FINAL AS-ADMINISTERED WRITTEN EXAMINATION

FOR THE BRAIDWOOD INITIAL EXAMINATION - NOVEMBER 1, 2000

ES-403

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Written Examination Grading Quality Checklist

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Facility: Braidwood Units 142 Date of Exam: 11-1-00	Exam Le	evel: R) sro -	
		Initials	\$	
Item Description	а	b	с	
1. Answer key changes and question deletions justified and documented	7	h	M63	
 Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations) 	51	gh-	ME3	
 Grading for all borderline cases (80% +/- 2%) reviewed in detail 	N/A	N/A	NIA	
 All other failing examinations checked to ensure that grades are justified 	N/A	NA	N/A	
 Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants 	51	V	Mess	
Printed Name / Signature Date				
a. Grader William J. Spahr JA			1-00	
b. Facility Reviewer(*) John NEYHARE Aufant 11-2-00				
c. NRC Chief Examiner (*) Michael & Bully S. Michael & Bielly 11/2/00				
d. NRC Supervisor (*) Roy J. CANIAND Rep Camaro illanio				
(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.				

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Written Examination Grading Quality Checklist

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Facility: BRAIDWOOD Units 1+2. Date of Exam: 11/1/00	Exam Le	evel: R	R ERO	
		Initials	5	
Item Description	a	b	с	
1. Answer key changes and question deletions justified and documented	4	gh	1163	
2. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	Z	gr	MF3	
3. Grading for all borderline cases (80% +/- 2%) reviewed in detail	NA	NIA	N/4	
4. All other failing examinations checked to ensure that grades are justified	N/A	NR	N/A	
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Printed Name / Signature		C	ate	
a. Grader William J. Spahr Lage	-	11-	1-00	
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c. NRC Chief Examiner (*) // When E. Bully Sn /Michael E. Bic 16g S- 11/27/00				
d. NRC Supervisor (*) Roy J. CANIANO Roy Cancaro 11/27/08				
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ES-401

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Site-Specific Written Examination Cover Sheet

U.S. Nuclear Regulatory Commission Site-Specific Written Examination			
Applicant Information			
Name: MASTER EXAMINATION	Region: III		
Date: November 1, 2000	Facility/Unit: Braidwood Units 1 and 2		
License Level: RO	Reactor Type: W		
Start Time:	Finish Time:		
Instructions Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.			
Applicant Certification All work done on this examination is my own. I have neither given nor received aid.			
Applicant's Signature			
Results			
Examination Value Points			
Applicant's Score Points			
Applicant's Grade Percent			

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NUREG-1021, Revision 8

 Surveillance 1BwOSR 3.7.5.4-1 "Unit One Train A Auxiliary Feedwater Valve Emergency Actuation Signal Verification Test" is being performed. The personnel performing the surveillance are stationed at the Main Control Room, Aux. Electrical Room and the AF Pump Area.

In accordance with 1BwAP 390-1 "Operating Department Surveillance Program" how are operator actions directed while performing the surveillance?

- a. US directs operator actions for the surveillance and will inform the NSO of any changes in the status of plant evolutions.
- b. Assigned management person (other than shift operations) will provide direction to the operators and will directly inform the US of the status of plant evolutions.
- c. NSO directs the operator's actions for the surveillance and is directly informed of the status of plant evolutions.
- d. Operator at the AF pump area is in charge of actions being performed and will inform the Unit Supervisor of any changes in the status of plant evolutions.
- 2. In accordance with OP-AA-101-110, "Reactivity Management Controls," which of the following NON-LICENSED individuals can manipulate the controls of the reactor?

Under the direct supervision of the Reactor Operator,

- a. an individual that is enrolled in an approved training program.
- b. a System Engineer during surveillance testing.
- c. a Non-Licensed Operator during surveillance testing.
- d. an individual under the direct supervision of the Shift Manager.
- 3. Per Technical Specification Definitions, a MODE is determined by power level
 - a. core reactivity, and average RCS temperature.
 - b. core reactivity, and auctioneered high RCS temperature.
 - c. decay heat, and average RCS temperature.
 - d. decay heat, and auctioneered high RCS temperature.

4. Mechanical Maintenance has completed work on the 1B SI pump bearings and the pump is ready to be tested. The OOS is in the process of being cleared when it is discovered that the Personnel Protection Card has not been removed. All work is complete, but the lead worker has left the site and cannot be reached.

Who can authorize the removal of the Personnel Protection Card?

- a. Shift Manager (SM).
- b. Unit Supervisor (US).
- c. Work Control Supervisor.
- d. Holder releasing the OOS.
- 5. Which of the following is a responsibility of the NSO during refueling operations in the main control room?
 - a. Checking source range counts while a fuel assembly is being placed in the core.
 - b. Verifying proper operation of the Containment Evacuation alarm shiftly.
 - c. Maintaining a 1/M plot while reloading fuel during a core shuffle.
 - d. Updating the Control Room tag board per the Nuclear Component Transfer List shiftly.
- 6 Concerning 1BwGP 100-2, "Plant Startup," Limitations and Actions, the overlap of the Rod Control Banks shall be

(Assume current fuel cycle)

- a. 113 steps.
- b. 115 steps.
- c. 116 steps.
- d. 118 steps.

7. An operator received radiation exposures at BOTH Braidwood and LaSalle Stations during the

year.

The exposure record to date this year is:

	Braidwood	LaSalle
- Deep Dose Equivalent (DDE)	180 mrem	40 mrem
- Lens Dose Equivalent (LDE)	10 mrem	5 mrem
- Committed Effective Dose Equivalent (CEDE)	105 mrem	0 mrem
- Shallow Dose Equivalent (SDE)	10 mrem	10 mrem
-Committed Dose Equivalent (CDE)	20 mrem	0 mrem

The operator at Braidwood Station has been requested to work in an area where the known radiation rate is 160 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has collected and has been determined to be totally gamma radiation.

If the work task takes 30 minutes to complete, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

- a. 365 mrem
- b. 405 mrem
- c. 460 mrem
- d. 485 mrem
- 8. What are the MINIMUM requirements for unconditional release of a wrench that has been used in a Radiological Posted Area (RPA)?

A survey indicates the wrench is...

- a. free of both smearable and fixed contamination.
- b. free of smearable contamination but is allowed up to 1000 dpm/100cm² fixed contamination.
- c. allowed up to 20 dpm/100cm² smearable contamination and is allowed up to 5000 dpm/100cm² fixed contamination.
- d. allowed up to 100 dpm/100cm² of either smearable or fixed contamination.

- 9. Given the following plant conditions:
 - Unit 1 is at 100% power.
 - Unit 2 is at 100% power.
 - 0PR09J "CC HX Outlet Unit 0 Radiation Monitor" is in HIGH Alarm.
 - A confirmed High Alarm has been determined by chemistry.
 - The 0 CC HX has been subsequently isolated.

The crew should verify...

- a. Only 1CC017 is closed and enter the LCOAR for Unit 1.
- b. Only 2CC017 is closed and enter the LCOAR for Unit 2.
- c. Both 1CC017 and 2CC017 are closed and enter the LCOAR for both units.
- d. Both 1CC017 and 2CC017 are closed and do not enter a LCOAR.
- 10. An automatic reactor trip has occurred requiring entry to BwEP-0, REACTOR TRIP OR SAFETY INJECTION. During performance of Step 4, the operator has determined that SI has NOT actuated.

What is the NEXT action required of the operator?

- a. Manually actuate SI.
- b. Transition to 1BwEP ES-0.1, "REACTOR TRIP RESPONSE."
- c. Procede with Step 5 of BwEP 0.
- d. Check if SI is required.
- 11. As discussed in BwAP 340-1,"Use of Procedures for Operating Department," the required operator action while implementing a Critical Safety Function would be to suspend...
 - a. a lower priority RED BwFR to address a higher priority ORANGE condition.
 - b. a higher priority ORANGE BwFR to address a lower priority RED condition.
 - c. the Status Tree pass prior to completion to address an ORANGE condition.
 - d. BwCA-0.0, "Loss of All AC Power."

- 12. The following plant conditions exist:
 - Unit 2 is in the process of starting up from a refueling outage.
 - Reactor power is at 3% and has been stabilized to perform a power history surveillance.
 - Indicated intermediate range start up rate is 0 dpm.

A loss of the Unit 2 station auxiliary transformer occurs.

The Unit Supervisor directs a reactor trip.

The reactor operator attempts to trip the reactor at 2PM05J and 2PM06J with no results. The Unit Supervisor has entered 2BwEP-0 and is at Step 1 RNO.

The next procedure action will be to...

- a. continue with 2BwEP-0, Step 2.
- b. transition to 2BwCA-0.0, "Loss of All AC Power."
- c. transition to 2BwFR-S.1, "Response to Nuclear Power Generation/ATWS."
- d. transition to 2BwOA ELEC-3, "Loss of 4KV ESF Bus."
- 13. The following alarms have actuated:
 - Unit Two Area Fire
 - CO2 Storage Tank Trouble
 - On PM09J, the Zone Light for the 2B DG Room is illuminated

The fire brigade has been dispatched.

The fire brigade can expect CO2 actuation in the...

- a. 2B DG Room ONLY.
- b. 2B DG Day Tank Room ONLY.
- c. 2B DG Room and 2B DG Day Tank Room.
- d. NO actuation due to low CO2 Storage Tank Pressure.

- 14 The following plant conditions exist:
 - Rod D-4 rod bottom light LIT LIT
 - PWR RANGE FLUX RATE RX TRIP ALERT annunciator
 - Reactor Power
 - 95% - ROD CONTROL URGENT FAILURE annunciator NOT LIT
 - 1BwOA ROD-3 "Dropped or Misaligned Rod" has been entered.

While the crew is taking data for the dropped rod per step 7 of 1BwOA ROD-3, the following indications occur.

- Rod D-8 rod bottom light

LIT

Which of the following describes the action required?

- a. Reset rate trip and perform dropped rod recovery per 1BwOA ROD-3.
- b. Trip the reactor and enter 1BwEP-0.
- c. Restore Tave/Tref, then calculate QPTR.
- d. Perform SDM surveillance and reduce reactor power to less than 70%
- 15 Given the following plant conditions on Unit 1:
 - 80% reactor power.
 - CBD is 175 steps.
 - Core Age is 5200 EFPH.
 - RCS Tave is 575°F.
 - RCS Boron Concentration is 600 ppm.

What will RCS Tave be following a withdrawal of CBD to 200 steps? Assume new stable plant conditions exist.

- a. 576.5°F
- b. 578.5°F
- c. 580.5°F
- d. 581.5°F

16. Given the following plant conditions on Unit 1:

- The plant is operating at 75% power with normal lineup for performing a calorimetric.

- During the calorimetric, the NSO is in the process of adjusting N-44 when a turbine runback occurs.

- 1PT-505, turbine first stage impulse chamber pressure, fails high when the turbine runsback.

- Tavg is 584°F and increasing.

Based on these conditions, the NSO should ...

- a. Drive rods in manual until rod speed drops below 48 steps/min, then switch to AUTO until temperature is restored.
- b. Drive rods in manual and continously insert rods until temperature is restored.
- c. Allow automatic insertion until rod speed drops below 48 steps/min, then insert rods in manual until temperature is restored.
- d. Allow automatic insertion until rod speed drops below 64 steps/min, then insert rods in manual until temperature is restored.
- 17. The following plant conditions exist during a small-break LOCA:
 - Core exit TC's read approximately 532°F
 - RCS pressure is 885 psig
 - S/G levels are 25% narrow range
 - Steam pressure is 1092 psig
 - RCS wide range cold leg temperatures are all 525°F

Based on the above conditions, the RCS is ...

- a. saturated. Decreasing RCS pressure will aid in establishing subcooling.
- b. subcooled. Increasing S/G pressure will aid in increasing subcooling.
- c. subcooled. Decreasing RCS pressure will aid in increasing subcooling.
- d. saturated. Decreasing S/G pressure will aid in establishing subcooling.

- 18. Given the following plant conditions on Unit 2:
 - Mode 1
 - 2A and Unit 0 CC pumps are OOS
 - A fault occurs de-energizing ESF Bus 242

Which of the following actions must occur for the above plant conditions?

- a. Trip the reactor when CC heat exchanger outlet temperature is 105°F.
- b. Trip the reactor when RCP lower radial bearing temperature is 205°F.
- c. Trip the reactor when RCP upper motor bearing temperature is 195°F.
- d. No reactor trip is required, CC temperatures should remain constant.
- 19. The following conditions exist on Unit 1:

- Reactor power	36%
- Pzr pressure	2235 psig
- Pzr level	35%

RCP 1A breaker trips due to sensed undervoltage from bus 157. What is expected as a result of the trip of the RCP?

- a. The reactor will automatically trip due to the open RCP breaker.
- b. The reactor will automatically trip due to RCS loop low flow condition.
- c. The reactor must be manually tripped by the operator.
- d. A normal plant shutdown will be initiated.

20. The following plant conditions exist:

- Reactor	Tripped
- All RCPs	Running
- PZR level	48% increasing
- RCS pressure	1700 psig decreasing

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

- a. Failure of charging header connection to the RCS.
- b. Weld failure on pressurizer liquid space sample line.
- c. Failure of pressurizer PORV in an intermediate position.
- d. Weld failure on RCP B discharge piping.
- 21. The following plant conditions exist on Unit 1:
 - 100% power
 - RCS Tave is 582°F
 - PZR Pressure is 2235 psig

All systems were operating normally in Automatic when the 1A CV pump trips. Which of the following actions are required per BwAR 1-9-A3, "CHG PUMP TRIP?"

- a. Place 1CV121, "Cent Chg Pumps Flow Cntrl Vlv", in manual and close, then start 1B CV pump.
- b. Verify suction source, then start 1B CV pump.
- c. Isolate letdown, then start 1B CV pump.
- d. Close 1HCV182, "Chg Hdr Back Press Cntrl Vlv", then start 1B CV pump.

- 22. The following plant conditions exist on Units 1 and 2:
 - Unit 1 is in Mode 5
 - 1A RH pump is running supplying S/D Cooling
 - 1B DG is OOS for maintenance
 - Unit 2 is in Mode 6 for a Refueling Outage
 - Unit 2 SATs are OOS for repairs
 - 2A RH pump is running supplying S/D Cooling
 - Unit 2 ESF Busses are being supplied by Unit 1

Annunciator 1-20-C3, "SAT 142-1 SUDDEN PRESS", actuates concurrent with an overcurrent condition on Bkr 1412.

Concerning the RH systems, what method would the control room operators use to remove decay heat?

	Unit 1	Unit 2
a.	Steam SGs	Steam SGs
b.	Bleed and Feed	Steam SGs
C.	Start an RH pump	Bleed and Feed
d.	Steam SGs	Start an RH pump

23. What are the parameters and values used by the operator to ensure the temperature difference between the PZR and the spray fluid are within the specified limit(s) in the PRESSURE AND TEMPERATURE LIMIT REPORT when initiating PZR spray?

For normal spray, the difference between ...

- a. RCS hot leg loop temperature and PZR vapor space temperature limit is 50°F, and for aux spray, the difference between Regenerative Hx charging inlet temperature and PZR vapor space limit is 320°F.
- b. RCS cold leg loop temperature and PZR vapor space temperature limit is 50°F, and for aux spray, the difference between Regenerative Hx charging outlet temperature and PZR vapor space limit is 320°F.
- c. RCS hot leg loop temperature and PZR vapor space temperature limit is 320°F, and for aux spray, the difference between Regenerative Hx charging inlet temperature and PZR vapor space limit is 320°F.
- d. RCS cold leg loop temperature and PZR vapor space temperature limit is 320°F, and for aux spray, the difference between Regenerative Hx charging outlet temperature and PZR vapor space limit is 320°F.

24 The unit is at 100% power, steady state, NOP/NOT. The Pressurizer Pressure Master Controller setpoint fails to 2185 psig. Assume a step change in the setpoint and assume that pressurizer pressure control remains in automatic.

Which of the following is the immediate automatic response of the system?

- a. Spray valves open, Variable Heaters deenergize
- b. PORV 455A opens, Spray valves open, Variable Heaters energize.
- c. Spray valves open, Variable Heaters energize.
- d. Spray valves close, Variable Heaters deenergize.
- 25. Which of the following Reactor Protection System Trips protects against DNB accidents?
 - a. IR High Flux
 - b. High Pressurizer Pressure
 - c. High Pressurizer Level
 - d. Power Range High Negative Rate
- 26. The Status light for 1SI8801B is DARK following a SI actuation. 1SI8801B is...
 - a. FULL OPEN and is NOT in its required safeguards position.
 - b. CLOSED and is NOT in its required safeguards position.
 - c. FULL OPEN and is in its required safeguards position.
 - d. CLOSED and is in its required safeguards position.

27. A normal Unit 1 heatup is in progress per 1BwGP 100-1 with the following plant conditions:

-RCS pressure	1850 psig
-RCS pressurization rate	15 psig/min
-RCS temperature	485°F
-RCS heat up rate	10°F/hr
-S/G pressure	575 psig

If the current trend continues, which of the following occurs FIRST?

