP DSCH HDR PRESS LOW, is LIT.
  - Unit 1 CC Hx temp is 108 and rising.
  - Unit 0 CC Hx temp is 86 and stable.
  - Containment Floor Drain sump pumps are NOT running.
  - The leakage is NOT flooding ANY vital equipment rooms.
  - NO equipment has exceeded its vital equipment temperature limit.

Of the actions listed below, the Unit Supervisor will FIRST direct the crew to…

A start the 1B SX pump, stop the 1A SX pump, and energize and close 1SX001A, 1A SX Pump Suction Valve.

B open 1SX005, CC HX 0 Inlet Valve.

C dispatch operators to align FP to the CV pumps.

D shutdown ALL RCFCs and close 1SX016A/B and 1SX027A/B, 1A-1D RCFC SX Inlet and Outlet Isolation Valves.

Answer:	Task No:	S-OA-054	Question Source:	Question Difficulty
C	Obj No:	T.OA18-03	New	High
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
Systems big note SX-1, Essential Service Water
1BwOA PRI-8, Essential Service Water Malfunction
0BwOA PRI-8, Aux Building Flooding

Explanation: Question meets KA. Question requires examinee assess plant conditions and determine the location of a leak in the SWS causing a loss of nuclear service water and determine correct procedural actions to mitigate consequences of SW leakage based on assessment of plant conditions.
Piping break has occurred in aux building on SX system. SX pressure is low and aux building sump pumps are running. Leak is not inside containment since containment sump pumps are not running. Leakage is located downstream of SX pumps, since Unit 1 CC HX temp is rising from lower SX flow with same CC flow. PRA significant operator action is to align FP to the CV pumps prior to the CV pumps reaching vital temperature limit in accordance with 1BwOA PRI-6 and 0BwOA PRI-6.
Question is at SRO level because choices are all procedural actions SRO will direct based on assessment of plant conditions.
A is incorrect, would be correct if leakage was upstream of 1A SX pump. Leakage is downstream of 1A SX pump.
B is incorrect, opening 1SX005 would cross-tie unit 1 and unit 2 SX systems and cause loss of SX on unit 2 as well as unit 1. Action would be correct if loss of SX occurred from loss of SX pumps with SX system intact.
C is correct, see explanation above.
D is incorrect, would be correct for SX system leakage inside reactor containment. Leakage is in aux building only.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
80	SRO	1	1	000015	0000152.4.4	4.0	4.3	High

System/Evolution Name: Reactor Coolant Pump (RCP) Malfunctions

Category Statement: Emergency Procedures/Plan

KA Statement:
Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is at 50% power.
- All systems are normally aligned.
- Annunciator 1-7-B3, RCP SEAL LEAKOFF HIGH, is LIT.
- 1A RCP #1 Seal Leakoff is 9.5 gpm.
- 1A RCP #2 SEAL LEAKOFF HIGH alarm is printed on the SER.
- 1A RCP #1 seal DP is > 400 psig.
- ALL RCP temperatures are stable in the normal operating range.
- ALL RCP seal injection flows are 10-12 gpm.
- There are NO RCP instrumentation failures.

Based on the above conditions, the Unit 1 Unit Supervisor will direct the crew to…

A trip the 1A RCP within 8 hours, AND close 1CV8141A, RCP 1A seal leakoff isolation valve, after 1A RCP stops rotating.

B initiate a unit shutdown in accordance with 1BwGP 100-4, POWER DESCENSION, dispatch operators to locally check #2 seal leakoff flow, AND close 1CV8141A, RCP 1A seal leakoff isolation valve.

C trip the reactor, trip the 1A RCP, enter 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION, AND close 1CV8141A, RCP 1A seal leakoff isolation valve, after 1A RCP stops rotating.

D maintain at least 9 gpm seal injection flow to the 1A RCP AND check #3 seal operating conditions.

Answer:	Task No:	S-OA-077	Question Source:	Question Difficulty
C	Obj No:	T.OA27-08	Bank: Braidwood LORT bank question ID BWLC3DOA5002	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-27, BwOA RCP-1
1BwOA RCP-1, RCP Seal Malfunction

Explanation: Question meets KA. Question requires examinee assess plant conditions and requires examinee ability to recognize abnormal indications for RCP operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
RCP #1 seal malfunction has occurred. With above conditions, the SRO will direct implementation of 1BwOA RCP-1, RCP SEAL FAILURE. With RCS seal leakoff > 8 gpm, immediate RCS shutdown is required and seal leakoff isolation valve is closed when affected RCP stops rotating.

A is incorrect, would be correct for #1 seal leakoff < 6 gpm.
B is incorrect, would be correct for #1 seal leakoff > 6 gpm but < 8 gpm.
C is correct, see explanation above.
D is incorrect, would be correct for #3 seal failure.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
81	SRO	1	1	00WE04	00WE04EA2.2	3.6	4.2	High

System/Evolution Name:
LOCA Outside Containment

Category Statement:
Ability to determine and interpret the following as they apply to the LOCA Outside Containment:

KA Statement:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 has experienced an RCS LOCA.
- The crew has implemented 1BwCA-1.2, LOCA OUTSIDE CONTAINMENT, and is performing step 2, Try to Identify and Isolate Break, with the following conditions:
  - 1SI8809A & B, RH to Cold Legs Isolation Valves, are OPEN.
  - 1SI8835, SI Pumps to Cold Leg Isolation Valve, is OPEN.

- The NSO FIRST places 1SI8809A control switch to close.
- When 1SI8809A is closed, RCS pressure begins to rise.

Based on the above conditions, and assuming RCS pressure continues to rise with 1SI8809A closed, the Unit Supervisor will direct the crew to…

A leave 1SI8809A closed AND complete the leak identification sequence of 1BwCA-1.2, THEN transition to 1BwCA-1.1. LOSS OF EMERGENCY COOLANT RECIRCULATION.

B re-open 1SI8809A AND IMMEDIATELY transition to 1BwEP-1, LOSS OF REACTOR OR SECONDARY COOLANT.

C re-open 1SI8809A AND complete the leak identification sequence of 1BwCA-1.2. THEN re-close 1SI8809A and transition to 1BwCA-1.1. LOSS OF EMERGENCY COOLANT RECIRCULATION.

D leave 1SI8809A closed AND complete the leak identification sequence of 1BwCA-1.2, THEN transition to 1BwEP-1, LOSS OF REACTOR OR SECONDARY COOLANT.