- a. MSIVs close.
- b. PZR PORV opens.
- c. Lowest setpoint S/G safety valve opens.
- d. First group of steam dumps throttle open.
- 28. Rods are being withdrawn in manual during a reactor startup, with all systems operable.

For the Control Banks, which of the following describes the status of the DRPI rod bottom lights at the moment the ROD AT BOTTOM annunciator alarm clears?

- a. Banks A, B, C, & D -- OFF.
- b. Banks A, B, C, & D -- ON.
- c. Banks A, B, C -- OFF; Bank D -- ON.
- d. Bank A -- OFF; Banks B, C, & D -- ON.
- 29. Which of the following components is being DIRECTLY adjusted by the gain adjust at the NI panel potentiameter following a calorimetric calibration?
 - a. Summing and level amplifier
 - b. Detector output current
 - c. Upper and Lower Detector Averaging Circuit
 - d. Detector high voltage power supply

30. A plant start-up is in progress. The P-10 permissive light has just come "ON". *qone "の*FF, " No operator actions have been taken.

Which of the following will result in an automatic reactor trip?

- a. Trip of one RCP.
- b. Power range channel N41 fails HIGH.
- c. Intermediate Range channel N35 fails HIGH.
- d. The NSO places the Block/Reset Switch for SR channel 31 to the "Reset" position.
- 31. Which of the following is correct for an OPEN in a RVLIS or CETC thermocouple after steady state conditions are reached?
 - a. RVLIS will indicate core uncovery.
 - b. Subcoolin Margin Monitor will indicate increased subcooling.
 - c. Control Board indication for the affected thermocouple will indicate less than 35°F.
 - d. Control Board indication for the affected thermocouple will indicate greater than 2300°F.

32. Given the following plant conditions on Unit 1:

-100% power.

-Train A CETC power supply (MCC 131x1 ckt15) has been deenergized for breaker replacement.

-Train B CETC has only 10 thermocouples operable which are currently indicating:

- 1-610°F 6-613°F
- 2-610°F 7-612°F
- 3-613°F 8-612°F
- 4-640°F 9-611°F
- 5-613°F 10-613°F

-MCB display for train B CETC indicates 615°F

CETC #4 fails high.

MCB temperature would indicate

- a. 612°F
- b. 615°F
- c. 731°F
- d. 781°F
- 33. Given the following Unit 2 conditions:

-2A and 2C Reactor Containment Fan Coolers (RCFC) are operating in HIGH speed. -2B and 2D RCFCs are stopped and in standby.

-Normal cooling water lineup for the RCFCs exists.

What will be the status of the RCFCs 15 seconds after an SI signal occurs concurrent with a loss of offsite power?

- a. Only 2A and 2B RCFCs running in HIGH speed.
- b. Only 2B and 2D RCFCs running in LOW speed.
- c. ALL RCFCs running in LOW speed.
- d. NO RCFCs are running.

- 34. The plant has just tripped from 100% power. Which of the following will result in the RCFCs automatically shifting to low speed?
 - a. Two channels of containment pressure reading 3.5 psig.
 - b. Two channels of pressurizer pressure reading 1880 psig.
 - c. Two channels of containment temperature reading 125°F.
 - d. Two undervoltage conditions sensed on the 6.9 KV buses.
- 35. During initial actuation of the Containment Spray System during a LOCA, radiation levels in the RWST are expected to....
 - a. increase due to spray add tank recirculation to the RWST.
 - b. increase due to containment recirc. sump recirculation to the RWST.
 - c. stay the same due to NO recirculation aligned to the RWST.
 - d. stay the same due to spray add tank recirculation to the RWST.
- 36. A fire has occurred in the 2B Containment Charcoal Filter Unit. Deluge is actuated at ...
 - a. 0PM02J in the Main Control Room.
 - b. 1PM09J, Fire Panel in the Main Control Room.
 - c. 2B Containment Charcoal Filter Unit.
 - d. 2VP01J on 426' Electrical Penetration Area.

37 The following plant conditions exist:

- A LOCA has occurred on Unit 1
- E-0 has been completed and the crew has transitioned to E-1
- From E-1 the crew transitioned to FR-C.1

- The Post-LOCA Purge Exhaust Fan is de-energized due to an electrical fault on Bus 134V4.

Which of the following containment hydrogen concentrations is the MAXIMUM concentration which the Hydrogen Recombiners may be placed in service WITHOUT CONSULTATION WITH THE TSC?

- a. 0.5%
- b. 4.0%
- c. 6.0%
- d. 8.0%
- 38. The following conditions exist:

-Unit 1 is at 100% power -Unit 2 is currently off loading fuel to the Spent Fuel Pool -Current Spent Fuel Pool temperature is 105°F -1FC01P "SFP Cooling Pump" is OOS for maintenance -2FC01P "SFP Cooling Pump" was running and tripped for unknown reasons

Per 0BwOA REFUEL-3, which of the following actions should take place:

- a. Start one FHB Charcoal Booster Fan and two Aux Building Charcoal Booster Fans.
- b. Align a RWST to the SFP and start one Aux Building Charcoal Booster Fan.
- c. Align Recycle Hold Up Tank to the SFP.
- d. Place the Skimmer Loop in Service.

39. The plant is operating at 100% power when the Controlling S/G Level Channel on 'A' S/G fails to 100%.

If no operator action is taken, what is the expected plant response?

- a. Feedwater flow to 'A' S/G will INITIALLY INCREASE, then DECREASE causing S/G level to STABILIZE at a level HIGHER THAN PROGRAM.
- b. Feedwater flow to 'A' S/G will INITIALLY DECREASE, then INCREASE causing S/G level to STABILIZE at a level LOWER THAN PROGRAM.
- c. Reactor trip will occur on Lo-Lo S/G level.
- d. Reactor trip will occur due to turbine trip.
- 40. Which of the following will close the MSIVs?
 - a. 3.4 psig Cnmt pressure on 2/3 channels.
 - b. 640 psig steam line pressure > P-11 on 1/3 channels on 1/4 lines.
 - c. -100 psi/50sec < P-11 with SI blocked on 1/3 channels on 1/4 lines.
 - d. 8.2 psig Cnmt pressure on 2/3 channels.
- 41. All steam generator pressures increase following a transient event. Steam generator pressures are being maintained by all twenty steam generator safety valves. The LOWEST approximate discharge pressure of the MFW pumps necessary to provide flow to the steam generators would be...
 - a. 1115 psig.
 - b. 1175 psig.
 - c. 1205 psig.
 - d. 1235 psig.

- 42. The following conditions exist on Unit 2:
 - -Reactor Power is at 50%, steady state.
 - -The Steam Dumps are in the Tave MODE and in Automatic
 - -The Reactor Operator adjusts the steam dump controller potentiometer from 7.28 to 8.00

Which of the following is a correct plant effect of the potentiometer change?

Fuel Cladding Temperature...

- a. increases due to increased steam demand.
- b. decreases due to a decrease in steam demand.
- c. remains constant due to the potentiometer only in circuit during Manual Mode.
- d. remains constant due to the potentiometer only in the circuit during STEAM PRESSURE Mode.
- 43. Unit 2 is operating at 50% power ramping up to full power. Main Condenser pressure is slowly rising. Pressure is currently at 5"HgA and rising at 0.5"/min.

In 6 minutes the crew should ...

- a. Initiate a Turbine Runback.
- b. Increase turbine power to 620 MW.
- c. Manually trip the reactor and go to 2BwEP-0.
- d. Select MW OUT and ramp down @ 0.5 MW/min.
- 44. What is the SEQUENCE that occurs when a Main Feed pump LOW NPSH signal is actuated?
 - a. The CD 152 valve (CD pump recirc) opens, the CD/CB aux oil pump starts, the CD/CB pump starts.
 - b. The CD/CB pump starts then the CD 152 valve (CD pump recirc) opens.
 - c. The CD 152 valve (CD pump recirc) closes, the CD/CB aux oil pump starts, the CD/CB pump starts.
 - d. The CD/CB pump starts then the CD 152 valve (CD pump recirc) closes.

45 Per Tech Specs, which of the following is a correct listing of Technical Specification Feedwater Isolation Valves associated with the Unit 2 Main Feed Water System?

2FW009, "FW Isolation Valve", 2FW035, "SG Feedwater Tempering Isolation Valve" 2FW510, "FW Regulating Valve", 2FW510A, "FW Regulating Bypass Valve",

AND...

- a. 2FW006A, "S/G FW Shutoff VLV" and 2FW043, "SG FWIV Bypass Isolation Valve."
- b. 2FW006A, "S/G FW Shutoff VLV" and 2FW046, "S/G FWIV Byp Flow Cont."
- c. 2FW034, "SG Tempering Flow Control Valve" and 2FW046, "S/G FWIV Byp Flow Cont."
- d. 2FW034, "SG Tempering Flow Control Valve" and 2FW043, "SG FWIV Bypass Isolation Valve."
- 46. The following conditions exist on Unit 1:
 - -Reactor power is 100%
 - -All systems are normal
 - -1FT-512 is selected for steam flow input into SGWLC for S/G 1A

With NO OPERATOR ACTION, what is the effect of the pressure transmitter associated with FT-512 failing low?

1A S/G level will decrease, feed pump speed ...

- a. will decrease, and S/G level will decrease below the LO-2 setpoint.
- b. is unaffected, and S/G level will return to normal.
- c. will increase, and S/G level will return to normal.
- d. is unaffected, and S/G level will decrease below LO-2 setpoint.

47. A Unit 1 RCS cooldown is in progress with the A auxiliary feedwater pump maintaining level in all steam generators. Instrument bus 111 is deenergized.

Auxiliary feedwater system flow control valves (1AF005a-d)

- a. Fail as is.
- b. Fail Open.
- c. Fail Closed.
- d. Are not affected.
- 48. Which of the following will result in a shift of Unit 1 Auxiliary Feedwater (AF) System suction from the Condensate Storage Tank to the Essential Service Water System while in Mode 3 at NOT/NOP?

AF pump suction pressure of ...

- a. 17 psia coincident with a loss of offsite power.
- b. 19 psia coincident with Lo-Lo level in ALL steam generators.
- c. 17 psia coincident with Pressurizer pressure of 1850 psig.
- d. 19 psia coincident with a phase B isolation.
- 49. A Reactor Trip has just occurred on Unit 1. Following the main generator trip, Automatic Bus Transfer failed to operate for Busses 156 and 157. Which ONE of the following describes the 6.9 KV Bus AND RCP status?
 - a. All Feed and Load Breakers Open on Busses 156 and 157. Only the 1A and 1B RCPs trip due to Bus Undervoltage.
 - All Load Breakers Open on Busses 156 and 157.
 Only the 1A and 1B RCPs trip due to Bus Underfrequency.
 - c. All Load Breakers Open on Busses 156 and 157. All RCPs trip due to Bus Undervoltage.
 - d. All Feed and Load Breakers Open on Busses 156 and 157. All RCPs trip due to Bus Underfrequency.

50. During operation at power with the Reactor Trip Breakers closed, a LOSS of 125 VDC control power to one of the Reactor Trip Breakers occurs.

Which of the following describes how that Reactor Trip Breaker will respond?

- a. Trips OPEN due to loss of power to the SHUNT coil.
- b. Trips OPEN due to loss of power to the UNDERVOLTAGE coil.
- c. Is NOT capable of tripping on a SHUNT trip.
- d. Is NOT capable of tripping on an UNDERVOLTAGE trip.
- 51. Given the following conditions:
 - Unit 2 is in MODE 3 at 500°F
 - The MCB indication for DC Bus 211 indicates 0 volts
 - Pressurizer Spray Valve 2RY455B is stuck open
 - RCS pressure is lowering

Which of the following will stop the RCS depressurization?

- a. Energize all Pressurizer heaters.
- b. Trip the 2D RCP locally at its breaker.
- c. Isolate Instrument Air to Containment.
- d. Secure the 2C RCP from the Main Control Room.
- 52. The 1A DG is not running.

Which of the following combinations of Diesel Generator Air Receiver pressures is sufficient to maintain the 1A Diesel Generator OPERABLE per BwOP DG-1 "Diesel Generator Alignment to Standby Condition?"

	Receiver A (PSIG)	Receiver B (PSIG)
a.	170	100
b.	0	240
C.	170	170
d.	0	170

53 The 2A Diesel Generator is NOT running. The lead Fuel Oil Transfer pump starts in response to low level in the Fuel Oil Day Tank. This pump fails to develop adequate discharge pressure but continues to run.

The second Fuel Oil Transfer pump will ...

- a. NOT start because it is not selected to start on low level.
- b. NOT start unless DG engine speed reaches 100 RPM.
- c. start if in AUTO.
- d. start immediately if the running pump is placed in Pull Out.
- 54. The following plant conditions exist:

- A high flow liquid radioactive waste discharge is in progress IAW BwOP WX-501T1, "Liquid Radioactive Tank 0WX01T Release Form."

- Circulating water blowdown flow in the release header indicates 6500 gpm.

The operator should...

- a. Increase circulating water blowdown flow to greater than 8000 gpm.
- b. Verify 0AOV WX-353, Release Tank Outlet, is closed and ensure the release is terminated.
- c. Verify the relase tank discharge high radiation header alarm is NOT lit.
- d. Check the high flow release rate less than the calculated value.
- 55. The waste gas discharge control modulating valve (RCV 014)....
 - a. must be opened by first dialing the controller to 50%, then placing the open control switch to the OPEN position.
 - b. will close automatically and an alarm will be activated when vent stack activity exceeds the high alarm setpoint on 0PR2J.
 - c. controls pressure at 1.3 psig from a gas decay tank to the hold up tanks.
 - d. maintains a constant downstream pressure to ensure a constant discharge flowrate.

56. When aligned for normal operation (BwOP GW-1), what is the response to high pressure sensed at the in-service Gas Decay Tank?

An alarm is generated that...

- a. alerts the operator to manually place a standby Gas Decay Tank in service.
- b. indicates auto swap of in-service Gas Decay Tank to selected standby Gas Decay Tank, and alerts the operator to align another standby Gas Decay Tank.
- c. indicates auto swap of in-service Gas Decay Tank to selected standby Gas Decay Tank and auto swap of standby Gas Decay Tank to new standby Gas Decay Tank.
- d. shuts down the Waste Gas Compressors and isolates the in-service Gas Decay Tank.
- 57. The Fuel Handling Incident FHB Monitors 0AR055/56 use which of the following detector types and detect which types of radiation?
 - a. Geiger-Mueller (G-M) tube, gamma and beta
 - b. Geiger-Mueller (G-M) tube, gamma and alpha
 - c. Compensated Ion Chamber, gamma and beta
 - d. Uncompensated Ion Chamber, gamma and alpha
- 58. The Main Control Room Outside Air Intake Radiation Monitors (gaseous) are separated into Train A and Train B (0RE-PR031B and 0RE-PR032B for Train A and 0RE-PR033B and 0RE-PR034B for Train B).

Which of the following is correct regarding the Main Control Room Outside Air Inlet Radiation Monitors (gaseous)?

The MINIMUM conditions to initiate automatic actions are...

- a. 0RE-PR031B and 0RE-PR034B are in the OPERATE FAILURE condition.
- b. 0RE-PR031B and 0RE-PR033B are in the OPERATE FAILURE condition.
- c. 0RE-PR031B in HIGH alarm.
- d. 0RE-PR031B and 0RE-PR033B are in HIGH alarm.

59. The unit is presently at 90% and shutting down due to a loss of Instrument Bus 114. All systems are in automatic.

A Loss of Coolant Accident (LOCA) occurs. Which of the following statements best describes response of the 1B SX pump?

- a. Will automatically start on low system pressure.
- b. Will have to be manually started.
- c. Cannot be started from the control room.
- d. Will automatically start on a Manual SI actuation.
- 60. Given the following Unit 1 conditions:

-Reactor power - 100% -1B D/G surveillance test in progress - full load -1B SX pump - running -1A SX pump - available

The 1B SX pump tripped due to electrical problem with Bus 142. The US directs a start of the 1A SX pump.

What is the SEQUENCE for starting the 1A SX pump in these conditions?

The operator will ...

- a. take the 1A SX pump switch to START and release. The pump will start after a delay.
- b. take the 1A SX pump switch to START and hold until the pump starts.
- c. start the auxiliary oil pump, take the 1A SX pump switch to START and release. The pump will immediately start.
- d. start the auxiliary oil pump, wait 5 seconds, take the 1A SX pump switch to START and hold until the pump starts.

- 61. Which of the following would occur on a small tube leak in the Component Cooling Water (CC) Heat Exchanger?
 - a. Automatic CC System makeup from the Primary Water System only would occur, providing the necessary level for CC pump operation.
 - b. CC System liquid inventory would increase, thus increasing the CC flowrate to components cooled by the CC System.
 - c. CC would leak into the Essential Service Water (SX) System, potentially contaminating the SX System.
 - d. CC surge tank level would increase, which would cause water to overflow through the vent valve.
- 62. When does the STBY station air compressor start?
 - a. 85 psig.
 - b. 90 psig.
 - c. 95 psig.
 - d. 105 psig.