Answer:	Task No:	S-CA-014	Question Source:	Question Difficulty
D	Obj No:	T.CA2-05	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-CA-XL-02, BwCA-1.1 and 1.2
1BwCA-1.2, LOCA Outside Containment

Explanation: Question meets KA. Question requires examinee ability to determine and interpret appropriate procedures and operations during a LOCA outside containment and requires examinee to assess plant conditions and determine proper recovery actions and procedures. When 1SI8809A is closed and RCS pressure begins to rise, note prior to step 2 of 1BwCA-1.2 directs leaving valve closed if pressure begins to rise. Leak step 2 is completed then RCS pressure is checked again. If RCS pressure is rising after leak identification sequence is completed, transition is made to 1BwEP-1.

A is incorrect, transition is made to 1BwCA-1.1 if RCS pressure is not rising following completion of leak identification sequence.
B is incorrect, leak identification process is completed prior to transitioning to 1BwEP-1.
C is incorrect, note prior to step 2 of 1BwCA-1.2 directs leaving 1SI8809A closed if pressure rises following closure. Reopening valve would reinitiate LOCA outside containment.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
82	SRO	1	1	000067	0000672.1.2	3.0	4.0	Low

System/Evolution Name:
Plant Fire on Site

Category Statement:
Conduct of Operations

KA Statement:
Knowledge of operator responsibilities during all modes of plant operation.

UserID:

Topic Line:

Question Stem:

Which of the following are the Shift Manager (or designee's) responsibilities in response to a plant fire on site?

1. Announcing the fire over the plant PA and radio.
2. Notifying Security to dispatch security personnel.
3. Sounding the plant fire siren.
4. Notifying BOTH Unit operators to refer to BwOP FP-100, FIRE RESPONSE GUIDELINES.
5. Notifying Rad Protection and Chemistry.
6. Recording Fire Brigade Members names on BwAP 1100-16.

A 1, 3, & 5

B 1, 4, & 6

C 2, 3, & 4

D 2, 5, & 6

Answer:	Task No:	S-AM-200	Question Source:	Question Difficulty
D	Obj No:	7E.AM-200-A	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
BwAP 1100-16, Fire/Hazardous Material Spill, and/or Injury Response

Explanation: Question meets KA. Question requires examinee knowledge of SRO responsibilities for plant fire on site.
In accordance with BwAP 1100-16, FIRE/HAZARDOUS MATERIAL SPILL AND/OR INJURY RESPONSE, shift manager or designee responsibilities during a plant fire on site include notifying security to dispatch security personnel, notifying rad protection and chemistry, and recording fire brigade members names on BwAP 1100-16.

A is incorrect, announcing the fire over the plant PA and radio and sounding the plant fire siren are NSO responsibilities.
B is incorrect, announcing the fire over the plant PA and radio and notifying both unit operators to refer to BwOP FP-100 are NSO responsibilities.
C is incorrect, sounding the plant fire siren and notifying both unit operators to refer to BwOP FP-100 are NSO responsibilities.
D is correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
83	SRO	1	2	00WE14	00WE14EA2.1	3.3	3.8	High

System/Evolution Name:
High Containment Pressure

Category Statement:
Ability to determine and interpret the following as they apply to the High Containment Pressure:

KA Statement:
Facility conditions and selection of appropriate procedures during abnormal and emergency operations

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- A large steam break occurred inside containment.
- The crew has just implemented 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION.
- The STA has completed the initial scan of the status trees and the following conditions exist:
  - An ORANGE path exists on the containment status tree.
  - Containment pressure is 26 psig and lowering.
  - The faulted SG has NOT been isolated.
  - ALL other CSFs are GREEN.

Based on the above conditions, the Unit Supervisor will direct the crew to…

A IMMEDIATELY implement and complete 1BwFR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, THEN transition back to 1BwEP-2.

B remain in 1BwEP-2 and continue to monitor containment pressure. If containment pressure begins to rise, THEN implement 1BwFR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE.

C remain in 1BwEP-2 until the faulted SG is isolated, THEN implement 1BwFR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE.

D IMMEDIATELY implement 1BwFR-Z.1, RESPONSE TO HIGH CONTAINMENT PRESSURE, and remain in 1BwFR-Z.1 until the containment CSF is restored to GREEN OR YELLOW, THEN transition back to 1BwEP-2.

Answer:	Task No:	S-FR-015	Question Source:	Question Difficulty
A	Obj No:	7D.FR-005A	New	Low
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-FR-XL-01, BwFR-Z
BwAP 340-1, Use of Procedures for the Operating Department
1BwFR-Z.1, Response to High Containment Pressure

Explanation: Question meets KA. Question requires examinee ability to determine and interpret facility conditions and select appropriate procedures during high containment pressure.
With containment pressure > 20 psig, an orange path conditions exist on the containment status tree. With an orange path present, immediate transition is made to 1BwFR-Z.1 to restore the CSF. Once entered, 1BwFR-Z.1 is entirely completed, then transition is made back to procedure and step in effect at time of transition to 1BwFR-Z.1.

A is correct, see explanation above.
B is incorrect, even though containment pressure is lowering and nearing point at which CSF will change to yellow status, transition is made to 1BwFR-Z.1.
C is incorrect, 1BwFR-Z.1 will perform faulted SG isolation sequence.
D is incorrect, 1BwFR-Z.1 is completed and procedure is exited even if CSF is not restored.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
84	SRO	1	2	00WE15	00WE152.4.4	4.0	4.3	High

System/Evolution Name:
Containment Flooding

Category Statement:
Emergency Procedures/Plan

KA Statement:
Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 was at 100% power.
- All systems were normally aligned.
- A large RCS LOCA occurred.
- SI and CS have actuated.
- The crew has implemented 2BwEP-1, LOSS OF REACTOR OR SECONDARY COOLANT.
- The STA has just completed the initial scan of the Status Trees with the following conditions:
  - Pressurizer level is 0%.
  - Cnmt pressure is 8 psig.
  - 2AR020 AND 2AR021, Containment High Range Rad Monitors, are in HIGH ALARM.
  - 2LI-PC006 and 2LI-PC-007, CNMT Floor Water Level, indicate 62 inches.

Based on the above conditions, the NEXT procedure to be implemented is…

(2BwST-5 & 2BwST-6 are attached)

A 2BwFR-Z.2, RESPOND TO CONTAINMENT FLOODING.

B 2BwFR-I.2, RESPONSE TO LOW PRESSURIZER LEVEL.

C 2BwFR-Z.3, RESPONSE TO HIGH CONTAINMENT RADIATION.

D 2BwEP ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION.

Answer:	Task No:	S-FR-015	Question Source:	Question Difficulty
A	Obj No:	T.FR05-04-B	Bank: INPO bank question ID# 27751 Cook Unit 1 4/29/2004	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
Provide examinee copy of 2BwST-5 & 2BwST-6.
ILT lesson plan I1-FR-XL-01, Status Trees
2BwST-5, Containment
2BwST-6, Inventory
BwAP 340-1, Use of Procedures for the Operating Department

Explanation: Question meets KA. Question requires examinee ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency procedures and select proper recovery guideline.
From above conditions, the containment CSF is orange based on containment floor water level > 59 inches (adverse containment due to containment pressure > 5 psig) and below non-adverse containment entry condition. The containment CSF also has a yellow path due to 1AR020 and 1AR21 > alert alarm setpoint. The inventory CSF is also yellow due to PZR level < 17%. The highest priority FR guideline to be implemented is 2BwFR-Z.2 based on the entry condition of the procedure being met (orange status of the containment CSF).

A is correct, see explanation above.
B is incorrect, entry conditions are met for 2BwFR-I.2, but 2BwFR-Z.2 is implemented first due to higher priority.
C is incorrect, entry conditions are met for 2BwFR-Z.3, but 2BwFR-Z.2 is implemented first due to higher priority.
D is incorrect, 2BwEP ES-1.2 would be next procedure implemented if no orange path existed. FRs take precedence over BwEP performance.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: 2BwST-5 & 2BwST-6

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
85	SRO	1	2	00WE10	00WE10EA2.2	3.4	3.9	High

System/Evolution Name:
Natural Circulation with Steam Void in Vessel with/without RVLIS

Category Statement:
Ability to determine and interpret the following as they apply to the Natural Circulation with Steam Void in Vessel with/without RVLIS:

KA Statement:
Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments

UserID:

Topic Line:

Question Stem:

Given:
- 1BwEP ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL (WITH RVLIS), is in progress at step 2.
- RCS pressure is 1550 psig and stable.
- CETCs are ALL 590°F and slowly rising.
- Pressurizer level is 42% and slowly lowering.
- RVLIS head level is 31% and stable.
- Containment pressure is 0.3 psig.
- ALL 4KV and 6.9 KV buses are energized.
- The main condenser is available.
- The crew has established conditions to start 1D RCP in accordance with 1BwOA ESP-1, RCP STARTUP DURING ABNORMAL CONDITIONS.

Based on the above conditions, the NEXT action the Unit Supervisor will direct the crew to perform is to…

(Partial copy of 1BwEP ES-0.3 is attached)

A start 1D RCP.

B actuate SI and transition to 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION.

C open the steam dumps to establish adequate RCS subcooling.

D turn on PZR heaters to raise RCS pressure.

Answer:	Task No:	S-EP-022	Question Source:	Question Difficulty
B	Obj No:	7D.EP-001-F	Bank: Braidwood LORT bank question ID#BWLC3DEP9012	Medium
Time: 1	Cross Ref:	10CFR5543(b)(5)		

Reference:
1BwEP ES-0.3 pages 3, 12-15, and OAS will be provided to examinee
1BwEP ES-0.3, Natural Circulation Cooldown with Steam Void in Vessel

Explanation: Question meets KA. Question requires examinee ability to analyze plant conditions and determine correct procedural actions to be taken during natural circulation with steam void in vessel with RVLIS.
At step 2 of 1BwEP ES-0.3 preparations are made to start one RCP. With above conditions, RCS subcooling is unacceptable. Operator action summary page action is to actuate SI and go to 1BwEP-0 step 1 if RCS subcooling is unacceptable.

A is incorrect, RVLIS head level , PZR level, and RCS subcooling are not adequate to support start of 1D RCP.
B is correct, see explanation above.
C is incorrect, opening steam dumps would enhance subcooling, but with unacceptable subcooling SI must be actuated.
D is incorrect, PZR level is too low to support RCP start, but with unacceptable subcooling SI must be actuated.

Date Written:	6/28/2007	Author:	Darren Stiles	App. Ref:	1BwEP ES-0.3 pages 3, 12-15, and OAS

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
86	SRO	2	1	008000	008000A2.02	3.2	3.5	High

System/Evolution Name:
Component Cooling Water System (CCWS)

Category Statement:
Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

KA Statement:
High/low surge tank level

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- 1A CC pump is running.
- 1B CC pump is in standby.
- U-0 CC pump is aligned to Bus 141.
- CC Surge Tank level begins to lower.
- One minute later, the following conditions and trends are noted:
  - BOTH CC Surge Tank Makeup Valves are OPEN.
  - CC Pump discharge header pressure has dropped from 136 psig to 116 psig and is stable.
  - CC surge tank level is 15% and lowering at 5% per minute.

Based on the above conditions AND assuming the current trends continue, the Unit Supervisor will direct the crew to FIRST…

A place ALL CC pumps in pull out, trip the reactor, and trip the RCPs to prevent RCP damage due to loss of cooling.

B isolate letdown and charging to prevent overheating the letdown demineralizers.

C start the standby CC pump(s) to raise CC header pressure.

D align the suction of the CV pumps to the RWST and align CV pump recirc to the HUT to cool the CV pump suction.

Answer:	Task No:	S-OA-052	Question Source:	Question Difficulty
A	Obj No:	7D.OA-016-A	Bank: INPO bank question ID# 26529 Byron Unit 1 12/10/2003	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-OA-XL-01, BwOA PRI-6
1BwOA PRI-6, Component Cooling Malfunction

Explanation: Question meets KA. Question requires examinee ability to predict the impact of low CC surge tank level on the CC system and based on those predictions, use procedures to mitigate the consequences of low CC surge tank level.
With low CC surge tank level, 1BwOA PRI-6 is implemented. With both CC surge tank makeup valves open and CC surge tank level at 15% and dropping at 5%/minute, CC surge tank level cannot be maintained > 13%. 1BwOA PRI-6 operator action summary page states "if surge tank level cannot be maintained greater than 13%, place ALL CC pumps in pull out, trip the reactor, and trip the RCPs".

A is correct, see explanation above.
B is incorrect, subsequent action is to isolate letdown and charging, but question asks for next action to be taken.
C is incorrect, subsequent action is to start the standby CC pump to raise CC header pressure after system is restored, but question asks for next action to be taken.
D is incorrect, subsequent action is to align the suction of the CV pumps to the RWST and align CV pump recirc to the HUT to cool the CV pump suction, but question asks for next action to be taken.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
87	SRO	2	1	062000	0620002.4.4	4.0	4.3	High

System/Evolution Name: A.C. Electrical Distribution System

Category Statement: Emergency Procedures/Plan

KA Statement:
Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is at 35%.
- A plant shutdown is in progress per 1BwGP 100-4, POWER DESCENSION.
- 1A DG is OOS for maintenance.
- ALL AC buses have been aligned to the shutdown electrical lineup per 1BwGP 100-4.
- A SAT 142-1 fault occurs.
- There are NO lockouts on ANY 4KV or 6.9 KV buses.
- ALL systems respond as designed.

Based on the above conditions, the Unit Supervisor will FIRST implement…

A 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION.