 63. Unit 1 is currently in Mode 4.
 1A RH train is in service providing shutdown cooling. RCS temp - 340°F
 RCS pressure - 350 psig

Unit 2 is in Mode 1 at 100% power.

Equipment OOS for ma	aintenance:
1B CW pump	"OC" WS pump
1A CC pump	U2 SA Compressor

A loss of the Unit 1 SAT occurs due to a sudden pressure actuation.

With NO operator action, Unit 1 will experience an uncontrolled ______ and Unit 2 will

a.	cooldown	trip on Lo-Lo S/G level.
b.	heatup	not be affected

- c. cooldown not be affected
- d. heatup trip on Lo-Lo S/G level.
- 64. The design of the Containment Equipment Hatch...
 - a. is sized to allow reactor vessel head "O" ring passage.
 - b. will allow only 2 personnel to enter/exit containment at one time.
 - c. has a door at each end; one of which has been tested to ensure containment integrity during a design basis accident.
 - d. is equipped with pneumatically interlocked inner and outer doors.

65 Unit 1 is at 36% power, when a rapid drop in reactor power occurs and a rod bottom light (DRPI panel) appears for a rod in Control Bank A. The crew enters 1BwOA ROD-3, Dropped or Misaligned Rod, for determining, correcting, and recovering a dropped control rod.

Which of the following actions will actuate the ROD CONT URGENT FAILURE (Annun. 1-10-C6) alarm during the dropped rod recovery?

- a. Resetting Group 1A step counter to ZERO.
- b. Resetting Control Bank A P/A Converter to ZERO.
- c. Withdrawing the dropped rod to its bank position.
- d. Opening the Lift Coil Disconnect switches for the unaffected rods in CB "A".
- 66. Given the following Unit 1 conditions:

Reactor power is at 100% steady state

	1	_2_	3	4
Power range NIS	102%	103%	102%	102%
PZR pressure	1880 psig(455)	1910 psig(456)	2500 psig(457)	1905 psig(458)
PZR level	90%(459)	92%(460)	90%(461)	72%(462)
Tave	584°F	585°F	582 [°] F	586 [°] F
SG levels	43%(1A)	34%(1B)	89%(1C)	40%(1D)
(all S/G instru	ments for a S/G re	ead the same level))	()

What is the FIRST required action for these conditions?

- a. Verify a turbine runback is initiated.
- b. Reduce power to LESS THAN 100% indicated to ensure 8 hour average does NOT exceed 100% power.
- c. Trip the reactor and initiate actions of 1BwEP-0.
- d. Initiate a MANUAL Safety Injection and initiate actions of 1BwEP-0.

67 A reactor trip has occurred due to a turbine trip from full power. Narrow range steam generator levels are off scale low.

Why does 1BwEP ES-0.1, Reactor Trip Response, instruct the operator to feed the steam generators at greater than 500 GPM?

- a. Enhance natural circulation.
- b. Provide an adequate heat sink for decay heat removal.
- c. Ensure the steam generator U-tubes remain "wet" preventing dry steam generators.
- d. Prevent the formation of steam in the steam generator feed ring.
- 68. The plant is operating at 100% power when a pressurizer safety valve inadvertently lifts. The PRT pressure is 20 psig.

Which of the following most closely approximates the tail pipe temperature of the open safety valve?

- a. 235°F
- b. 265°F
- c. 295°F
- d. 325°F
- 69 Given the following plant conditions on Unit 1:
 - 100% power.
 - RCP No. 1 SEAL LEAKOFF FLOW HIGH alarm is received.
 - No. 2 seal leakoff high flow alarm has been PRINTED.
 - RCP No. 1 seal leakoff recorder indication is offscale high on the HIGH range.

Which of the following has occurred and what action is indicated?

- a. The No. 1 and No. 2 seals have failed and a controlled reactor shutdown is required.
- b. The No. 2 seal has failed and continued monitoring of RCP conditions is required.
- c. The No. 1 seal has failed and an immediate reactor trip is required.
- d. The No. 2 and No. 3 seals have failed and continued monitoring of RCP conditions is required.

- 70. The following plant conditions exist:
 - Unit 1 40% reactor power steady state conditions
 - Rod Control Automatic

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- Letdown 75 gpm through 1A L/D Hx

Temperature Control Valve (1CC130A), CC flow control valve, repositions due to a loss of IA to the valve positioner. Which of the following describes the plant response to the event?

- a. 1TCV-129 opens bypassing flow around the demineralizers.
- b. Control rods step out due to a reduction in RCS temperature.
- c. Control rods step in due to rising RCS temperature.
- d. RCS temperature falls requiring dilution to restore temperature.
- 71. Which of the following valve combinations and flows for emergency boration are allowed in accordance with 1BwOA PRI-2, "Emergency Boration?"
 - a. 1CV112B, VCT Outlet Isolation Valve FULL OPEN and 1CV121, Charging Line Flow Control Valve, FULL OPEN with maximum charging header flow.
 - b. 1CV112C, VCT Outlet Isolation Valve, CLOSED, and 1CV8104, Emergency Boration Valve, FULL OPEN with maximum charging header flow.
 - c. 1CV112D, RWST to Cent Chg Pump Suction Valve, FULL OPEN, and 1CV8485A, CV Pump Disch Valve THROTTLED to balance high head SI flow and Letdown flow.
 - d. 1CV8104, Emergency Boration Valve, FULL OPEN, and 1CV8485A, CV Pump Disch Valve THROTTLED to balance high head SI flow and Letdown flow.

- 72. Given the following plant conditions on Unit 1:
 - Reactor power 75%
 - PZR pressure control selected to 455/456
 - Pressure channel 1PT-457 fails LOW

1BwOA INST-2 "Operation With A Failed Instrument Channel" is entered and the required actions for the failed channel are performed.

How is the PZR PORV operation affected with the failed channel Out of Service?

- a. ONLY PORV PCV-456 will NOT CLOSE, if OPEN in AUTO, when PZR pressure decreases to the PORV blocking signal.
- b. Neither PORV will CLOSE, if OPEN in AUTO, when PZR pressure decreases to the PORV blocking signal.
- c. ONLY PORV PCV-456 will NOT OPEN when PZR pressure increases to its OPEN setpoint.
- d. Neither PORV will OPEN when PZR pressure increases to their OPEN setpoint.
- 73. While performing the immediate actions of BwFR-S.1," Response to Nuclear Power Generation/ATWS", the operator was directed to verify a turbine trip. Subsequently, in Step 8, the operator is again directed to verify a turbine trip. If the main turbine has not tripped at this point, the crew is directed to trip the main turbine locally.

Why wasn't the operator directed to trip the main turbine locally during the immediate actions of the procedure?

- a. Local operators are busy isolating the steam dumps.
- b. The main turbine can still be used to draw steam for RCS temperature control.
- c. The main turbine can still be used to maintain S/G water level due to no MFW pump trip.
- d. Local operator actions are more time consuming to initiate and complete.

74. Refueling is in progress on Unit 2. RCS boron concentration has been verified to be 1990 ppm (two samples analyzed).

The crew is required to ...

- a. suspend core alterations and establish containment integrity.
- b. suspend core alterations and positive reactivity changes, and initiate boration.
- c. suspend core alterations and remove all personnel from the containment building.
- d. remove all personnel from the containment building, establish containment integrity, and initiate boration.
- 75. The following plant conditions exist:
 - A fuel assembly has just been removed from the core.
 - Immediately after initiating transit to the upender, the refueling cavity level is reported to be a foot below normal and dropping at a visible rate.

Which of the following is the preferred course of action?

- a. Stop the refuel movement at the current location in transit to the upender.
- b. Place the fuel assembly back into the reactor vessel.
- c. Place the fuel assembly in the upender and lower it to the horizontal position.
- d. Position the mast over the deepest part of the cavity and lower the assembly to the bottom.

76. A SGTR has occurred on Unit 1. Current conditions are:

- RCS pressure 1350 psig
- RCS temperature (CETCs) 545° F
- SG pressures 930 psig (A) 1145 psig (B) 940 psig (C) 940 psig (D) - SG 1B has been confirmed as the SG with the rupture.

While performing the steps of 1BwEP-3, "Steam Generator Tube Rupture", the Unit Supervisor found ALL available copies of the procedure had an illegible page. This page contained the required temperatures for determining RCS cooldown temperatures.

The US directs you to use the steam tables to determine the required RCS (core exit) temperature with an allowance of 50° F for subcooling.

The required core exit temperature after the RCS cooldown is ...

- a. 513°F
- b. 518°F
- c. 534°F
- d. 538°F
- 77. The following plant conditions exist:
 - An initial plant startup is in progress, per 1BwGP 100-3, from a refueling outage.
 - The reactor is initially at 13% power.
 - The Main Turbine is at 600 rpm.
 - Trips associated with Permissive P-10 have been blocked.
 - Fouling of the circ water traveling screens has caused a reduction in condenser CW flow.
 - Condenser vacuum decreases to indicate 7.0 inches Hg absolute.

Assuming no operator action, choose the statement below which describes the effect on the plant.

- a. The reactor will trip due to a turbine trip.
- b. The reactor will trip on NIS IR FLUX HI Setpoint.
- c. RCS temperature will increase until steam dumps actuate.
- d. RCS temperature will increase until Steam Generator PORVs actuate.
- 78. While at 35% power, a main feed water regulating valve fails open causing the affected SG level to exceed the hi-hi level setpoint. The reactor trips; however, NO SG level drops below the LO-LO level setpoint. Assuming NO operator action is taken, how many AF pump Lube Oil Pumps will be running 1 minute after the trip?
 - a. None.
 - b. One.
 - c. Two.
 - d. Three.
- 79. Given the following plant conditions on Unit 1:
 - Reactor power is 90%. - IC SG Feed Flow is pegged HIGH. - RCS Tave is stable at 579°F on all 4 loops. - 1C SG Main FW Reg Valve is full
 - OPEN. - RCS pressure is stable at 2235 psig. - 1C SG pressure is STABLE.
 - Containment Pressure is INCREASING. 1C SG level is DECREASING.
 - Which of the following events is in progress?
 - a. Main FW Reg Valve failed OPEN.
 - b. Feed Flow Indicator failed HIGH.
 - c. Feed Line Break INSIDE Containment.
 - d. Main Feed Pump trip.
- 80. Which of the following signals will cause the Radwaste Release Tank Pump (0WX53P) to trip?
 - a. High radiation condition on OPR01J "Liquid Radwaste."
 - b. Low flow from the Circ Water system.
 - c. Low level of 16% in the Radwaste Release Tank.
 - d. High level of 90% in the Regeneration Waste Drain Tank.

- 81. A waste gas decay tank release is in progress. Which of the following malfunctions occurring during the release could result in a release outside of permitted limits assuming no operator action?
 - a. Loss of instrument air to OGWRCV014 "Gas DecayTank Vent Stack Effluent Isolation Valve."
 - b. Gas Decay Tank Cover Gas Pressure reaches .7 psig.
 - c. OPR02J "Waste Gas Processing Rad Monitor" fails low.
 - d. In service Gas Decay Tank pressure reaches 95 psig.
- 82. The following plant conditions exist:

0B Gas Decay Tank is now in service.0E Gas Decay Tank is in Standby.0A Gas Decay Tank was in service and is currently isolated.

Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig. 0BwOA RAD-3 was entered and the 0A Gas Decay Tank was taken off-line and isolated.

Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is ...

- a. 47 psig.
- b. 58 psig.
- c. 62 psig.
- d. 73 psig.
- 83. Per Tech Spec Basis regarding high containment pressure, which of the following events could lead to the highest pressure/leakage out of containment?
 - a. Design Basis LOCA.
 - b. Design Basis Steam Line Break inside Containment.
 - c. Inadvertant Containment Spray Initiation.
 - d. Pressurizer vapor space LOCA.

- 84. Which of the following is NOT a high level action of 1BwFR-Z.1, "Response to Containment High Pressure?"
 - a. Verify containment isolation.
 - b. Verify containment heat removal.
 - c. Reduce heat input to containment.
 - d. Check for and isolate faulted steam generator.
- 85. 2BwFR-C.1, "Inadequate Core Cooling" must be entered if CETCs are greater than or equal to...
 - a. 700°F ONLY.
 - b. 1200°F ONLY.
 - c. 700°F AND RCS Subcooling Unacceptable.
 - d. 1200°F AND RCS Subcooling Unacceptable.
- 86. The following plant conditions exist:

A reactor trip and loss of offsite power occurred. Reactor power was initially at 100%. Tavg is 531°F. Tcold is at 527°F. Thot is at 534°F. Average of the ten (10) hottest CETC's is 538°F. Pressurizer pressure is at 2185 psig.

Which of the following is the subcooling that currently exists?

- a. 92°F
- b. 102°F
- c. 111°F
- d. 121°F

A Small Break LOCA occurred on Unit 2 resulting in a reactor trip/SI.
 While performing the Immediate Actions of 2BwEP-0, the Main Turbine did not trip and the crew successfully performed ALL actions of the RNO for verifying a Turbine Trip.
 From 2BwEP-0 the crew transitioned to 2BwEP-1.
 At step 6 of 2BwEP 1. "Check if ECCS flow should be reduced" BCS pressure starts.

At step 6 of 2BwEP-1, "Check if ECCS flow should be reduced" RCS pressure starts decreasing rapidly.

The crew notes steam flows on ALL 4 Steam Generators.

The crew transitions to 2BwEP ES-0.0 "Rediagnosis"

From 2BwEP ES-0.0, the crew should transition to...

- a. 2BwEP-2, "Faulted Steam Generator Isolation."
- b. 2BwCA-2.1, "Uncontrolled Depressurization of All SGs."
- c. 2BwEP ES-1.1, "SI Termination."
- d. 2BwEP-0, "Reactor Trip or Safety Injection."
- 88. Which of the following describes the methods in order of preference used in 1BwEP ES-1.2, "Post LOCA Cooldown and Depressurization" during the performance of step 10, Depressurize RCS to Refill PZR?
 - a. One Pzr PORV, Normal Spray. Aux. Spray.
 - b. One Pzr PORV, Aux. Spray, Normal Spray.
 - c. Normal Spray, Aux. Spray, One Pzr PORV.
 - d. Normal Spray, One Pzr PORV, Aux. Spray.

89. A Large Break LOCA has occurred on Unit 1 and a transition to 1BwEP-1, "Loss of Reactor or Secondary Coolant," has been made. Subsequently, 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," was implemented. Currently, the operators are aligning the SI and CV pumps for Cold Leg Recirculation per Step 5. The STA reports a RED path in Heat Sink.

The proper course of action for the operator is to...

- a. immediately suspend 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," and implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- b. only complete aligning ECCS for Cold Leg Recirculation steps of 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," and then implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- c. complete all steps of1Bw EP ES-1.3, "Transfer to Cold Leg Recirculation," and then implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- d. immediately implement 1BwFR H.1, "Loss of Secondary Heat Sink," while concurrently aligning ECCS for Cold Leg Recirculation per 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation."
- 90. Unit 1 is in MODE 4 on RH cooldown with the following plant conditions:

RCS Temperature	340°F slo	wly lowering			
RCS pressure	300 psig l	300 psig lowering			
PZR level	42% lowe	ering			
CNMT pressure	0.2 psig	0.2 psig			
Alarm received for E	CCS cubicle radia	tion (GRID 2)			
SG levels	42% (A)	40% (B)	43% (C)	40% (D)	
SG pressures	115 psig (A)	115 psig (B)	115 psig (C)	115 psig (D)	

What event is taking place?

- a. A steam leak has occurred inside CNMT.
- b. The Cold Overpressure system has actuated.
- c. Letdown line pressure control valve, 1PCV-131, has failed open.
- d. A LOCA has occurred on the suction of the RH pump.

91. An SI Signal has been initiated due to a LOCA outside Containment.

Which of the following describes the lineup of the Control Room Ventilation System?

- a. Makeup Air Fan autostarts and Recirc Charcoal Absorber unisolates.
- b. Makeup Air Fan autostarts and Supply Fan trips.
- c. Makeup Air Fan trips and Normal intake from outside isolates.
- d. Makeup Air Fan trips and Purge Exhaust Damper opens.
- 92. The following conditions exist on Unit 2:
 - Reactor power was 8% prior to the event below.
 - A failure in the feedwater control system caused ONE S/G level to rise to 83%.
 - The main turbine tripped.
 - S/G levels have returned to their normal level range
 - The Startup FW Pump is running

What are the minimum set of conditions that would have to be met to feed the S/Gs using the 2FW034s Feedwater Tempering Flow Control valves?

- a. The FW Isolation Aux Relays would have to be reset and 2FW035 Feedwater Tempering Isol valves opened.
- b. The reactor trip breakers would have to be cycled, the FW Isolation Aux Relays would have to be reset and 2FW035 Feedwater Tempering Isol valves opened.
- c. The FW Isolation Main Relays and Aux Relays would have to be reset and 2 FW035 Feedwater Tempering Isol valves opened.
- d. The reactor trip breakers would have to be cycled and FW Isolation Main Relays and Aux Relays reset and 2FW035 Feedwater Tempering Isol valves opened.
- 93. All reactor core heat removal systems have failed and the RCS temperature is increasing.

When core exit thermocouple temperatures are greater than 700°F...

- a. the DNBR decreases to less than 1.3.
- b. the core is superheated.
- c. RCP damage is prevalent.
- d. fuel cladding failure is prevalent.

94 The following conditions exist on Unit 1:

- A natural circulation cooldown is in progress per 1BwEP ES-0.2 "Natural Circulation Cooldown."

- Pressurizer pressure is being controlled using Aux. Spray and Pzr heaters.
- As pressure is being lowered through 1300 psig, a rapid increase is noted in Pzr level.
- Charging and letdown are in manual and are balanced.

What action is required to be taken by the operators?

- a. Repressurize the RCS.
- b. Isolate the SI Accumulators.
- c. Increase the RCS cooldown rate.
- d. Place excess letdown in service.
- 95. Which of the following describes why it is important to run CRDM fans when performing a natural circulation cooldown?
 - a. Provides the heat removal mechanism for the vessel head area.
 - b. Aids in natural circulation flow through the RCS vessel head region.
 - c. Prevents erratic indication of SR instrumentation.
 - d. Aids in natural circulation flow through the RCS.
- 96. What are the MAXIMUM cooldown rates that apply for a cooldown from normal operating temperature for the RCS to 500°F in the following indicated procedures? (NOTE: all choices are applicable in any ONE hour period.)

1BwEP ES-0.3 "Natural Circulation Cooldown With Void In Vessel (With RVLIS)" 1BwEP ES-0.4 "Natural Circulation Cooldown With Void In Vessel (Without RVLIS)"

1BwEP ES-0.3 value		1BwEP ES-0.4 value		
	50°F	50°F	-	
b.	50°F	100°F		
C.	100°F	50°F		
d.	100°F	100°F		

97. Unit 1 reactor tripped approximately 1 hour ago due to a large steam break inside containment. The crew is currently in 1BwEP ES-0.3, "Natural Circulation Cooldown with Steam Voids in Vessel (with RVLIS)". Pressurizer level is currently at 95%.

Per 1BwEP ES-0.3, PZR Level should be reduced to less than 90% by ...

- a. cycling PZR heaters and securing the RCS cooldown.
- b. controlling charging and letdown.
- c. closing PZR sprays and energizing PZR heaters.
- d. ONLY establish maximum letdown.
- 98. Why are the S/Gs depressurized to less than 670 psig according to 1BwCA-1.1, "Loss of Emergency Coolant Recirculation"?
 - a. To allow maximum AF flow to the S/Gs.
 - b. To ensure adequate subcooling for restart of the RCPs.
 - c. To set up conditions for controlled injection to the RCS from the accumulators.
 - d. To decrease RCS temperature and pressure which reduces break flow in a LOCA condition.
- 99. The NSO reports that the Spray Additive Tank low-2 level light has just been received as a result of a Containment spray system actuation during a steam line break. Containment Pressure is currently 24 psig. Which of the following is correct concerning this situation? (Assume CS Actuation signal has been RESET)
 - a. Allow the Containment spray system to operate AS-IS until containment pressure is < 15 psig.
 - b. Manually shift the Containment spray system lineup to the post accident recirculation lineup.
 - c. Manually close the motor operated isolation valve between the eductor and the spray additive tank (1CS019A/B).
 - d. Stop all containment spray pumps until the spray additive tank is filled and vented per BwOP CS-3.

- 100. Per 1BwFR-Z.2, "Respond to Containment Flooding," the MAXIMUM level of water in containment following a major accident is based upon the entire contents of the RCS, RWST,
 - a. CST and SI accumulators.
 - b. SX and CC water.
 - c. SX and FP.
 - d. CC water and PW.

2 · · · 7

1.	с	26.	b
2.	а	27.	а
3.	а	28.	d
4.	d	29.	а
5.	а	30.	с
6.	а	31.	d
7.	b	32.	а
8.	а	33.	d
9.	с	34.	а
10.	d	35.	с
11.	b	36.	d
12.	c	37.	b
13.	C	38.	а
14.	b	39.	с
15.	b	40.	d
16.	b	41.	d
17.	d	42.	d
18.	с	43.	С
19.	b	44 .	с
20.	c	45.	d
21.	b	46.	а
22.	d	47.	с
23.	d	48.	а
24.	а	49.	а
25.	d	50.	с

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51.	b	76. a	
52.	b	77. d	
53.	а	78. a	
54.	b	79. c	
55.	b	80. c	
56.	b	81. c	
57.	а	82. b	
58.	c	83. a	
59.	b	84. c	
60.	b	85. b	
61.	c	86. c	
62.	d	87. b	
63.	d	88. d	
64.	a	89. b	
65.	с	90. d	
66.	c	91. a	
67.	b	92. a	
68.	b	93. b	
69.	c	94. a	
70.	c	95. a	
71.	с	96. c	
72.	с	97. b	
73.	d	98. c	
74.	b	99. c	
75.	b	100. a	

DECAY TANK HIGH ACTIVITY UNIT 0

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED				
	ATTACHMENT A (PG 1 OF 1)					
	ACCEPTABLE PRESSURE CALCU	<u>JLATION</u>				
1 <u>Ca</u>	<u>lculate absolute pressure for affected gas de</u>	<u>cay tank</u> :				
Pa	= (indicated pressure) + 15 psi					
2 <u>Ca</u> wi	<u>lculate pressure of affected gas decay tank at 11 be within limits</u> :	<u>t which activity</u>				
P	$m = P_A X 5 X 10^4$ curies (present tank activity in curies)	3)				
3 <u>Ca</u>	Iculate indicated pressure equivalent to Plim	:				
Ir	dicated pressure = P _{Lim} - 15 psi					
	- EN D -					

BwCB-1 Fig. 2 Rev. 14 3/22/2000 PAGE 2 OF 8 REFERENCE USE



BwCB-1 Fig. 2 Rev. 14 3/22/2000

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BwCB-1 Fig. 2 Rev. 14 3/22/2000 PAGE 6 OF 8 REFERENCE USE



Differential and Integral Rod Worth vs. Steps Withdrawn Control Banks D and C Moving with 113 Step Overlap

BwCB-1 Fig. 2 Rev. 14 3/22/2000

PAGE 8 OF 8 **REFERENCE USE**



Differential and Integral Rod Worth vs. Steps Withdrawn

BwCB-1 Fig. 2A Rev. 13 3/22/2000 PAGE 2 OF 8 REFERENCE USE



BwCB-1 Fig. 2A Rev. 13 3/22/2000

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Differential and Integral Rod Worth vs. Steps Withdrawn Control Banks D and C Moving with 113 Step Overlap

BwCB-1 Fig. 2A Rev. 13 3/22/2000 PAGE 6 OF 8 REFERENCE USE



Differential and Integral Rod Worth vs. Steps Withdrawn Control Banks D and C Moving with 113 Step Overlap

BwCB-1 Fig. 2A Rev. 13 3/22/2000

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Differential and Integral Rod Worth vs. Steps Withdrawn

BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 1 OF 5 REFERENCE USE

TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE

CZP TO HZP, ARO, NO Xe



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 2 OF 5 REFERENCE USE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 3 OF 5 REFERENCE USE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 4 OF 5 REFERENCE USE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 5 OF 5 REFERENCE USE



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REDIAGNOSIS UNIT 1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
		· · ·
1 <u>Check</u> <u>Pressu</u>	IF ANY SG SECONDARY IRE BOUNDARY IS INTACT:	
a. Ch <u>AN</u> IN	eck pressure in all SGs - Y SG PRESSURE STABLE OR CREASING	a. <u>IF</u> a controlled cooldown is in progress, <u>THEN</u> GO TO Step 2 (Next Page).
		<u>IF NOT,</u> <u>THEN</u> the following applies:
		o <u>IF</u> main steamlines are <u>NOT</u> isolated, <u>THEN</u> you should be in 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION.
		-OR-
		o <u>IF</u> main steamlines are isolated, <u>THEN</u> you should be in 1BwCA-2.1, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS.

REV.	1
WOG	10

REDIAGNOSIS UNIT 1

STEP ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
2 <u>CHECK IF ALL SGs SECONDARY</u> <u>PRESSURE BOUNDARIES ARE INTACT</u> :	
 a. Check pressure in all SGs: <u>NO_SG_PRESSURE_DECREASING_IN</u> <u>AN_UNCONTROLLED_MANNER</u> <u>NO_SG_COMPLETELY</u> <u>DEPRESSURIZED</u> 	a. You should be in 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION. <u>IF NOT</u> , <u>THEN GO TO 1BwEP-2,</u> FAULTED STEAM GENERATOR ISOLATION, Step 1.
 CHECK IF SG TUBES ARE RUPTURED: ANY SG LEVEL INCREASING IN AN UNCONTROLLED MANNER	You should be in a 1BwEP-1, or 1BwCA-1 series procedure. <u>IF NOT</u> , <u>THEN GO TO 1BwEP-1</u> , LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
4 <u>YOU SHOULD BE IN A 1BWEP-3, OR</u> <u>A 1BWCA-3 SERIES PROCEDURE</u> -END-	GO TO 1BwEP-3, STEAM GENERATOR TUBE RUPTURE, Step 1.

FIGURE 46-1 GASEOUS RADIOACTIVE WASTE SYSTEM (REV. 0)



LOSS OF CONDENSER VACUUM UNIT 1



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ES-401

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U.S. Nuclear Regulatory Commission Site-Specific Written Examination			
Applicant Information			
Name: MASTER EXAMINATION	Region: III		
Date: November 1, 2000	Facility/Unit: Braidwood Units 1 and 2		
License Level: SRO	Reactor Type: W		
Start Time:	Finish Time:		
Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected five hours after the examination starts.			
Applicant Certification	. I have neither given nor received aid		
	Applicant's Signature		
Results			
Examination Value Points	5		
Applicant's Score Points	5		
Applicant's Grade Percen	t		

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NUREG-1021, Revision 8

1. Surveillance 1BwOSR 3.7.5.4-1 "Unit One Train A Auxiliary Feedwater Valve Emergency Actuation Signal Verification Test" is being performed. The personnel performing the surveillance are stationed at the Main Control Room, Aux. Electrical Room and the AF Pump Area.

In accordance with 1BwAP 390-1 "Operating Department Surveillance Program" how are operator actions directed while performing the surveillance?

- a. US directs operator actions for the surveillance and will inform the NSO of any changes in the status of plant evolutions.
- b. Assigned management person (other than shift operations) will provide direction to the operators and will directly inform the US of the status of plant evolutions.
- c. NSO directs the operator's actions for the surveillance and is directly informed of the status of plant evolutions.
- d. Operator at the AF pump area is in charge of actions being performed and will inform the Unit Supervisor of any changes in the status of plant evolutions.
- 2 The following Unit 1 conditions exist:
 - Reactor Power is 85%
 - Containment pressure is 0.6 psig
 - Containment temperature is 115°F

Electric Operations has requested a load ascension to 95% power.

A containment entry is required to search for a 0.3 gpm UNIDENTIFIED leak inside containment. Which of the following is applicable for this entry?

- a. Reactor power must be reduced to <60% if entry inside the missile barrier is required.
- b. Containment Integrity must be maintained.
- c. The requested load increase may occur while personnel are inside containment.
- d. A Containment Entry Checklist is NOT required for this entry.
- 3. Per Technical Specification Definitions, a MODE is determined by power level
 - a. core reactivity, and average RCS temperature.
 - b. core reactivity, and auctioneered high RCS temperature.
 - c. decay heat, and average RCS temperature.
 - d. decay heat, and auctioneered high RCS temperature.

4. Which of the following chemistry values requires restoration within its steady state limit within 24 hours per TRM 3.4.b while in Mode 5.

Dissolved O2		Chloride	Flouride
a.	80 ppb	150 ppb	100 ppb
b.	300 ppb	80 ppb	80 ppb
C.	100 ppb	200 ppb	100 ppb
d.	150 ppb	100 ppb	80 ppb

- 5. Which of the following items is considered a temporary modification?
 - a. Tygon hose installed on a water drop to fill a cleaning bucket.
 - b. Blocking device installed on a safety valve to prevent inadvertent opening.
 - c. Thermal overloads removed from a breaker that are specified on an OOS.
 - d. An electrical jumper placed in a component's start circuit as part of a surveillance procedure to prevent inadvertent auto start.
- 6. Which of the following actions is NOT required when a Tech Spec surveillance fails to meet the designated acceptance criteria?
 - a. Immediately inform the Shift Manager/Senior Reactor Operator.
 - b. Document information on the data package cover sheet.
 - c. Notify the NRC within 1 hour.
 - d. Initiate a Condition Report (previously a PIF).
- 7. The Shiftly/Daily surveillance is being performed by the NSO. The NSO has made a circle around the reading for 1PI-960, SI Accumulator 1A pressure Indicator.

What is indicated by the circle?

- a. The indicator is suspect.
- b. Data is missing from previous entry/entries.
- c. The data falls outside the limits specified.
- d. The parameter indicates a significant change from previous readings.

8. Concerning 1BwGP 100-2, "Plant Startup," Limitations and Actions, the overlap of the Rod Control Banks shall be

(Assume current fuel cycle)

- a. 113 steps.
- b. 115 steps.
- c. 116 steps.
- d. 118 steps.
- 9. An operator received radiation exposures at BOTH Braidwood and LaSalle Stations during the year.

The exposure record to date this year is:

	Braidwood	LaSalle
- Deep Dose Equivalent (DDE)	180 mrem	40 mrem
- Lens Dose Equivalent (LDE)	10 mrem	5 mrem
- Committed Effective Dose Equivalent (CEDE)	105 mrem	0 mrem
- Shallow Dose Equivalent (SDE)	10 mrem	10 mrem
-Committed Dose Equivalent (CDE)	20 mrem	0 mrem

The operator at Braidwood Station has been requested to work in an area where the known radiation rate is 160 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has collected and has been determined to be totally gamma radiation.

If the work task takes 30 minutes to complete, what is the individual's Total Effective Dose Equivalent (TEDE) for the year?

- a. 365 mrem
- b. 405 mrem
- c. 460 mrem
- d. 485 mrem

- 10. Which of the following activities would NOT require Radiation Protection consultation prior to performing?
 - a. Raising radioactive material(s) from the fuel pool above established limits.
 - b. Uncovering contaminated process lines.
 - c. Cleanup of a boric acid spill coverin 2 levels of the Auxiliary Building.
 - d. Adding boric acid to the batch tank.
- 11. What are the MINIMUM requirements for unconditional release of a wrench that has been used in a Radiological Posted Area (RPA)?

A survey indicates the wrench is...

- a. free of both smearable and fixed contamination.
- b. free of smearable contamination but is allowed up to 1000 dpm/100cm² fixed contamination.
- c. allowed up to 20 dpm/100cm² smearable contamination and is allowed up to 5000 dpm/100cm² fixed contamination.
- d. allowed up to 100 dpm/100cm² of either smearable or fixed contamination.
- 12. The following conditions exist on Unit 1:
 - Unit 1 Containment Equipment hatch is removed
 - Refueling operations in progress
 - A HIGH alarm is received on radiation monitors 1RE-AR011/12, Containment Fuel Handling Incident

The crew should...

- a. Activate the Unit 1 Containment evacuation alarm and start containment charcoal filter fans.
- b. Verify Fuel Handling Building is at a negative pressure and start the Cnmt Mini Purge System.
- c. Start the Containment Purge System and start containment charcoal filter fans.
- d. Activate the Unit 1 Containment evacuation alarm and start the Containment Mini Purge System.

- 13 Per procedure 1BwCA-0.0, "LOSS OF ALL AC POWER", which of the following is the basis for maintaining SG Narrow Range levels above 10% when the RCS is being cooled to 350°F?
 - a. Narrow Range level is the only indication of SG inventory available after a loss of all AC power.
 - b. Ensure proper thermal stratification in the SGs in the event of a SGTR.
 - c. Ensures the capability to cooldown once AC power is restored.
 - d. Ensures heat transfer capability exists to remove heat from the RCS.
- 14 The following plant conditions exist:
 - Unit 2 is in the process of starting up from a refueling outage.
 - Reactor power is at 3% and has been stabilized to perform a power history surveillance.
 - Indicated intermediate range start up rate is 0 dpm.

A loss of the Unit 2 station auxiliary transformer occurs.

The Unit Supervisor directs a reactor trip.

The reactor operator attempts to trip the reactor at 2PM05J and 2PM06J with no results. The Unit Supervisor has entered 2BwEP-0 and is at Step 1 RNO.

The next procedure action will be to...