B 1BwCA-0.0, LOSS OF ALL AC POWER.

C 1BwOA ELEC-3, LOSS OF 4KV ESF BUS.

D 0BwOA ELEC-1, ABNORMAL GRID CONDITIONS.

Answer:	Task No:	S-OA-005	Question Source:	Question Difficulty
C	Obj No:	7D.OA-003-B	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
Systems big note AC-6, AC Power Notes
1BwOA ELEC-3, Loss of 4KV ESF Bus
1BwCA-0.0, Loss of All AC Power
1BwEP-0, Reactor Trip or Safety Injection
0BwOA ELEC-1, Abnormal Grid Conditions

Explanation: Question meets KA. Question requires examinee ability to recognize abnormal indications for AC system which are entry-level conditions for abnormal operating procedures.
When SAT 142-1 fault occurs, all 4KV and 6.9KV Bus SAT feed breakers open. 6.9 KV buses and 4KV non-ESF buses ABT to the UAT. Bus 142 is energized from the 1B DG. Bus 141 remains deenergized due to 1A DG OOS. 1BwOA ELEC-3 will be implemented in response to the loss of 4KV bus 141.

A is incorrect, reactor trip will not occur and is not warranted.
B is incorrect, loss of all AC power will not occur.
C is correct, see explanation above.
D is incorrect, entry conditions for 0BwOA ELEC-1 not met.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
88	SRO	2	1	063000	0630002.2.25	2.5	3.7	High

System/Evolution Name: D.C. Electrical Distribution System

Category Statement: Equipment Control

KA Statement:
Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

UserID: Topic Line:

Question Stem:

Given:
- Unit 1 is at 100% power.
- All systems are normally aligned.
- While reviewing 1BwOSR 3.8.6.5-2, UNIT ONE 125V DC ESF BATTERY BANK 112 OPERABILITY SURVEILLANCE, the following parameters are noted:
  - Battery 112 Float Current is 3.5 Amps.
  - Cell #21 (pilot Cell) Voltage is 2.25 Volts.
  - Cell #18 (non-Pilot Cell) Voltage is 2.01 Volts.
  - Cell #18 electrolyte level is below the minimum level mark and above the top of the battery plates.
  - ALL other Battery 112 parameters are within the acceptance criteria of 1BwOSR 3.8.6.5-2.

Which ONE of the following correctly describes the actions required to be taken in accordance with Tech Specs/TRM?

(Tech Specs 3.8.4, 3.8.6, and TRM 3.8.c are attached)

A. Power operation can continue provided Battery 112 parameters meet Table T3.8.c-1 Category C limits within 24 hours AND are restored to Table T3.8.c-1 Category A & B limits within 31 days.

B. Verify Battery Charger 112 operable within 2 hours. Power operation can continue provided Cell #18 voltage is restored within limits within 24 hours.

C. Verify Battery Charger 112 operable within 2 hours. Power operation can continue provided Cell #18 electrolyte level above the minimum level mark within 31 days.

D. IMMEDIATELY declare Battery 112 INOPERABLE. If current battery conditions continue, be in MODE 5 within 38 hours.

Answer:	Task No:	S-TS-006	Question Source:	Question Difficulty
D	Obj No:	S.TS1-12	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
TS 3.8.4, 3.8.6, & TRM 3.8.c will be provided to examinee.
Technical Specification 3.8.4, DC Sources - Operating
Technical Specification 3.8.6, Battery Parameters
TRM 3.8.c, Battery Monitoring and Maintenance
Technical Specification 3.8.4 Bases

Explanation: uestion meets KA. Question requires examinee knowledge of bases in battery and DC distribution system technical specifications for limiting conditions for operations and safety limits.
With the above conditions, TS 3.8.6 condition A is entered for cell 18 voltage at 2.01 volts, condition B is entered for battery float current at 3.5 amps, condition C is entered for cell 18 level below the minimum established design limit, and condition F is entered for the combination of cell 18 voltage and battery current. Battery 112 is immediately declared inoperable. TRM 3.8.c conditions A and B are entered for the above conditions. TS 3.8.4, condition D must be applied for the inoperable battery, which requires battery 112 be restored within 2 hours or be in mode 3 in 6 hours and mode 5 in 36 hours for a total of 38 hours. Question requires examinee knowledge to TS 3.8.4 and 3.8.6 bases since TS LCO 3.8.4, condition D only states "one DC subsystem inoperable for reasons other than conditions A, B or C". TS 3.8.4 bases section defines what is required to have an operable DC subsystem, which includes maintaining the battery operable. TS 3.8.6 bases includes information on declaring battery inoperable due to battery not being able to perform its intended function.

A is incorrect, would be correct if battery float current was within TS 3.8.6 limits.
B is incorrect, is correct for TS 3.8.6 condition A only.
C is incorrect, is correct for TS 3.8.6 condition C only.
D is correct, see explanation above.

Date Written: 6/28/07 Author: Darren Stiles App. Ref: TS 3.8.4, 3.8.6, & TRM 3.8.c

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
89	SRO	2	1	064000	0640002.2.22	3.4	4.1	Low

System/Evolution Name: Emergency Diesel Generator (ED/G) System

Category Statement: Equipment Control

KA Statement:
Knowledge of limiting conditions for operations and safety limits.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is at 100% power.
- 2B DG was declared INOPERABLE at 0700 on November 1, 2007.
- ALL other equipment remains operable.

Which ONE of the following correctly describes action(s) REQUIRED to be taken within ONE HOUR in accordance with Tech Specs?

1. Perform 2BwOSR 3.8.1.1, UNIT TWO OFF SITE AC POWER AVAILABILITY SURVEILLANCE.
2. Declare equipment supported by 2B DG inoperable.
3. Verify BOTH Unit 1 DGs are operable.

A ONLY 1 & 2

B ONLY 2 & 3

C ONLY 1 & 3

D 1, 2, & 3

Answer:	Task No:	S-TS-007	Question Source:	Question Difficulty
C	Obj No:	S.TS1-05-A	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
Technical Specification 3.8.1, AC Sources - Operating

Explanation: Question meets KA. Question requires examinee knowledge of DG limiting conditions for operations.
With 2B DG inoperable at 0700 on 11/01/2007, TS 3.8.1 condition B is entered. Condition B requires operability verification of both unit 1 DGs within one hour and once per 24 hours thereafter and performance of the unit two off site AC power availability surveillance by within one hour and once per 8 hours thereafter. Support systems would be declared inoperable within 4 hours if redundant features were also inoperable (none are, from question stem).