- a. continue with 2BwEP-0, Step 2.
- b. transition to 2BwCA-0.0, "Loss of All AC Power."
- c. transition to 2BwFR-S.1, "Response to Nuclear Power Generation/ATWS."
- d. transition to 2BwOA ELEC-3, "Loss of 4KV ESF Bus."

15. The following conditions exist following a LOCA on unit 2:

- AF flow	420 gpm			
- CNMT Pressure	18 psig and increasing			
- RCS Pressure	2340 psig			
- Core Exit TC's	650°F and increasing			
- RCPs	Tripped			
- SG pressures	750 psig st	table		
- Narrow Range SG levels	38% (A)	34%(B)	34%(C)	35%(D)

Based on the above conditions, which of the following satisfies the minimum scanning requirements for the CSF Status Tree's?

- a. Continuously scan.
- b. Scan at 15 minute intervals.
- c. Scan at 30 minute intervals.
- d. Scanning may be terminated.
- 16 The following alarms have actuated:
 - Unit Two Area Fire
 - CO2 Storage Tank Trouble
 - On 1PM09J, the Zone Light for the 2B DG Room is illuminated

The fire brigade has been dispatched.

The fire brigade can expect CO2 actuation in the...

- a. 2B DG Room ONLY.
- b. 2B DG Day Tank Room ONLY.
- c. 2B DG Room and 2B DG Day Tank Room.
- d. NO actuation due to low CO2 Storage Tank Pressure.
- 17. Unit 1 has declared an ALERT due to a Steam Generator Tube Rupture. Offsite dose assessment is in progress. The Shift Manager is the acting Station Director. Which of the following responsibilities CAN NOT be delegated by the SM?
 - a. Notification of the offsite authorities of protective action recommendations.
 - b. Authorize exceeding 10CFR100 site boundary limits.
 - c. Decision to issue thyroid blocking agents to onsite personnel.
 - d. Notify the NRC Operations Center via the ENS Red Phone.
- 18 The following plant conditions exist:

- Rod D-4 rod bottom light	LIT
- PWR RANGE FLUX RATE RX TRIP ALERT annunciator	LIT
- Reactor Power	95%
- ROD CONTROL URGENT FAILURE annunciator	NOT LIT
- 1BwOA ROD-3 "Dropped or Misaligned Rod" has been entered	

While the crew is taking data for the dropped rod per step 7 of 1BwOA ROD-3, the following indications occur:

- Rod D-8 rod bottom light

LIT

Which of the following describes the action required?

- a. Reset rate trip and perform dropped rod recovery per 1BwOA ROD-3.
- b. Trip the reactor and enter 1BwEP-0.
- c. Restore Tave/Tref, then calculate QPTR.
- d. Perform SDM surveillance and reduce reactor power to less than 70%

- 19 Given the following plant conditions on Unit 1:
 - 80% reactor power.
 - CBD is 175 steps.
 - Core Age is 5200 EFPH.
 - RCS Tave is 575°F.
 - RCS Boron Concentration is 600 ppm.

What will RCS Tave be following a withdrawal of CBD to 200 steps? Assume new stable plant conditions exist.

- a. 576.5°F
- b. 578.5°F
- c. 580.5°F
- d. 581.5°F
- 20. Given the following plant conditions on Unit 1:
 - The plant is operating at 75% power with normal lineup for performing a calorimetric.
 - During the calorimetric, the NSO is in the process of adjusting N-44 when a turbine runback occurs.

- 1PT-505, turbine first stage impulse chamber pressure, fails high when the turbine runsback.

- Tavg is 584°F and increasing.

Based on these conditions, the NSO should ...

- a. Drive rods in manual until rod speed drops below 48 steps/min, then switch to AUTO until temperature is restored.
- b. Drive rods in manual and continously insert rods until temperature is restored.
- c. Allow automatic insertion until rod speed drops below 48 steps/min, then insert rods in manual until temperature is restored.
- d. Allow automatic insertion until rod speed drops below 64 steps/min, then insert rods in manual until temperature is restored.

- 21. The following plant conditions exist during a small-break LOCA:
 - Core exit TC's read approximately 532°F
 - RCS pressure is 885 psig
 - S/G levels are 25% narrow range
 - Steam pressure is 1092 psig
 - RCS wide range cold leg temperatures are all 525°F

Based on the above conditions, the RCS is ...

- a. saturated. Decreasing RCS pressure will aid in establishing subcooling.
- b. subcooled. Increasing S/G pressure will aid in increasing subcooling.
- c. subcooled. Decreasing RCS pressure will aid in increasing subcooling.
- d. saturated. Decreasing S/G pressure will aid in establishing subcooling.
- 22. The following conditions exist on Unit 1:
 - Reactor power 36%
 Pzr pressure 2235 psig
 Pzr level 35%

RCP 1A breaker trips due to sensed undervoltage from bus 157. What is expected as a result of the trip of the RCP?

- a. The reactor will automatically trip due to the open RCP breaker.
- b. The reactor will automatically trip due to RCS loop low flow condition.
- c. The reactor must be manually tripped by the operator.
- d. A normal plant shutdown will be initiated.

- 23 The following plant conditions exist:
 - Reactor Tripped
 - All RCPs Running
 - PZR level 48% increasing
 - RCS pressure 1700 psig decreasing

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

- a. Failure of charging header connection to the RCS.
- b. Weld failure on pressurizer liquid space sample line.
- c. Failure of pressurizer PORV in an intermediate position.
- d. Weld failure on RCP B discharge piping.
- 24. The following plant conditions exist on Unit 1:
 - 100% power
 - RCS Tave is 582°F
 - PZR Pressure is 2235 psig

All systems were operating normally in Automatic when the 1A CV pump trips. Which of the following actions are required per BwAR 1-9-A3, "CHG PUMP TRIP?"

- a. Place 1CV121, "Cent Chg Pumps Flow Cntrl Vlv", in manual and close, then start 1B CV pump.
- b. Verify suction source, then start 1B CV pump.
- c. Isolate letdown, then start 1B CV pump.
- d. Close 1HCV182, "Chg Hdr Back Press Cntrl Vlv", then start 1B CV pump.

25 The following plant conditions exist:

Unit 1 is at 100% 1A CC pump is running 1B CC pump is OOS 0 CC pump is aligned to Bus 141 Unit 2 is in MODE 4 2A CC pump is running 2B CC pump is in standby 0 CC HX is aligned to Unit 1

Which of the following applies?

- a. No Tech Spec actions apply.
- b. Unit 1 is in a 7 day LCO to restore required CC pump to operable status.
- c. Unit 2 is in a 7 day LCO to restore required CC HX to operable status.
- d. Unit 1 and unit 2 are in a 7 day LCO to restore required CC pump to operable status.
- 26. The unit is at 100% power, steady state, NOP/NOT. The Pressurizer Pressure Master Controller setpoint fails to 2185 psig. Assume a step change in the setpoint and assume that pressurizer pressure control remains in automatic.

Which of the following is the immediate automatic response of the system?

- a. Spray valves open, Variable Heaters deenergize
- b. PORV 455A opens, Spray valves open, Variable Heaters energize.
- c. Spray valves open, Variable Heaters energize.
- d. Spray valves close, Variable Heaters deenergize.
- 27. Per Tech Specs, which of the following is NOT a reason for designating 1LT459 and 1LT460 as Post Accident Monitoring Instrumentation?
 - a. Used to determine whether to terminate SI.
 - b. Used to determine if SI reinitiation is required.
 - c. Used to verify unit conditions necessary to establish natural circulation.
 - d. Used to evaluate RCP trip criteria.

- 28. Which of the following Reactor Protection System Trips protects against DNB accidents?
 - a. IR High Flux
 - b. High Pressurizer Pressure
 - c. High Pressurizer Level
 - d. Power Range High Negative Rate
- 29. The Status light for 1SI8801B is DARK following a SI actuation. 1SI8801B is...
 - a. FULL OPEN and is NOT in its required safeguards position.
 - b. CLOSED and is NOT in its required safeguards position.
 - c. FULL OPEN and is in its required safeguards position.
 - d. CLOSED and is in its required safeguards position.
- 30. Rods are being withdrawn in manual during a reactor startup, with all systems operable.

For the Control Banks, which of the following describes the status of the DRPI rod bottom lights at the moment the ROD AT BOTTOM annunciator alarm clears?

- a. Banks A, B, C, & D -- OFF.
- b. Banks A, B, C, & D -- ON.
- c. Banks A, B, C -- OFF; Bank D -- ON.
- d. Bank A -- OFF; Banks B, C, & D -- ON.
- 31. Which of the following components is being DIRECTLY adjusted by the gain adjust at the NI panel potentiameter following a calorimetric calibration?
 - a. Summing and level amplifier
 - b. Detector output current
 - c. Upper and Lower Detector Averaging Circuit
 - d. Detector high voltage power supply

32. The following plant conditions exist on Unit 2:

-Reactor is operating at 100% rated thermal power

-Annunciator 2-10-A4 "PWR RNG UPPER DET FLUX DEV HIGH" has alarmed -All control rods are positioned within 12 steps of their group demand counters -Maximum QPTR based on the plant computer calculation is 1.04

Assuming QPTR is not reduced, within two hours reactor power must be reduced to...

- a. 50%
- b. 74%
- c. 88%
- d. 94%
- 33. Given the following plant conditions on Unit 1:
 - -100% power.

-Train A CETC power supply (MCC 131x1 ckt15) has been deenergized for breaker replacement.

-Train B CETC has only 10 thermocouples operable which are currently indicating:

- 1-610°F 6-613°F
- 2-610°F 7-612°F
- 3-613°F 8-612°F
- 4-640°F 9-611°F
- 5-613°F 10-613°F

-MCB display for train B CETC indicates 615°F

CETC #4 fails high.

MCB temperature would indicate

- a. 612°F
- b. 615°F
- c. 731°F
- d. 781°F

- 34. The following conditions exist with Unit 1 in MODE 5:
 - Containment temperature 88°F
 - 2C RCP RUNNING
 - 2C RCFC STOPPED

The adverse consequence of starting the 2C RCFC is that 2C RCP seal number ...

- a. 2 may CLOSE causing the number 1 seal leakoff flow indication to INCREASE.
- b. 2 may OPEN causing the number 1 seal leakoff flow indication to DECREASE.
- c. 1 may OPEN causing the number 1 seal leakoff flow indication to INCREASE.
- d. 1 may CLOSE causing the number 1 seal leakoff flow indication to DECREASE.
- 35. Given the following Unit 2 conditions:

-2A and 2C Reactor Containment Fan Coolers (RCFC) are operating in HIGH speed. -2B and 2D RCFCs are stopped and in standby.

-Normal cooling water lineup for the RCFCs exists.

What will be the status of the RCFCs 15 seconds after an SI signal occurs concurrent with a loss of offsite power?

- a. Only 2A and 2B RCFCs running in HIGH speed.
- b. Only 2B and 2D RCFCs running in LOW speed.
- c. ALL RCFCs running in LOW speed.
- d. NO RCFCs are running.
- 36. During initial actuation of the Containment Spray System during a LOCA, radiation levels in the RWST are expected to....
 - a. increase due to spray add tank recirculation to the RWST.
 - b. increase due to containment recirc. sump recirculation to the RWST.
 - c. stay the same due to NO recirculation aligned to the RWST.
 - d. stay the same due to spray add tank recirculation to the RWST.

- 37. A fire has occurred in the 2B Containment Charcoal Filter Unit. Deluge is actuated at ...
 - a. 0PM02J in the Main Control Room.
 - b. 1PM09J, Fire Panel in the Main Control Room.
 - c. 2B Containment Charcoal Filter Unit.
 - d. 2VP01J on 426' Electrical Penetration Area.
- 38. The following plant conditions exist:
 - A LOCA has occurred on Unit 1
 - E-0 has been completed and the crew has transitioned to E-1
 - From E-1 the crew transitioned to FR-C.1

- The Post-LOCA Purge Exhaust Fan is de-energized due to an electrical fault on Bus 134V4.

Which of the following containment hydrogen concentrations is the MAXIMUM concentration which the Hydrogen Recombiners may be placed in service WITHOUT CONSULTATION WITH THE TSC?

- a. 0.5%
- b. 4.0%
- c. 6.0%
- d. 8.0%

39.	In Modes 1-4, the Contain	nment Normal Purge Valves	 and the Mini Purge
	Valves		

- a. are sealed closed, may be opened as needed.
- b. are sealed closed, are sealed closed
- c. may be opened as needed, may be opened as needed
- d. may be opened as needed, are sealed closed

40. The following conditions exist:

-Unit 1 is at 100% power -Unit 2 is currently off loading fuel to the Spent Fuel Pool -Current Spent Fuel Pool temperature is 105°F -1FC01P "SFP Cooling Pump" is OOS for maintenance -2FC01P "SFP Cooling Pump" was running and tripped for unknown reasons

Per 0BwOA REFUEL-3, which of the following actions should take place:

- a. Start one FHB Charcoal Booster Fan and two Aux Building Charcoal Booster Fans.
- b. Align a RWST to the SFP and start one Aux Building Charcoal Booster Fan.
- c. Align Recycle Hold Up Tank to the SFP.
- d. Place the Skimmer Loop in Service.
- 41. The plant is operating at 100% power when the Controlling S/G Level Channel on 'A' S/G fails to 100%.

If no operator action is taken, what is the expected plant response?

- a. Feedwater flow to 'A' S/G will INITIALLY INCREASE, then DECREASE causing S/G level to STABILIZE at a level HIGHER THAN PROGRAM.
- b. Feedwater flow to 'A' S/G will INITIALLY DECREASE, then INCREASE causing S/G level to STABILIZE at a level LOWER THAN PROGRAM.
- c. Reactor trip will occur on Lo-Lo S/G level.
- d. Reactor trip will occur due to turbine trip.
- 42. Which of the following will close the MSIVs?
 - a. 3.4 psig Cnmt pressure on 2/3 channels.
 - b. 640 psig steam line pressure > P-11 on 1/3 channels on 1/4 lines.
 - c. -100 psi/50sec < P-11 with SI blocked on 1/3 channels on 1/4 lines.
 - d. 8.2 psig Cnmt pressure on 2/3 channels.

- 43 The following conditions exist on Unit 2:
 - -Reactor Power is at 50%, steady state.
 - -The Steam Dumps are in the Tave MODE and in Automatic
 - -The Reactor Operator adjusts the steam dump controller potentiometer from 7.28 to 8.00

Which of the following is a correct plant effect of the potentiometer change?

Fuel Cladding Temperature...

- a. increases due to increased steam demand.
- b. decreases due to a decrease in steam demand.
- c. remains constant due to the potentiometer only in circuit during Manual Mode.
- d. remains constant due to the potentiometer only in the circuit during STEAM PRESSURE Mode.
- 44. What is the SEQUENCE that occurs when a Main Feed pump LOW NPSH signal is actuated?
 - a. The CD 152 valve (CD pump recirc) opens, the CD/CB aux oil pump starts, the CD/CB pump starts.
 - b. The CD/CB pump starts then the CD 152 valve (CD pump recirc) opens.
 - c. The CD 152 valve (CD pump recirc) closes, the CD/CB aux oil pump starts, the CD/CB pump starts.
 - d. The CD/CB pump starts then the CD 152 valve (CD pump recirc) closes.

- 45. The following conditions exist on Unit 1:
 - -Reactor power is 100%
 - -All systems are normal
 - -1FT-512 is selected for steam flow input into SGWLC for S/G 1A

With NO OPERATOR ACTION, what is the effect of the pressure transmitter associated with FT-512 failing low?

- 1A S/G level will decrease, feed pump speed ...
- a. will decrease, and S/G level will decrease below the LO-2 setpoint.
- b. is unaffected, and S/G level will return to normal.
- c. will increase, and S/G level will return to normal.
- d. is unaffected, and S/G level will decrease below LO-2 setpoint.
- 46 A Unit 1 RCS cooldown is in progress with the A auxiliary feedwater pump maintaining level in all steam generators. Instrument bus 111 is deenergized.

Auxiliary feedwater system flow control valves (1AF005a-d)

- a. Fail as is.
- b. Fail Open.
- c. Fail Closed.
- d. Are not affected.
- 47. A Reactor Trip has just occurred on Unit 1. Following the main generator trip, Automatic Bus Transfer failed to operate for Busses 156 and 157. Which ONE of the following describes the 6.9 KV Bus AND RCP status?
 - a. All Feed and Load Breakers Open on Busses 156 and 157. Only the 1A and 1B RCPs trip due to Bus Undervoltage.
 - All Load Breakers Open on Busses 156 and 157.
 Only the 1A and 1B RCPs trip due to Bus Underfrequency.
 - c. All Load Breakers Open on Busses 156 and 157. All RCPs trip due to Bus Undervoltage.
 - d. All Feed and Load Breakers Open on Busses 156 and 157. All RCPs trip due to Bus Underfrequency.

48. During operation at power with the Reactor Trip Breakers closed, a LOSS of 125 VDC control power to one of the Reactor Trip Breakers occurs.