A is incorrect, must perform surveillance by 0800, but support systems are not declared inoperable.
B is incorrect, must verify Unit 1 DGs operable within one hour, but support systems are not declared inoperable.
C is correct, must verify operability of unit 1 DGs and perform surveillance within one hour.
D is incorrect, must verify operability of unit 1 DGs and perform surveillance within one hour but support systems are not declared inoperable.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:				TIER:	GROUP:	Topic No:	KA No:	RO:
SRO:	Cog Level:								
90	SRO	2	1	073000	073000A2.02	2.7	3.2		High

System/Evolution Name:
Process Radiation Monitoring (PRM) System

Category Statement:
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:

KA Statement:
Detector failure

UserID:

Topic Line:

Question Stem:

Given:
- BOTH Units are at 100% power.
- All systems are normally aligned.
- 0A VC train is in operation.
- 0RE-PR031B, MCR Air Intake Gaseous Radioactivity Monitor, detector has failed with the following indications:
  - The RM-11 cursor for 0RE-PR031B is DARK BLUE.
  - The RM-23 GREEN AVAIL light is NOT LIT.
  - The RM-23 AMBER INTLK light is LIT.
  - The RM-23 RED HIGH light is NOT LIT.
  - BOTH the RM-11 and RM-23 indicate 0.00 E+00.

- 0RE-PR031A and C, MCR Air Intake Particulate and Iodine Radioactivity Monitors are indicating normally for current plant conditions

Based on the above conditions, 0PR31J is…

A OPERABLE based on current plant conditions.

B INOPERABLE. Operation can continue indefinitely with no additional actions, provided 0PR32J remains operable.

C INOPERABLE. Operation can continue indefinitely if, within 1 hour, EITHER 0A VC train is placed in emergency mode OR 0B VC train is started in normal mode.

D INOPERABLE. Operators must IMMEDIATELY declare 0A VC train inoperable.

Answer:	Task No:	S-TS-001	Question Source:	Question Difficulty
C	Obj No:	S.AR1-15	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
No reference will be provided to examinee.
ILT lesson plan IQ-AR-XL-01, Radiation Monitors
Systems big note AR-1, Rad Monitor Notes
Technical Specification 3.3.7, VC Filtration System Actuation Instrumentation
Technical Specification 3.7.10, VC Filtration System

Explanation: Question meets KA. Question requires examinee ability to predict the impacts of a PRM detector failure and based on those predictions, use procedures to control the consequences of the detector failure.
0PR31J gas channel is required to be operable in accordance with Tech Spec 3.3.7. TS 3.3.7 requires 2 gaseous monitors per each train of control room HVAC. With 0PR31J gas channel detector failure, 0PR31J is inoperable. TS 3.3.7, condition A requires placing 0A VC train in emergency mode or placing 0B VC train in normal mode within 1 hour. Operation can continue indefinitely.

A is incorrect, would be correct for same indications on either particulate or iodine channel, which are located on same skid but are not Tech Spec monitors.
B is incorrect, both 0PR31J and 0PR32J gaseous monitors are required on 0A VC train.
C is correct, see explanation above.
D is incorrect, VC train operability is addressed in TS 3.7.10. 0PR31J is separate Tech Spec and TS 3.7.10 is not implemented for 0PR31J failure.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
91	SRO	2	2	015000	0150002.1.33	3.4	4.0	High

System/Evolution Name:
Nuclear Instrumentation System

Category Statement:
Conduct of Operations

KA Statement:
Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 reactor startup is in progress.
- The following indications are present on 1PM05J:
  - ALL PR channels indicate 0%.
  - IR channel N-35 indicates 5.0 X 10-11 amps.
  - IR channel N-36 indicates 1.0 X 10-11 amps.
  - SR channel N-31 indicates 2.0 X 10+4 cps.
  - SR channel N-32 indicates 1.8 X 10+4 cps.
  - Annunciator 1-10-B2, IR HI VOLT FAILURE, is LIT.

Based on the above indications, the crew's required action(s), if any, are to…

(Tech Spec Table 3.3.1-1 is attached)

A continue the reactor startup to Mode 1.

B immediately open the reactor trip breakers.

C restore the failed instrument prior to raising reactor power above the P-6 setpoint.

D raise reactor power above the P-10 setpoint within 2 hours.

Answer:	Task No:	S-TS-006	Question Source:	Question Difficulty
C	Obj No:	S.NI2-11	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
Provide examinee copy of Tech Spec Table 3.3.1-1.
Tech Spec Table 3.3.1-1 will be provided to examinee.
ILT lesson plan I1-NI-XL-02, Intermediate Range Nuclear Instrumentation
Systems big note NI-2, Power Range Drawer
Systems big note NI-3, Intermediate Range Drawer
BwAR 1-10-B2
Technical Specification 3.3.1, RTS Instrumentation

Explanation: Question meets KA. Question requires examinee ability to recognize indications for NI system operating parameters which are entry-level conditions for technical specifications and requires examinee analyze plant indications and determine appropriate tech spec actions.
Unit 1 is in Mode 2 with power < P-6 setpoint. IR channel N-35 and all SR and PR channels are responding properly. IR channel N-36 is failed low. TS 3.3.1 requires two IR channels operable in mode 2 above the P-6 setpoint. TS 3.0.4 prohibits raising power > P-6 until the failed IR channel is restored.

A is incorrect, would be correct if IR channel N-36 was responding normally.
B is incorrect, would be correct if both SR channels were not responding properly.
C is correct, see explanation above.
D is incorrect, would be correct if power was > P-6 and < P-10.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: Tech Spec Table 3.3.1-1

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
92	SRO	2	2	033000	033000A2.03	3.1	3.5	High

System/Evolution Name:
Spent Fuel Pool Cooling System (SFPCS)

Category Statement:
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 operations:

KA Statement:
Abnormal spent fuel pool water level or loss of water level

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 is defueled.
- Unit 2 is at 100% power.
- The Spent Fuel Pit is isolated from the transfer canal.
- Fuel pool cooling is aligned to Unit 1.
- A leak develops downstream of 1FC8762A, Spent Fuel Pit Hx Inlet Valve.
- Spent Fuel Pit level is 24' 6" and lowering.
- Spent Fuel Pit temperature is 102°F and rising.

Based on the above conditions, the Spent Fuel Pit level will lower until the…

A. Unit 1 FC pump trips when the leak detection system actuates. The Unit Supervisor will implement 0BwOA REFUEL-3, LOSS OF SPENT FUEL PIT COOLING, and direct the crew to align one Refueling Water Purification pump to the Unit 2 Spent Fuel Hx to restore Fuel Pool cooling.

B. Unit 1 FC pump trips when annunciator 1-1-C1, SPENT FUEL PIT LEVEL HIGH/LOW alarms. The Unit Supervisor will implement 0BwOA REFUEL-3, LOSS OF SPENT FUEL PIT COOLING, and direct the crew to align Unit 2 FC pump and Hx to restore Fuel Pool cooling.

C. discharge piping of the Unit 1 FC pump uncovers. The Unit Supervisor will implement 1BwOA REFUEL-2, REFUELING CAVITY OR SPENT FUEL POOL LEVEL LOSS, and direct the crew to makeup to the spent fuel pit from the PW system.

D. suction piping of the Unit 1 FC pump uncovers. The Unit Supervisor will implement 1BwOA REFUEL-2, REFUELING CAVITY OR SPENT FUEL POOL LEVEL LOSS, and direct the crew to makeup to the spent fuel pit from an RWST.

Answer:	Task No:	S-OA-084	Question Source:	Question Difficulty
D	Obj No:	T.OA30-05	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(5), (7)		

No reference will be provided to examinee. Reference:
ILT lesson plan I1-FC-XL-01, Spent Fuel Cooling
Systems big note FC-1, Fuel Pool Cooling
1BwOA REFUEL-2, Refueling Cavity or Spent Fuel Pool Level Loss
BwOP FC-11, Spent Fuel Pool Level Adjustment

Explanation: Question meets KA. Question requires examinee ability to predict the impacts of loss of spent fuel pool water level on the spent fuel pool cooling system and based on those predictions, use procedures to correct the consequences of loss of spent fuel pool water level. When a leak develops downstream of the spent fuel pit heat exchanger inlet valve, the spent fuel cooling flowpath will begin to lower spent fuel pool level. Spent fuel pit level will lower until the suction line of the spent fuel cooling pump uncovers at approximately 7 feet below the normal water level. 1BwOA REFUEL-2 will be implemented to isolate spent fuel pit leakage and initiate makeup to the spent fuel pit from the RWST. 0BwOA REFUEL-3 can be used to align the unit 2 spent fuel cooling pump to restore spent fuel cooling.

A is incorrect, the leakage detection system does not trip the spent fuel cooling pump. The refueling water purification pump provides a backup to the FC pumps if none are available.
B is incorrect, low SFP level alarm does not trip the spent fuel cooling pump. Unit 2 FC cooling can be aligned to restore spent fuel pit cooling.
C is incorrect, the discharge piping of the spent fuel cooling pump contains an anti-siphon hole to prevent draining the spent fuel pit and PW is not the preferred makeup method to the spent fuel pit.
D correct, see explanation above.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
93	SRO	2	2	034000	034000K1.02	2.5	3.2	High

System/Evolution Name:
Fuel Handling Equipment System (FHES)

Category Statement:
Knowledge of the physical connections and/or cause-effect relationships between the Fuel Handling System and the following systems:

KA Statement:
RHRS

UserID:

Topic Line:

Question Stem:

Given:
- Unit 2 is in Mode 6.
- Reactor cavity level is 23' 6"
- 2A RH Train is in standby, aligned for shutdown cooling mode.
- 2B RH Train was started in shutdown cooling mode 10 hours ago.
- The 2B RH train was shutdown for 15 minutes 5 hours ago for fuel handling activities.
- The containment fuel handling supervisor has requested the Unit 2 Unit Supervisor shutdown the 2B RH train to reduce turbulence in the area of the hot leg nozzles.

Based on the above conditions, the 2B RH train…

A CANNOT be shutdown unless the 2A RH train is FIRST placed in service PRIOR TO securing the2B RH train.

B CAN be shutdown for up to 45 MINUTES, provided NO operations which would reduce RCS boron concentration are permitted.

C CAN be shutdown for up to 8 HOURS, provided NO operations are permitted which would raise Shutdown Risk level.

D CAN be shutdown for up to 45 MINUTES, provided a gravity flow path from the RWST to the reactor core is available via the 2A RH pump.

Answer:	Task No:	S-FH-012	Question Source:	Question Difficulty
B	Obj No:	7C.FH-024	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
No reference will be provided to examinee.
Technical Specification 3.9.5, RHR and Coolant Circulation - High Level

Explanation: Question meets KA. Question requires examinee knowledge of the cause-effect relationships of operating the fuel handling system in conjunction with the RH system and requires examinee analyze plant conditions and determine additional operational constraints on RH system while FH system in operation.
In mode 6 with water level > 23 feet above the reactor vessel flange, Tech Spec 3.9.5 requires one RH loop to be operable and in operation. With fuel moves near the hot leg nozzles, the RH system may be shutdown for less than or equal to one hour per eight hour period, provided no operations are permitted that would cause a reduction of the reactor coolant system boron concentration. In the question above, the RH system was shutdown for 15 minutes 5 hours ago, so the RH system may be shutdown for an additional 45 minutes.

A is incorrect, the 2B RH train can be shutdown for 45 minutes. Would be correct if 2B RH pump had been shutdown for 1 hour in last 8 hours.
B is correct, see explanation above.
C is incorrect, 2B RH pump can only be shutdown for 45 minutes.
D is incorrect, no requirement to align a gravity flow path.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
94	SRO	3		194001	1940012.1.10	2.7	3.9	Low

System/Evolution Name: Generic

Category Statement: Conduct of Operations

KA Statement:
Knowledge of conditions and limitations in the facility license.

UserID: Topic Line:

Question Stem:

Given:
- BOTH Units are at 100% power.
- All systems are normally aligned.
- A plant transient is in progress.
- The crew is preparing to invoke 10 CFR 50.54x to depart from a license condition in order to protect the health and safety of the public.

Which ONE of the following correctly describes the MINIMUM required approval(s) for invocation of 10 CFR 50.54x?

A The Shift Manager (or SRO designee) must approve the intended deviation prior to performance.

B The NRC must approve intended deviation prior to performance. **B**

C BOTH The Shift Manager (or SRO designee) AND the Nuclear Duty Officer must approve the intended deviation prior to performance.

D BOTH The Shift Manager (or SRO designee) AND the NRC must approve intended deviation prior to performance.

Answer:	Task No:	S-AM-106	Question Source:	Question Difficulty
A	Obj No:	7E.AM-106-A	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(1)		

Reference:
No reference will be provided to examinee.
BwAP 340-1, Use of Procedures for the Operating Department
10CFR50.54x

Explanation: Question meets KA. Question requires examinee knowledge of conditions and limitations in the facility license. 10CFR50.54, conditions of licenses, section X states "a licensee may take reasonable action that departs from a license condition or tech spec in an emergency when this action is immediately needed to protect the public safety". 10CFR50.54 section Y states "licensee action permitted in 10CFR50.54xshall be approved, as a minimum, by a licensed senior reactor operator prior to taking the action".