Which of the following describes how that Reactor Trip Breaker will respond?

- a. Trips OPEN due to loss of power to the SHUNT coil.
- b. Trips OPEN due to loss of power to the UNDERVOLTAGE coil.
- c. Is NOT capable of tripping on a SHUNT trip.
- d. Is NOT capable of tripping on an UNDERVOLTAGE trip.
- 49 Given the following conditions:
 - Unit 2 is in MODE 3 at 500°F
 - The MCB indication for DC Bus 211 indicates 0 volts
 - Pressurizer Spray Valve 2RY455B is stuck open
 - RCS pressure is lowering

Which of the following will stop the RCS depressurization?

- a. Energize all Pressurizer heaters.
- b. Trip the 2D RCP locally at its breaker.
- c. Isolate Instrument Air to Containment.
- d. Secure the 2C RCP from the Main Control Room.
- 50. The 1A DG is not running.

Which of the following combinations of Diesel Generator Air Receiver pressures is sufficient to maintain the 1A Diesel Generator OPERABLE per BwOP DG-1 "Diesel Generator Alignment to Standby Condition?"

Receiver A (PSIG)		Receiver B (PSIG)
a.	170	100
b.	0	240
C.	170	170
d.	0	170

51. The 2A Diesel Generator is NOT running. The lead Fuel Oil Transfer pump starts in response to low level in the Fuel Oil Day Tank. This pump fails to develop adequate discharge pressure but continues to run.

The second Fuel Oil Transfer pump will ...

- a. NOT start because it is not selected to start on low level.
- b. NOT start unless DG engine speed reaches 100 RPM.
- c. start if in AUTO.
- d. start immediately if the running pump is placed in Pull Out.
- 52. The waste gas discharge control modulating valve (RCV 014)....
 - a. must be opened by first dialing the controller to 50%, then placing the open control switch to the OPEN position.
 - b. will close automatically and an alarm will be activated when vent stack activity exceeds the high alarm setpoint on 0PR2J.
 - c. controls pressure at 1.3 psig from a gas decay tank to the hold up tanks.
 - d. maintains a constant downstream pressure to ensure a constant discharge flowrate.
- 53. The Main Control Room Outside Air Intake Radiation Monitors (gaseous) are separated into Train A and Train B (0RE-PR031B and 0RE-PR032B for Train A and 0RE-PR033B and 0RE-PR034B for Train B).

Which of the following is correct regarding the Main Control Room Outside Air Inlet Radiation Monitors (gaseous)?

The MINIMUM conditions to initiate automatic actions are...

- a. 0RE-PR031B and 0RE-PR034B are in the OPERATE FAILURE condition.
- b. 0RE-PR031B and 0RE-PR033B are in the OPERATE FAILURE condition.
- c. 0RE-PR031B in HIGH alarm.
- d. 0RE-PR031B and 0RE-PR033B are in HIGH alarm.

54. The unit is presently at 90% and shutting down due to a loss of Instrument Bus 114. All systems are in automatic.

A Loss of Coolant Accident (LOCA) occurs. Which of the following statements best describes response of the 1B SX pump?

- a. Will automatically start on low system pressure.
- b. Will have to be manually started.
- c. Cannot be started from the control room.
- d. Will automatically start on a Manual SI actuation.
- 55. Given the following Unit 1 conditions:

-Reactor power - 100% -1B D/G surveillance test in progress - full load -1B SX pump - running -1A SX pump - available

The 1B SX pump tripped due to electrical problem with Bus 142. The US directs a start of the 1A SX pump.

What is the SEQUENCE for starting the 1A SX pump in these conditions?

The operator will ...

- a. take the 1A SX pump switch to START and release. The pump will start after a delay.
- b. take the 1A SX pump switch to START and hold until the pump starts.
- c. start the auxiliary oil pump, take the 1A SX pump switch to START and release. The pump will immediately start.
- d. start the auxiliary oil pump, wait 5 seconds, take the 1A SX pump switch to START and hold until the pump starts.

- 56. Which of the following would occur on a small tube leak in the Component Cooling Water (CC) Heat Exchanger?
 - a. Automatic CC System makeup from the Primary Water System only would occur, providing the necessary level for CC pump operation.
 - b. CC System liquid inventory would increase, thus increasing the CC flowrate to components cooled by the CC System.
 - c. CC would leak into the Essential Service Water (SX) System, potentially contaminating the SX System.
 - d. CC surge tank level would increase, which would cause water to overflow through the vent valve.
- 57. Unit 1 is currently in Mode 4.
 1A RH train is in service providing shutdown cooling.
 RCS temp 340°F
 RCS pressure 350 psig

Unit 2 is in Mode 1 at 100% power.

Equipment OOS for maintenance:

1B CW pump	"OC" WS pump
1A CC pump	U2 SA Compressor

A loss of the Unit 1 SAT occurs due to a sudden pressure actuation.

With NO operator action, Unit 1 will experience an uncontrolled _____ and Unit 2 will

- a. cooldown trip on Lo-Lo S/G level.
- b. heatup not be affected
- c. cooldown not be affected
- d. heatup trip on Lo-Lo S/G level.

58. Unit 1 is at 36% power, when a rapid drop in reactor power occurs and a rod bottom light (DRPI panel) appears for a rod in Control Bank A. The crew enters 1BwOA ROD-3, Dropped or Misaligned Rod, for determining, correcting, and recovering a dropped control rod.

Which of the following actions will actuate the ROD CONT URGENT FAILURE (Annun. 1-10-C6) alarm during the dropped rod recovery?

- a. Resetting Group 1A step counter to ZERO.
- b. Resetting Control Bank A P/A Converter to ZERO.
- c. Withdrawing the dropped rod to its bank position.
- d. Opening the Lift Coil Disconnect switches for the unaffected rods in CB "A".
- 59 Given the following Unit 1 conditions:

Reactor power is at 100% steady state

	1	_2_	_3_	_4_
Power range NIS	102%	103%	102%	102%
PZR pressure	1880 psig(455)	1910 psig(456)	2500 psig(457)	1905 psig(458)
PZR level	90%(459)	92%(460)	90%(461)	72%(462)
Tave	584°F	585°F	582°F	586°F
SG levels	43%(1A)	34%(1B)	89%(1C)	40%(1D)
(all S/G instru	ments for a S/G re	ad the same level))	

What is the FIRST required action for these conditions?

- a. Verify a turbine runback is initiated.
- b. Reduce power to LESS THAN 100% indicated to ensure 8 hour average does NOT exceed 100% power.
- c. Trip the reactor and initiate actions of 1BwEP-0.
- d. Initiate a MANUAL Safety Injection and initiate actions of 1BwEP-0.

60. A reactor trip has occurred due to a turbine trip from full power. Narrow range steam generator levels are off scale low.

Why does 1BwEP ES-0.1, Reactor Trip Response, instruct the operator to feed the steam generators at greater than 500 GPM?

- a. Enhance natural circulation.
- b. Provide an adequate heat sink for decay heat removal.
- c. Ensure the steam generator U-tubes remain "wet" preventing dry steam generators.
- d. Prevent the formation of steam in the steam generator feed ring.
- 61. Given the following plant conditions on Unit 1:

-A reactor trip and SI signal have been generated due to a PZR vapor space LOCA -ALL RCPs are stopped -RCS subcooling is inadequate -PZR level is 68% and INCREASING -CNMT pressure is 6 psig and slowly INCREASING

The US is directing actions of 1BwEP ES-1.2 "Post LOCA Cooldown And Depressurization" and

is checking to see if an RCP should be started.

Which of the following describes the correct actions?

- a. Start the 1A or 1B RCP.
- b. Start the 1C or 1D RCP.
- c. Do NOT start an RCP since PZR level in inadequate.
- d. Do NOT start an RCP since subcooling is inadequate.

62. The plant is operating at 100% power when a pressurizer safety valve inadvertently lifts. The PRT pressure is 20 psig.

Which of the following most closely approximates the tail pipe temperature of the open safety valve?

- a. 235°F
- b. 265°F
- c. 295°F
- d. 325°F
- 63. If Unit 1 is operating at 20% power with control rods in MANUAL and 1C RCP trips but the reactor is NOT manually tripped, which of the following sets of conditions describes the expected conditions for the parameter listed below?

1	Actual Reactor Power	Steam Flow for Affected Loop SG	Steam Flow for Other SGs
a.	DECREASE,	DECREASE,	DECREASE
b.	CONSTANT,	INCREASE,	INCREASE
C.	CONSTANT,	DECREASE,	INCREASE
d.	DECREASE,	INCREASE,	CONSTANT

- 64. The following plant conditions exist on Unit 1:
 - PZR Level is 34%
 - Combined RCP Seal Return flow is 12 gpm
 - 1BwOA PRI-1 has been entered due to an Identified RCS leakage of 8 gpm
 - Letdown Flow is isolated

Assume:

Tave constant 92 Gallons/% PZR Level

A loss of all CV pumps is preventing makeup to the RCS. With NO OPERATOR ACTION what is the longest amount of time the crew will have until they are procedurally required to trip?

- a. 78 minutes.
- b. 138 minutes.
- c. 195 minutes.
- d. 345 minutes.
- 65. The following plant conditions exist:
 - Unit 1 40% reactor power steady state conditions
 - Rod Control Automatic
 - Letdown 75 gpm through 1A L/D Hx

Temperature Control Valve (1CC130A), CC flow control valve, repositions due to a loss of IA to the valve positioner. Which of the following describes the plant response to the event?

- a. 1TCV-129 opens bypassing flow around the demineralizers.
- b. Control rods step out due to a reduction in RCS temperature.
- c. Control rods step in due to rising RCS temperature.
- d. RCS temperature falls requiring dilution to restore temperature.

- 66. Which of the following valve combinations and flows for emergency boration are allowed in accordance with 1BwOA PRI-2, "Emergency Boration?"
 - a. 1CV112B, VCT Outlet Isolation Valve FULL OPEN and 1CV121, Charging Line Flow Control Valve, FULL OPEN with maximum charging header flow.
 - b. 1CV112C, VCT Outlet Isolation Valve, CLOSED, and 1CV8104, Emergency Boration Valve, FULL OPEN with maximum charging header flow.
 - c. 1CV112D, RWST to Cent Chg Pump Suction Valve, FULL OPEN, and 1CV8485A, CV Pump Disch Valve THROTTLED to balance high head SI flow and Letdown flow.
 - d. 1CV8104, Emergency Boration Valve, FULL OPEN, and 1CV8485A, CV Pump Disch Valve THROTTLED to balance high head SI flow and Letdown flow.
- 67. Given the following plant conditions on Unit 1:
 - Reactor power 75%
 - PZR pressure control selected to 455/456
 - Pressure channel 1PT-457 fails LOW

1BwOA INST-2 "Operation With A Failed Instrument Channel" is entered and the required actions for the failed channel are performed.

How is the PZR PORV operation affected with the failed channel Out of Service?

- a. ONLY PORV PCV-456 will NOT CLOSE, if OPEN in AUTO, when PZR pressure decreases to the PORV blocking signal.
- b. Neither PORV will CLOSE, if OPEN in AUTO, when PZR pressure decreases to the PORV blocking signal.
- c. ONLY PORV PCV-456 will NOT OPEN when PZR pressure increases to its OPEN setpoint.
- d. Neither PORV will OPEN when PZR pressure increases to their OPEN setpoint.

- 68. Given the following plant conditions on Unit 1:
 - Power level 77%
 - PZR pressure 2235 psig
 - RCS Tave 577°F (A) 575°F (B) 579°F (C) 575°F (D)
 - PZR Level Channel Selector Switch 459/460 position

The CV121 Flow Controller, FK-121, fails such that charging flow to the RCS is increased.

What would PZR level read on 1LI-459 when annunciator 1-12-C3, "PZR LEVEL CONT DEV HIGH HTRS ON", actuates?

- a. 52%
- b. 56%
- c. 57%
- d. 61%
- 69. Given the following conditions:
 - The unit is at 8% power.
 - Plant startup is in progress
 - Pzr level instrument 1LT-459 has failed LOW.
 - All actions of 1BwOA INST-2 "Operation with a Failed Instrument Channel" Attachment C are complete.

Which of the following describes the crews minimum course of action if there is a subsequent failure of Pzr level instrument 1LT-460 HIGH?

- a. Verify reactor trip.
- b. Stop the startup and restore one of the failed channels of pressurizer level to OPERABLE status prior to increasing power above 10%.
- c. Stop the startup and restore both of the failed channels of pressurizer level to OPERABLE status prior to increasing power above 10%.
- d. Within one hour initiate ACTION to be in at least HOT STANDBY within the next 6 hours.

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70. While performing the immediate actions of BwFR-S.1," Response to Nuclear Power Generation/ATWS", the operator was directed to verify a turbine trip. Subsequently, in Step 8, the operator is again directed to verify a turbine trip. If the main turbine has not tripped at this point, the crew is directed to trip the main turbine locally.

Why wasn't the operator directed to trip the main turbine locally during the immediate actions of the procedure?

- a. Local operators are busy isolating the steam dumps.
- b. The main turbine can still be used to draw steam for RCS temperature control.
- c. The main turbine can still be used to maintain S/G water level due to no MFW pump trip.
- d. Local operator actions are more time consuming to initiate and complete.
- 71. The following plant conditions exist:
 - A fuel assembly has just been removed from the core.
 - Immediately after initiating transit to the upender, the refueling cavity level is reported to be a foot below normal and dropping at a visible rate.

Which of the following is the preferred course of action?

- a. Stop the refuel movement at the current location in transit to the upender.
- b. Place the fuel assembly back into the reactor vessel.
- c. Place the fuel assembly in the upender and lower it to the horizontal position.
- d. Position the mast over the deepest part of the cavity and lower the assembly to the bottom.

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- 72. A SGTR has occurred on Unit 1. Current conditions are:
 - RCS pressure 1350 psig
 - RCS temperature (CETCs) 545° F
 - SG pressures 930 psig (A) 1145 psig (B) 940 psig (C) 940 psig (D)
 - SG 1B has been confirmed as the SG with the rupture.

While performing the steps of 1BwEP-3, "Steam Generator Tube Rupture", the Unit Supervisor found ALL available copies of the procedure had an illegible page. This page contained the required temperatures for determining RCS cooldown temperatures.

The US directs you to use the steam tables to determine the required RCS (core exit) temperature with an allowance of 50° F for subcooling.

The required core exit temperature after the RCS cooldown is ...

- a. 513°F
- b. 518°F
- c. 534°F
- d. 538°F
- 73. The following plant conditions exist:
 - An initial plant startup is in progress, per 1BwGP 100-3, from a refueling outage.
 - The reactor is initially at 13% power.
 - The Main Turbine is at 600 rpm.
 - Trips associated with Permissive P-10 have been blocked.
 - Fouling of the circ water traveling screens has caused a reduction in condenser CW flow.
 - Condenser vacuum decreases to indicate 7.0 inches Hg absolute.

Assuming no operator action, choose the statement below which describes the effect on the plant.

- a. The reactor will trip due to a turbine trip.
- b. The reactor will trip on NIS IR FLUX HI Setpoint.
- c. RCS temperature will increase until steam dumps actuate.
- d. RCS temperature will increase until Steam Generator PORVs actuate.

- 74 While at 35% power, a main feed water regulating valve fails open causing the affected SG level to exceed the hi-hi level setpoint. The reactor trips; however, NO SG level drops below the LO-LO level setpoint. Assuming NO operator action is taken, how many AF pump Lube Oil Pumps will be running 1 minute after the trip?
 - a. None.
 - b. One.
 - c. Two.
 - d. Three.
- 75. Given the following plant conditions on Unit 1:

- Reactor power is 90%.	- 1C SG Feed Flow is pegged HIGH.
- RCS Tave is stable at 579°F on all 4 loops.	- 1C SG Main FW Reg Valve is full
OPEN.	5
- RCS pressure is stable at 2235 psig.	- 1C SG pressure is STABLE.
- Containment Pressure is INCREASING.	- 1C SG level is DECREASING.

Which of the following events is in progress?

- a. Main FW Reg Valve failed OPEN.
- b. Feed Flow Indicator failed HIGH.
- c. Feed Line Break INSIDE Containment.
- d. Main Feed Pump trip.
- 76. Given the following plant conditions on Unit 1:
 - 100% reactor power.
 - A voltage transient caused the DC Bus 113 supply fuses to blow.
 - The reactor was manually tripped due to adverse secondary transients.
 - One minute after performing the immediate action steps of 1BwEP-0 "Reactor Trip or Safety Injection", an operator was dispatched to open the PMG output Breaker.

After the PMG output breaker is opened, Bus 143 will be _____ and Bus 144 will be _____ .