A is correct, see explanation above.
B is incorrect, the NRC must be notified, but approval is not needed prior to taking action.
C is incorrect, only one SRO approval required. Nuclear Duty Officer is required to be available 24 hours 7 days a week to respond to plant events as part of the Emergency Response Organization , but NDO approval is not needed for 10CFR 50.54x. Question asks for minimum approval.
D is incorrect, NRC approval not needed prior to taking action.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
95	SRO	3		194001	1940012.1.20	4.3	4.2	Low

System/Evolution Name: Generic

Category Statement: Conduct of Operations

KA Statement:
Ability to execute procedure steps.

UserID: Topic Line:

Question Stem:

Given:
- The crew is performing an Emergency Procedure (EP).
- The current step in the EP is designated as a Continuous Action Step.

During performance of the above step, the Unit Supervisor will direct the crew to…

A complete the particular step entirely prior to proceeding to the next procedure step or transitioning to another procedure.

B maintain the condition stated in the procedure step unless it is superceded by alternate guidance OR stated to be inapplicable.

C transition directly to the Continuous Action Summary page and perform the step using ONLY the information provided on the Continuous Action Summary Page.

D perform the Operator Action Summary action associated with the step.

Answer:	Task No:	S-AM-003	Question Source:	Question Difficulty
B	Obj No:	7E.AM-003-A	New	Low
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
No reference will be provided to examinee.
BwAP 340-1, Use of Procedures for the Operating Department

Explanation: Question meets KA. Question requires examinee ability to execute procedure steps and requires examinee knowledge of procedure use and adherence standards.
From BwAP 340-1, USE OF PROCEDURES FOR OPERATING DEPARTMENT, step C.4.b.4), a continuous action is an action that is applicable from the point it is first encountered until it is superceded by alternate guidance or stated to be inapplicable.

A is incorrect, tasks that must be completed entirely prior to proceeding to the next procedure step or transitioning to another procedure will be denoted by use of a note or caution and is not a continuous action step.
B is correct, see explanation above.
C is incorrect, in accordance with BwAP 340-1, any action taken during the performance of a continuous action step is to be performed using the referenced procedure step, not directly from the CAS page.
D is incorrect, operator action summaries are used for information that must be monitored throughout the procedure. Continuous actions do not apply until first encountered in the procedure. Continuous action steps are listed on the continuous action summary page, not the operator action summary page.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
96	SRO	3		194001	1940012.2.23	2.6	3.8	Low

System/Evolution Name: Generic

Category Statement: Equipment Control

KA Statement:
Ability to track limiting conditions for operations.

UserID: Topic Line:

Question Stem:

Given:
- ALL times listed are for today's date.
- Unit 1 is at 100% power.
- At 0445, 1BwOSR 0.1-1, 2, 3, UNIT 1 MODES 1, 2, AND 3 SHIFTLY AND DAILY OPERATING SURVEILLANCE, was completed for shift 1.
- ALL shift 1 Tech Spec required component parameters were within the acceptance criteria of 1BwOSR 0.1-1, 2, 3.
- At 0715, the shift 2 NSO initiated 1BwOSR 0.1-1, 2, 3 for shift 2.
- At 0830 the shift 2 NSO noted a Tech Spec required component parameter was outside the acceptance criteria of 1BwOSR 0.1-1, 2, 3 and verbally notified the Unit 1 Unit Supervisor of the condition.
- At 1345 the Unit 1 NSO completed 1BwOSR 0.1-1, 2, 3.

Based on the above conditions and assuming the component parameter remained outside the acceptance criteria of 1BwOSR 0.1-1, 2, 3, the Tech Spec Required Action completion time clock for the component inoperability started at…

A 0445.

B 0715.

C 0830.

D 1345.

Answer:	Task No:	S-AM-123	Question Source:	Question Difficulty
C	Obj No:	7E.AM-123-A	New	Low
Time: 1	Cross Ref:	10CFR55.43(b)(2)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-TS-XL-01, Intro to Tech Specs
Technical Specification 1.3, Completion Times

Explanation: Question meets KA. Question requires examinee ability to track limiting conditions for operations and requires examinee knowledge of tech spec surveillance requirement applicability.
The tech spec component was discovered to be outside it acceptance criteria at 0830. From Tech Spec 3.0.2 and Bases 3.0.2, time of LCO entry is at time of discovery of failure to meet LCO.

A is incorrect, surveillance was completed at 0445 with all parameters within acceptance criteria. LCO is entered at time of discovery of failure to meet LCO, not at time of last satisfactory completion of surveillance.
B is incorrect, surveillance was initiated at 0745. LCO is entered at time of discovery of failure to meet LCO, not surveillance initiation time.
C is correct, see explanation above.
D is incorrect, surveillance was completed at 1345. LCO is entered at time of discovery of failure to meet LCO, not surveillance completion time.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
97	SRO	3		194001	1940012.2.27	2.6	3.5	Low

System/Evolution Name: Generic

Category Statement: Equipment Control

KA Statement:
Knowledge of the refueling process.

UserID: Topic Line:

Question Stem:

Given:
- Unit 2 is in Mode 6.
- Core off load is in progress.
- All systems are properly aligned for current plant conditions.

Which ONE of the following conditions ALONE would require IMMEDIATE suspension of the core offload in accordance with Tech Specs/TRM?

A Direct communications is lost between the SPENT FUEL POOL and MCR.

B The reactor has been subcritical for 110 hours.

C SR Channel N31 is INOPERABLE.

D ONE unborated water source isolation valve is OPEN.

Answer:	Task No:	S-FH-012	Question Source:	Question Difficulty
D	Obj No:	7C.FH-024	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(2), (7)		

Reference:
No reference will be provided to examinee.
Technical Specification 3.9.2, Unborated Water Source Isolation Valves
Technical Specification, Nuclear Instrumentation
TRM 3.9.a, Decay Time
TRM 3.9.b, Communications

Explanation: Question meets KA. Question requires examinee knowledge of the refueling process.

A is incorrect, per TRM 3.9.b., would be correct if direct communications are lost between MCR and personnel at the containment refueling station vs. spent fuel pool.
B is incorrect, would be correct if reactor was subcritical for < 100 hours per TRM 3.9.a.
C is incorrect, with SR N31 inoperable, 3 SR channels remain operable (SR N32 and PANM SR channels A and B from TS 3.9.3 bases). Per TS 3.9.3 two SR NI channels are required in Mode 6.
D is correct, with one unborated water source isolation valve open, core alterations are suspended in per TS 3.9.2.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
98	SRO	3		194001	1940012.3.6	2.1	3.1	Low

System/Evolution Name:
Generic

Category Statement:
Radiological Controls

KA Statement:
Knowledge of the requirements for reviewing and approving release permits.

UserID:

Topic Line:

Question Stem:

Which of the following are Unit Supervisor responsibilities for reviewing and approving a liquid release package?

1. Verification of CW blowdown flow.
2. Placing "Liquid Release in Progress" placard at 0PM01J.
3. Calculating radiation monitor setpoints.
4. Verifying 0BwOS RETS 2.1.B-1 acceptance criteria met.
5. Verifying release tank valve alignment.
6. Performing pre-release rad monitor channel checks.