- a. energized energized
- b. energized de-energized
- c. de-energized energized
- d. de-energized de-energized

- 77. Which of the following signals will cause the Radwaste Release Tank Pump (0WX53P) to trip?
 - a. High radiation condition on OPR01J "Liquid Radwaste."
 - b. Low flow from the Circ Water system.
 - c. Low level of 16% in the Radwaste Release Tank.
 - d. High level of 90% in the Regeneration Waste Drain Tank.
- 78 A waste gas decay tank release is in progress. Which of the following malfunctions occurring during the release could result in a release outside of permitted limits assuming no operator action?
 - a. Loss of instrument air to OGWRCV014 "Gas DecayTank Vent Stack Effluent Isolation Valve."
 - b. Gas Decay Tank Cover Gas Pressure reaches .7 psig.
 - c. OPR02J "Waste Gas Processing Rad Monitor" fails low.
 - d. In service Gas Decay Tank pressure reaches 95 psig.
- 79. The following plant conditions exist:
 - 0B Gas Decay Tank is now in service.
 - 0E Gas Decay Tank is in Standby.
 - 0A Gas Decay Tank was in service and is currently isolated.

Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig. 0BwOA RAD-3 was entered and the 0A Gas Decay Tank was taken off-line and isolated.

Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is ...

- a. 47 psig.
- b. 58 psig.
- c. 62 psig.
- d. 73 psig.

- 80. You are the Unit 1 Unit Supervisor.
 - A fire has occurred in the Main Control Room.
 - Smoke in the Main Control Room is growing very heavy.
 - The order has been given to evacuate the control room.

You should direct a reactor trip and go to the...

- a. Remote Shutdown Panel to obtain plant control.
- b. Reactor trip breakers to verify Reactor Trip.
- c. Fire Hazards Panel to obtain plant control.
- d. Auxiliary Electric Room to align needed instrumentation.
- 81 Per Tech Spec Basis regarding high containment pressure, which of the following events could lead to the highest pressure/leakage out of containment?
 - a. Design Basis LOCA.
 - b. Design Basis Steam Line Break inside Containment.
 - c. Inadvertant Containment Spray Initiation.
 - d. Pressurizer vapor space LOCA.
- 82. Which of the following is NOT a high level action of 1BwFR-Z.1, "Response to Containment High Pressure?"
 - a. Verify containment isolation.
 - b. Verify containment heat removal.
 - c. Reduce heat input to containment.
 - d. Check for and isolate faulted steam generator.

- 83 2BwFR-C.1, "Inadequate Core Cooling" must be entered if CETCs are greater than or equal to...
 - a. 700°F ONLY.
 - b. 1200°F ONLY.
 - c. 700°F AND RCS Subcooling Unacceptable.
 - d. 1200°F AND RCS Subcooling Unacceptable.
- 84. The following plant conditions exist:

A reactor trip and loss of offsite power occurred. Reactor power was initially at 100%. Tavg is 531°F. Tcold is at 527°F. Thot is at 534°F. Average of the ten (10) hottest CETC's is 538°F. Pressurizer pressure is at 2185 psig.

Which of the following is the subcooling that currently exists?

- a. 92°F
- b. 102°F
- c. 111°F
- d. 121°F

85. A Small Break LOCA occurred on Unit 2 resulting in a reactor trip/SI.
While performing the Immediate Actions of 2BwEP-0, the Main Turbine did not trip and the crew successfully performed ALL actions of the RNO for verifying a Turbine Trip.
From 2BwEP-0 the crew transitioned to 2BwEP-1.
At step 6 of 2BwEP-1, "Check if ECCS flow should be reduced" RCS pressure starts decreasing rapidly.

The crew notes steam flows on ALL 4 Steam Generators. The crew transitions to 2BwEP ES-0.0 "Rediagnosis"

From 2BwEP ES-0.0, the crew should transition to...

- a. 2BwEP-2, "Faulted Steam Generator Isolation."
- b. 2BwCA-2.1, "Uncontrolled Depressurization of All SGs."
- c. 2BwEP ES-1.1, "SI Termination."
- d. 2BwEP-0, "Reactor Trip or Safety Injection."
- 86. Which of the following is NOT a condition in which a transition to 1BwEP ES-0.0, "Rediagnosis", is allowed?
 - a. Large Break LOCA, RCS Temperature 563°F, RCS Pressure 1000 psig, PZR Level Off-Scale Low.
 - b. Main Steam Line Break inside containment, Containment Pressure 23 psig.
 - c. Main Steam Line Break outside containment, SG Pressures 1A 560 psig, 1B 570 psig, 1C 570 psig, 1D 590 psig.
 - d. Reactor Trip due to P-14, RCS Temperature 557°F, RCS Pressure 2100 psig, PZR Level 20%.
- 87. A small break LOCA has occurred on Unit 1. The crew has transitioned to 1BwEP-1, "Loss of Reactor or Secondary Coolant" and is evaluating SI termination criteria in step 6.

Which of the following is used to determine if adequate core cooling exists?

- a. RCS wide range temperature.
- b. ECCS injection flow rate.
- c. RVLIS indication.
- d. Subcooling margin.

- Which of the following describes the methods in order of preference used in 1BwEP ES-1.2,
 "Post LOCA Cooldown and Depressurization" during the performance of step 10,
 Depressurize RCS to Refill PZR?
 - a. One Pzr PORV, Normal Spray. Aux. Spray.
 - b. One Pzr PORV, Aux. Spray, Normal Spray.
 - c. Normal Spray, Aux. Spray, One Pzr PORV.
 - d. Normal Spray, One Pzr PORV, Aux. Spray.
- 89. A Large Break LOCA has occurred on Unit 1 and a transition to 1BwEP-1, "Loss of Reactor or Secondary Coolant," has been made. Subsequently, 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," was implemented. Currently, the operators are aligning the SI and CV pumps for Cold Leg Recirculation per Step 5. The STA reports a RED path in Heat Sink.

The proper course of action for the operator is to...

- a. immediately suspend 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," and implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- b. only complete aligning ECCS for Cold Leg Recirculation steps of 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation," and then implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- c. complete all steps of1Bw EP ES-1.3, "Transfer to Cold Leg Recirculation," and then implement 1BwFR H.1, "Loss of Secondary Heat Sink."
- d. immediately implement 1BwFR H.1, "Loss of Secondary Heat Sink," while concurrently aligning ECCS for Cold Leg Recirculation per 1BwEP ES-1.3, "Transfer to Cold Leg Recirculation."

90. Unit 1 is in MODE 4 on RH cooldown with the following plant conditions:

RCS Temperature	340°F slo	wly lowering		
RCS pressure	300 psig l	owering		
PZR level	42% lowe	ering		
CNMT pressure	0.2 psig	-		
Alarm received for E	CCS cubicle radia	tion (GRID 2)		
SG levels	42% (A)	40% (B)	43% (C)	40% (D)
SG pressures	115 psig (A)	115 psig (B)	115 psig (C)	115 psig (D)

What event is taking place?

- a. A steam leak has occurred inside CNMT.
- b. The Cold Overpressure system has actuated.
- c. Letdown line pressure control valve, 1PCV-131, has failed open.
- d. A LOCA has occurred on the suction of the RH pump.
- 91. The following conditions exist on Unit 2:
 - Reactor power was 8% prior to the event below.
 - A failure in the feedwater control system caused ONE S/G level to rise to 83%.
 - The main turbine tripped.
 - S/G levels have returned to their normal level range
 - The Startup FW Pump is running

What are the minimum set of conditions that would have to be met to feed the S/Gs using the 2FW034s Feedwater Tempering Flow Control valves?

- a. The FW Isolation Aux Relays would have to be reset and 2FW035 Feedwater Tempering Isol valves opened.
- b. The reactor trip breakers would have to be cycled, the FW Isolation Aux Relays would have to be reset and 2FW035 Feedwater Tempering Isol valves opened.
- c. The FW Isolation Main Relays and Aux Relays would have to be reset and 2 FW035 Feedwater Tempering Isol valves opened.
- d. The reactor trip breakers would have to be cycled and FW Isolation Main Relays and Aux Relays reset and 2FW035 Feedwater Tempering Isol valves opened.

92. All reactor core heat removal systems have failed and the RCS temperature is increasing.

When core exit thermocouple temperatures are greater than 700°F...

- a. the DNBR decreases to less than 1.3.
- b. the core is superheated.
- c. RCP damage is prevalent.
- d. fuel cladding failure is prevalent.
- 93. A steam void has been detected in the Unit 2 reactor vessel head during natural circulation cooldown. RVLIS is NOT available.

Which of the following means can be utilized by the operators to estimate the growth of the steam void per 2BwEP ES-0.4, "Natural Circulation Cooldown with Steam Void in Vessel (Without RVLIS)"?

- a. Pressurizer pressure indication changes.
- b. Pressurizer level indication changes.
- c. RCS Hot Leg temperature indications.
- d. Core Exit Thermocouple indications.
- 94. Step 1 of 1BwFR-C.3, "Response to Saturated Core Cooling," checks if the RH system has been placed in shutdown cooling mode.

Which of the following describes the basis for this step?

- a. To ensure a ORANGE or RED condition in Core Cooling will not arise while performing this procedure.
- b. To verify RH is aligned for long term cooling if the appropriate conditions are met.
- c. If RH is in shutdown cooling mode, the saturated core cooling condition is a problem with RH and this procedure will not address this condition.
- d. If RH is in shutdown cooling mode, the saturated core cooling condition is a problem with RH and this procedure will identify and isolate the affected train.

95 The following conditions exist on Unit 1:

- A natural circulation cooldown is in progress per 1BwEP ES-0.2 "Natural Circulation Cooldown."

- Pressurizer pressure is being controlled using Aux. Spray and Pzr heaters.
- As pressure is being lowered through 1300 psig, a rapid increase is noted in Pzr level.
- Charging and letdown are in manual and are balanced.

What action is required to be taken by the operators?

- a. Repressurize the RCS.
- b. Isolate the SI Accumulators.
- c. Increase the RCS cooldown rate.
- d. Place excess letdown in service.
- 96. Which of the following describes why it is important to run CRDM fans when performing a natural circulation cooldown?
 - a. Provides the heat removal mechanism for the vessel head area.
 - b. Aids in natural circulation flow through the RCS vessel head region.
 - c. Prevents erratic indication of SR instrumentation.
 - d. Aids in natural circulation flow through the RCS.
- 97. What are the MAXIMUM cooldown rates that apply for a cooldown from normal operating temperature for the RCS to 500°F in the following indicated procedures? (NOTE: all choices are applicable in any ONE hour period.)

1BwEP ES-0.3 "Natural Circulation Cooldown With Void In Vessel (With RVLIS)" 1BwEP ES-0.4 "Natural Circulation Cooldown With Void In Vessel (Without RVLIS)"

1BwEP ES-0.3		1BwEP ES-0.4
	value	value
a.	50°F	50°F
b.	50°F	100°F
C.	100°F	50°F
d.	100°F	100°F

98. Unit 1 reactor tripped approximately 1 hour ago due to a large steam break inside containment. The crew is currently in 1BwEP ES-0.3, "Natural Circulation Cooldown with Steam Voids in Vessel (with RVLIS)". Pressurizer level is currently at 95%.

Per 1BwEP ES-0.3, PZR Level should be reduced to less than 90% by ...

- a. cycling PZR heaters and securing the RCS cooldown.
- b. controlling charging and letdown.
- c. closing PZR sprays and energizing PZR heaters.
- d. ONLY establish maximum letdown.
- 99 Why are the S/Gs depressurized to less than 670 psig according to 1BwCA-1.1, "Loss of Emergency Coolant Recirculation"?
 - a. To allow maximum AF flow to the S/Gs.
 - b. To ensure adequate subcooling for restart of the RCPs.
 - c. To set up conditions for controlled injection to the RCS from the accumulators.
 - d. To decrease RCS temperature and pressure which reduces break flow in a LOCA condition.
- 100. The NSO reports that the Spray Additive Tank low-2 level light has just been received as a result of a Containment spray system actuation during a steam line break. Containment Pressure is currently 24 psig. Which of the following is correct concerning this situation? (Assume CS Actuation signal has been RESET)
 - a. Allow the Containment spray system to operate AS-IS until containment pressure is < 15 psig.
 - b. Manually shift the Containment spray system lineup to the post accident recirculation lineup.
 - c. Manually close the motor operated isolation valve between the eductor and the spray additive tank (1CS019A/B).
 - d. Stop all containment spray pumps until the spray additive tank is filled and vented per BwOP CS-3.

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.1.	C	2 6.	а
2.	b	27.	d
3.	а	28.	d
4.	c	29 .	b
5.	b	30.	d
6.	c	31.	а
7.	С	32.	с
8.	а	33.	а
9.	b	34.	b
10.	d	35.	d
11.	а	36.	с
12.	а	37.	d
13.	d	38.	b
14.	C -	39.	а
15.	b	40.	а
16.	с	41.	С
17.	р С - 4 11-1-00	42.	d
18.	b	43.	d
19.	b	44.	с
20.	b	45.	а
21.	d	4 6 .	с
22.	b	47.	а
23.	C	48.	с
24.	b	49.	b
25.	b	50.	b

51.	а	76.	с
52.	b í	77.	С
53.	с	78.	С
54.	b	79.	b ·
55.	b	80.	а
56.	с	81.	а
57.	d	82.	с
58.	с	83.	b
59.	с	84.	с
60.	b	85.	b
61.	d ·	86.	d
62.	b	87.	d
63.	C	88.	d
64.	b	89.	b
65.	с	90.	d,
66.	с	91.	а
67.	с	92.	b
68.	d	93.	b
69.	b	94.	С
70.	d	95.	а
71.	b	96.	а
72.	а	97.	с
73.	d	98.	b
74.	а	99.	С
75.	с	100.	с

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DECAY TANK HIGH ACTIVITY UNIT 0

STEP		ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED				
		ATTACHMENT A (PG 1 OF	1)				
	~ -	ACCEPTABLE PRESSURE CALCUI	LATION				
1 <u>C</u>	alcul	ate absolute pressure for affected gas deca	<u>ay tank</u> :				
F	'A =	(indicated pressure) + 15 psi					
2 <u>C</u> <u>w</u>	2 <u>Calculate pressure of affected gas decay tank at which activity</u> will be within limits:						
P	Lim	= <u>Pa X 5 X 104 curies</u> (present tank activity in curies)	,				
3 <u>C</u>	alcul	ate indicated pressure equivalent to PLim:					
I	ndic	ated pressure = P_{Lim} - 15 psi					
		-END-					

BwCB-1 Fig. 2 Rev. 14 3/22/2000 PAGE 2 OF 8 **REFERENCE USE**



Differential and Integral Rod Worth vs. Steps Withdrawn

BwCB-1

Fig. 2 Rev. 14 3/22/2000

PAGE 4 OF 8 REFERENCE USE



BwCB-1 Fig. 2 Rev. 14-3/22/2000 PAGE 6 OF 8 **REFERENCE USE**



Differential and Integral Rod Worth vs. Steps Withdrawn

BwCB-1 Fig. 2 Rev. 14 3/22/2000

PAGE 8 OF 8 REFERENCE USE



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BwCB-1 Fig. 2A Rev. 13 3/22/2000 PAGE 2 OF 8 REFERENCE USE



BwCB-1 Fig. 2A Rev. 13 3/22/2000

PAGE 4 OF 8 REFERENCE USE



BwCB-1 Fig. 2A Rev. 13 3/22/2000 PAGE 6 OF 8 REFERENCE USE



Differential and Integral Rod Worth vs. Steps Withdrawn Control Banks D and C Moving with 113 Step Overlap

BwCB-1 Fig. 2A Rev. 13 3/22/2000

PAGE 8 OF 8 **REFERENCE USE**



Differential and Integral Rod Worth vs. Steps Withdrawn

BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 1 OF 5 REFERENCE USE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 2 OF 5 REFERENCE USE

TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 3 OF 5 REFERENCE USE

TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 4 OF 5 REFERENCE USE

TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE



BwCB-1 FIG 5 Rev. 12 3/22/00 PAGE 5 OF 5 REFERENCE USE

TEMPERATURE COEFFICIENT VS. MODERATOR TEMPERATURE



HZP TO HFP, ARO

REDIAGNOSIS UNIT 1

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
1 CHECK	IF ANY SG SECONDARY	
PRESSU	RE BOUNDARY IS INTACT:	
a. Ch <u>AN</u> IN	eck pressure in all SGs - <u>Y SG PRESSURE STABLE OR</u> <u>CREASING</u>	a. <u>IF</u> a controlled cooldown is in progress, <u>THEN</u> GO TO Step 2 (Next Page).
		<u>IF NOT,</u> <u>THEN</u> the following applies:
		o <u>IF</u> main steamlines are <u>NOT</u> isolated, <u>THEN</u> you should be in 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION.
		-OR-
		o <u>IF</u> main steamlines are isolated, <u>THEN</u> you should be in 1BwCA-2.1, UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS.