A 1, 2, & 4

B 1, 3, & 5

C 2, 5, & 6

D 3, 4, & 6

Answer:	Task No:	S-HP-001	Question Source:	Question Difficulty
A	Obj No:	7C.HP-001-A	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(4)		

Reference:
No reference will be provided to examinee.
BwOP WX-501T1, Liquid Release Tank Form

Explanation: Question meets KA. Question requires examinee knowledge of the SROs responsibilities and requirements for reviewing and approving release permits.

A is correct, SRO responsibilities include verification of CW blowdown flow, placement of the liquid release in progress placard, and verification of 0BwOS RETS 2.1-1a acceptance criteria.
B is incorrect, calculation of rad monitor setpoints is RP responsibility and valve alignment verification is field supervisor responsibility.
C is incorrect, valve alignment verification is field supervisor responsibility and pre-release channel check is RO responsibility.
D is incorrect, calculation of rad monitor setpoints is RP responsibility and pre-release channel check is RO responsibility.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
99	SRO	3		194001	1940012.4.38	2.2	4.0	Low

System/Evolution Name: Generic

Category Statement: Emergency Procedures/Plan

KA Statement:
Ability to take actions called for in the facility emergency plan, including (if required) supporting or acting as emergency coordinator.

UserID: Topic Line:

Question Stem:

Given:
- A plant event meeting the threshold for a General Emergency has occurred.
- The Shift Manager is the Shift Emergency Director.

Assuming the Shift Manager remains the Shift Emergency Director, which ONE of the following emergency plan actions may be delegated to the Unit 1 Unit Supervisor?

A Final decision to recommend Protective Action Requirements (PARs)

B Communication of Emergency Action Levels to offsite authorities.

C Authorizing issuance of thyroid blocking agents.

D Authorizing emergency exposures greater than EPA-400 limits.

Answer:	Task No:	S-ZP-012	Question Source:	Question Difficulty
B	Obj No:	7F.ZP-012-B	New	Medium
Time: 1	Cross Ref:	10CFR55.43(b)(1)		

Reference:
No reference will be provided to examinee.
ILT lesson plan I1-ZP-XL-01, Emergency Plan
EP-AA-112, Emergency Response Organization (ERO)/Emergency Response Facility (ERF) Activation and Operation

Explanation: Question meets KA. Question requires examinee knowledge of emergency plant and requires examinee ability to determine which actions called for in the facility emergency plan can be delegated to personnel supporting the emergency coordinator and which actions must be performed by the emergency coordinator.

A is incorrect, station emergency director cannot delegate final decision to recommend PARS. Initial determination of PARs can be delegated.
B is correct, EAL determination can be delegated to Unit Supervisor. Station emergency director is responsible for final approvals of EALs and PARs recommendations per EP-AA-112, steps 3.1.1.2 and 3.1.2.1.
C is incorrect, station emergency director cannot delegate authorization of thyroid blocking agents per EP-AA-112, step 3.1.2.2.
D is incorrect, station emergency director cannot delegate authorization of emergency exposures greater than EPA-400 limits per EP-AA-112, step 3.1.2.3.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: none

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
100	SRO	3		194001	1940012.4.44	2.1	4.0	High

System/Evolution Name:
Generic

Category Statement:
Emergency Procedures/Plan

KA Statement:
Knowledge of emergency plan protective action recommendations.

UserID:

Topic Line:

Question Stem:

Given:
- Unit 1 was at 100% power.
- All systems were normally aligned.
- An event occurred and a GENERAL EMERGENCY has been declared due to a LOSS of BOTH the RCS AND Fuel Clad Fission Product Barriers AND a POTENTIAL LOSS of the Containment Fission Product Barrier.
- The Shift Manager is determining Protective Action Recommendations (PARS) in accordance with EP-AA-111-F-02, BRAIDWOOD PLANT BASED PAR FLOWCHART, with the following conditions:
  - A controlled direct containment vent has NOT occurred.
  - Wind direction is from 192°.

Based on the above conditions, the result(s) of determining the PARs will be…

(EP-AA-111-F-02 is attached)

A NO PARs currently exist.

B shelter sub areas 1, 2, & 10

C evacuate ONLY sub areas 1, 2, & 10

D evacuate sub areas 1, 2, 3, 5, 6, 7, 10, 11, & 14.

Answer:	Task No:	S-ZP-007	Question Source:	Question Difficulty
C	Obj No:	T.ZP1-31	New	Low
Time: 1	Cross Ref:	10CFR55.43(b)(5)		

Reference:
Provide examinee copy of EP-AA-111-F-02.
EP-A-111-F-02, Braidwood Plant Based PAR Flowchart

Explanation: Question meets KA. Question requires examinee knowledge of plant based PARS and requires examinee analyze plant conditions and determine applicable PARS.
With general emergency declared, PARs are required. With no controlled direct containment vent in progress and loss of two fission product barriers, evacuation of 2 mile radius and 5 mile down wind is required. With wind direction 192°, sub areas 1, 2, & 10 are evacuated.

A is incorrect, would be correct if general emergency not declared.
B is incorrect, would be correct if controlled direct containment vent in progress.
C is correct, see explanation above.
D is incorrect, would be correct for loss of all three fission product barriers. Containment fission product barrier is only potential loss.

Date Written: 6/28/2007 Author: Darren Stiles App. Ref: EP-A-111-F-02

BRAIDWOOD December 2007 NRC ILT Written Examination Answer Key

- **Questions 1 through 75 are RO level questions.**
- **Questions 76 through 100 are SRO level questions.**

Q#	Answer	Q#	Answer	Q#	Answer	Q#	Answer
1	B	26	A	51	D	76	D
2	C	27	A	52	A	77	B
3	B	28	B	53	D	78	D
4	A	29	A	54	D	79	C
5	C	30	B	55	C	80	C
6	A	31	D	56	B	81	D
7	D	32	B	57	C	82	D
8	D	33	C	58	A	83	A
9	A	34	A	59	C	84	A
10	A	35	C	60	B	85	B
11	C	36	D	61	A	86	A
12	D	37	B	62	D	87	C
13	B	38	B	63	C	88	D
14	D	39	C	64	B	89	C
15	B	40	A	65	A	90	C
16	C	41	D	66	B	91	C
17	A	42	D	67	A	92	D
18	C	43	A	68	C	93	B
19	D	44	D	69	B	94	A
20	D	45	C	70	D	95	B
21	D	46	C	71	C	96	C
22	A	47	D	72	A	97	D
23	B	48	B	73	A	98	A
24	C	49	B	74	C	99	B
25	A	50	A	75	A	100	C