REV.	1
WOG	1C

REDIAGNOSIS UNIT 1

STEP ACTION/EXPECTED RESP	PONSE RESPONSE NOT OBTAINED
2 <u>CHECK IF ALL SGS SECONDARY</u> <u>PRESSURE BOUNDARIES ARE INTACT</u> :	
a. Check pressure in all S <u>NO SG PRESSURE DECRE</u> <u>AN UNCONTROLLED MANN</u> <u>NO SG COMPLETELY</u> <u>DEPRESSURIZED</u> 	GS: a. You should be in 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION. ER IF NOT, THEN GO TO 1BwEP-2, FAULTED STEAM GENERATOR ISOLATION, Step 1.
 CHECK IF SG TUBES ARE RUPTURED: ANY SG LEVEL INCREASING UNCONTROLLED MANNER	You should be in a 1BwEP-1, or 1BwCA-1 series procedure. <u>IF NOT</u> , <u>THEN GO TO 1BwEP-1</u> , LOSS OF REACTOR OR SECONDARY COOLANT, Step 1.
4 <u>YOU SHOULD BE IN A 1BWEP-3, OR</u> <u>A 1BWCA-3 SERIES PROCEDURE</u>	GO TO 1BwEP-3, STEAM GENERATOR TUBE RUPTURE, Step 1.
	-END-



FIGURE 46-1 GASEOUS RADIOACTIVE WASTE SYSTEM (REV. 0)

Question Topic NSO Responsibilities for Surveillances
Surveillance 1BwOSR 3.7.5.4-1 "Unit One Train A Auxiliary Feedwater Valve Emergency Actuation Signal Verification Test" is being performed. The personnel performing the surveillance are stationed at the Main Control Room, Aux. Electrical Room and the AF Pump Area.
In accordance with 1BwAP 390-1 "Operating Department Surveillance Program" how are operator actions directed while performing the surveillance?
US directs operator actions for the surveillance and will inform the NSO of any changes in the status of plant evolutions.
Assigned management person (other than shift operations) will provide direction to the operators and will directly inform the US of the status of plant evolutions.
NSO directs the operator's actions for the surveillance and is directly informed of the status of plant evolutions.
Operator at the AF pump area is in charge of actions being performed and will inform the Unit Supervisor of any changes in the status of plant evolutions.
Answer C Exam Level B Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00
Tier: Generic Knowledge and Abilities RO Group 1
GENERIC
2.1 Conduct of Operations
2.1.8 Ability to coordinate personnel activities outside the control room. 3.8 3.6
Explanation of Mhen Surveillances req. coordination between CR and operators in the plant are being performed, the NSO will direct the operators actions. The operator will communicate directly with the NSO as to the status of plant evolutions.
Reference Title Facility Reference Number Section Page Number(s) Revision L.O.
Operating Department Surveillance Program 1BwAP 390-1 E.4.a 3 6 P1-AM-
TK-022
Material Required for Examination Question Source: Facility Exam Bank Question Modification Method:
Material Required for Examination Question Source: Facility Exam Bank Question Source Comments: 1997 Braidwood NRC Exam

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Question Topic Directing Under InstructionILT	Candidates		· ····	· · · ·	
In accordance with OP-AA-101-110, "R LICENSED individuals can manipulate	eactivity Management the controls of the read	Controls," w ctor?	hich of the fo	llowing	NON-
Under the direct supervision of the Rea	ctor Operator,	· ·	· · · · · · · · · · · · · · · · · · ·		
an individual that is enrolled in an a	approved training prog	ram.			
🙇 a System Engineer during surveilla	nce testing.				· · · · · · · · · · · · · · · · · · ·
a Non-Licensed Operator during su	irveillance testing.]
an individual under the direct super	vision of the Shift Mar	nager.			· · ·
Answer a Exam Level R Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 Tier: Generic Knowledge and Abilities RO Group 1 SRO Group 1					
2.1 Conduct of Operations	ide the control room			2	5 40
Explanation of must be enrolled in an approved	training program				
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Reactivity Management Control	OP-AA-101-110	3.5.3	2	0	
Reactivity Management Control L.P.	PBIG	NA	NA	0	2
Material Required for Examination					
Question Source: Facility Exam Bank	Question Modific	ation Method:			
Question Source Comments: 1996 Braidwood NRC	Exam RO Question #4 SRO Ques	stion #4			
Record Number: 2 RO Number: 2	SRO Number:				

Acquirements for Containment Entry ~40% power						
The following Unit 1 conditions exist:						
- Reactor Power is 85%						
- Containment pressure is 0.6 psig						
Electric Operations has requested a load ascension to 95% power.						
A containment entry is required to search for a 0.3 gpm UNIDE	ENTIFIED lea	ak inside cont	ainmer	it.		
Which of the following is applicable for this entry?						
Reactor power must be reduced to <60% if entry inside the	e missile bar	rier is require	ed.			
Containment Integrity must be maintained.			···· ·· ·· · · · · · · · · · · · · · ·			
The requested load increase may occur while personnel a	re inside cor	ntainment.				
A Containment Entry Checklist is NOT required for this en	try.]		
Answer b Exam Level S Cognitive Level Memory Facility	Braidwood	ExamDate:		10/20/00		
Tier: Generic Knowledge and Abilities RO Group 1 SRO Group 1						
Tier: Generic Knowledge and Abilities RO Group 1 SRO GENERIC Image: State St	O Group 1	·····.				
Tier: Generic Knowledge and Abilities RO Group 1 SR0 GENERIC	O Group 1					
Tier: Generic Knowledge and Abilities RO Group 1 SR0 GENERIC	D Group 1 access.		2	.0 2.9		
Tier: Generic Knowledge and Abilities RO Group 1 SR GENERIC	2 Group 1 access. e reactor must b	be operating a st	2 leady sta	.0 2.9 te		
Tier: Generic Knowledge and Abilities RO Group 1 SR GENERIC	9 Group 1 access. e reactor must to Section	e operating a st Page Number(s)	eady sta Revision	.0 [2.9 te 1. 0.		
Tier: Generic Knowledge and Abilities FO Group 1 SR GENERIC	2 Group 1 access. e reactor must b Section F.1.f, F.3.d, F.1.a, F.1.c	e operating a st Page Number(s) 6, 7, 5	eady sta Revision 16E2	.0] 2.9 te L. 0.		
Tier: Generic Knowledge and Abilities RO Group 1 SR GENERIC	2 Group 1 access. e reactor must to Section F.1.f, F.3.d, F.1.a, F.1.c XXII	pe operating a st Page Number(s) 6, 7, 5	2 teady sta Revision 16E2 8	.0] [2.9] te L. 0: [
Tier: Generic Knowledge and Abilities R0 Group 1 SR GENERIC	D Group 1 access.	e operating a st Page Number(s) 6, 7, 5 85	2 teady sta Revision 16E2 8	.0 2.9 te L.0.		
Tier: Generic Knowledge and Abilities FO Group 1 SR GENERIC	2 Group 1 access. e reactor must b Section F.1.f, F.3.d, F.1.a, F.1.c	e operating a st Page Number(s) 6, 7, 5 85	2 teady sta Revision 16E2 8	.0] [2.9] te [
Tier: Generic Knowledge and Abilities R0 Group 1 SR GENERIC	2 Group 1 access. a reactor must & Section F.1.f, F.3.d, F.1.a, F.1.c XXII	e operating a st Page Number(s) 6, 7, 5 85 Significantly Modifie	2 teady sta Revision 16E2 8	.0 2.9 te L.0.		
Tier: Generic Knowledge and Abilities RO Group 1 SR GENERIC	2 Group 1 access. e reactor must b Section F.1.f, F.3.d, F.1.a, F.1.c XXII ation Method:	be operating a st Page Number(s) [6, 7, 5] [85] [Significantly Modifie	2 teady sta Revision 16E2 8 ed	.0 2.9 te 1.0.		

Question Topic Technical Specification MODE	definition]
Per Technical Specification Definitions,	a MODE is determine	d by power le	vel		
core reactivity, and average RCS te	emperature.				
b core reactivity, and auctioneered hi	gh RCS temperature.				
decay heat, and average RCS temp	perature.				
decay heat, and auctioneered high	RCS temperature.				
Answer a Exam Level B Cognitive Level	Memory Facilit	y: Braidwood	ExamDate:		10/20/00
Tier: Generic Knowledge and Abilities	RO Group 1 SF	RO Group 1			
GENERIC			·		
2.1 Conduct of Operations				·····	
2.1.22 Ability to determine Mode of Operation	•			2	.8 3.3
Answer Answer A MODE shall correspond to any reactor coolant temperature, and fuel in the reactor vessel.	on inclusive combination or reactor vessel head closur	of core reactivity re bolt tensioning	conditions, pow g specified in Ta	ver level, able 1.1-1	average with
registered College Print Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Technical Specifications	Basis Table 1.1-1	Definitions	1.1-9,1.1-5	Amend	
				ment 9B	
Introduction to Technical Specifications	I1-MC-XL-13 (3)	11-A	5	[1	3.b
Material Required for Examination]
Question Source: New	Question Modific	ation Method:			
Question Source Comments:					
Record Number: 4 RO Number: 3 S	RO Number: 3				

Which of the following chemistry values requires restoration within its steady state limit within 24 hours per TRM 3.4.b while in Mode 5.

	Dissolved O2	Chloride		Flou	ride		
a.	80 ppb	150 ppb		100 pp	b		
b.	300 ppb	80 ppb		80 pp	b		
c.	100 ppb	200 ppb		100 pp	b		
d.	150 ppb	100 ppb		80 pp	b		
Answe	C Exam Level S Cognitive Level	Comprehension	Facility	r: Braidwood	ExamDate:		10/20/00
Tier: GENI	Generic Knowledge and Abilities	RO Group		O Group 1]
2.1	Conduct of Operations						
2.1.3	Ability to maintain primary and second	ary plant chemistry	within a	llowable limits.		2	.3 2.9
Explar Answe	nation of Disolved O2 has no limit when be sr SS limit.	elow Mode 4 at 250	0°F. CL	and FL must be	e less than or eq	ual to 150) ppb
- 1. U.T.	Reference Title	Facility Reference	Number	Section	Page Number(s)	Revision	L. O.
Techi	nical Requirements Manual	TRM 3.4.b		3.4.b	3.4.b-1,4	1	
Reac	tor Coolant LP	[11-RC-XL-01 (12)		III.A	35	1	13
Materi	al Required for Examination						
Quest	ion Source: New	Questio	on Modific	ation Method:	<u> </u>		
Quest	on Source Comments:						
Recor	d Number: 5 RO Number: 5	SRO Number: 4]				

Question Topic Temporary Modifications]	
Which of the following items is consider	ed a temporary modifi	cation?				
Tygon hose installed on a water drop to fill a cleaning bucket.						
Blocking device installed on a safety valve to prevent inadvertent opening.						
Thermal overloads removed from a breaker that are specified on an OOS.						
An electrical jumper placed in a con prevent inadvertent auto start.	mponent's start circuit	as part of a s	urveillance pi	rocedure	e to	
Answer b Exam Level S Cognitive Level	Comprehension Facility	r: Braidwood	ExamDate:		10/20/00	
Tier: Generic Knowledge and Abilities	RO Group 1 SR	O Group 1				
GENERIC]	
2.2 Equipment Control					}	
2.2.11 Knowledge of the process for controlling	ng temporary changes.			2	.5 3.4*	
Explanation of Answer modifications (e.g. installation of a jumper to conduct a trip test, would not fall under the TMOD procedure. Water droops also not considered TMOD.						
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.	
Temporary Modifications	CC-AA-112	Exhibit G	42	0		
Temporary Modifications LP	PBIG	Exhibit G	42	0	3	
Material Required for Examination						
Question Source: Facility Exam Bank	Question Modific	ation Method:	Editorially Modified			
Question Source Comments: Modified CC-AA-112-1	Changed 1 distractor to not have	3 distractors refere	ncing a procedure			
Record Number: 6 RO Number: 5	SRO Number: 5					

Question Topic Clearance of Personal Protection Cards						
Mechanical Maintenance has completed work on the 1B SI pump bearings and the pump is ready to be tested. The OOS is in the process of being cleared when it is discovered that the Personnel Protection Card has not been removed. All work is complete, but the lead worker has left the site and cannot be reached.						
Who can authorize the removal of the Personnel Protection Card?						
Shift Manager (SM).		· · · · · · · · · · · · · · · · · · ·				
b. Unit Supervisor (US).						
Work Control Supervisor.	······································					
d. Holder releasing the OOS.						
Answer d Exam Level R Cognitive Level	Memory Facilit	y: Braidwood	ExamDate:		10/20	0/00
Tier: Generic Knowledge and Abilities	RO Group 1 SF	RO Group 1				
GENERIC						
2.2 Equipment Control						
2.2.13 Knowledge of tagging and clearance p	rocedures.				3.6	3.8
Explanation of If the lead worker is not on site an Answer perform the following	nd the PPC must be remov	red, then the hol	der releasing th	e OOS s	hall	
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	i L.O.	
Station Equipment Out of Service	OP-AA-101-201	4.3.5.E	24	2]	
Station Admin Procedures LP	I1-QB-XL-01	[]	2	8	1	
][]
Material Required for Examination						
Question Modification Method:						
Question Source: Facility Exam Bank	Question Modific	ation Method:				

Record Number: 7 RO Number: 4 SRO Number:

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Question Topic Failed Tech Spec Actions							
Which of the following actions is NOT re designated acceptance criteria?	equired when a Tech S	Spec surveilla	nce fails to n	neet the			
a Immediately inform the Shift Manager/Senior Reactor Operator.							
Document information on the data package cover sheet.							
Notify the NRC within 1 hour.							
d. Initiate a Condition Report (previou	isly a PIF).						
Answer C Exam Level S Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00							
GENERIC							
2.2 Equipment Control							
2.2.20 Knowledge of the process for managing	ng troubleshooting activities	,		2.	2 3.3		
Explanation of In the event of a failure of a Tech Answer immediately notify the SM/SRO.	a Spec , the person perform The information will be doc	ing the work or umented on the	their immediate data package a	superviso Ind initiate	or shall e a PIF.		
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Predefine Process	WC-AA-111	4.1.3	6	0	3		
Material Required for Examination							
Question Source: New	Question Modific	ation Method:					
Question Source Comments:							
Record Number: 8 RO Number: S	RO Number: 6						

Question Topic Recording out of spec data						
The Shiftly/Daily surveillance is being p	erformed by the NSO.	The NSO ha	as made a cir	cle arou	ind the	
reading for 1PI-960, SI Accumulator 1A	pressure Indicator.					
What is indicated by the circle?						
The indicator is suspect.						
Data is missing from previous entry	//entries.					
• The data falls outside the limits spe	ecified)	
d The perspector indicates a similar]	
	int change from previo	us readings.				
Answer C Exam Level S Cognitive Level	Memory Facility	: Braidwood	ExamDate:		10/20/00	
Tier: Generic Knowledge and Abilities	RO Group 1 SF	O Group 1				
GENERIC]	
2.2 Equipment Control						
2.2.23 Ability to track limiting conditions for op	perations.			2	.6 3.8	
Explanation of A circle around a reading indicate	es the value is out-of tolera	nce.				
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.	
Braidwood Operating Department Memo -	Memo 1-92	C.7	2	6	350-1	
	ſ <u></u>	· · · · · · · · · · · · · · · · · · ·	r		5&6	
Material Required for Examination						
Question Source: Facility Exam Bank	Question Modific	ation Method:]	
Question Source Comments: Braidwood 1999 NRC Exam						
Record Number: 9 RO Number: S	RO Number: 7					

Question Topic RO duties in Control Room during refueling

Which of the following is a responsibility of the NSO during refueling operations in the main control room?

Checking source range counts while a fuel assembly is being placed in the core.

Verifying proper operation of the Containment Evacuation alarm shiftly.

Maintaining a 1/M plot while reloading fuel during a core shuffle.

Updating the Control Room tag board per the Nuclear Component Transfer List shiftly.

Answer a Exam Level R Cognitive Level	Memory Facilit	y: Braidwood	ExamDate;		10/20/00
Tier: Generic Knowledge and Abilities	RO Group 1 SF	RO Group 1			
GENERIC					
2.2 Equipment Control					
2.2.30 Knowledge of RO duties in the control area, communication with fuel storage fueling operations, and supporting inst	room during fuel handling s facility, systems operated rumentation.	such as alarms from the control	from fuel handlir room in support	ng 3 t of	.5 3.3
Explanation of Coordinating the conduct of refue Answer activities that could affect the rea	ling activities and monitori ctivity of the core so that a	ng nuclear instru bnormal reactivi	umentation durir ty events can be	ng refuelir e mitigate	ng d.
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Reactivity Management	OP-AA-101-110	3.6.5	3	0	P1-QG-
					TK-051
Material Required for Examination					
Question Source: Facility Exam Bank	Question Modific	ation Method:			
Question Source Comments: 1998 Braidwood NRC E	xam				
Record Number: 10 RO Number: 5 S	RO Number:				

Question Topic Control Rod Programming]		
Concerning 1BwGP 100-2, "Plant Start Banks shall be (Assume current fuel cycle)	up," Limitations and Ac	tions, the ove	erlap of the R	od Con	trol		
a 113 steps							
b. 115 stens							
			· · · · · · · · · · · · · · · · · · ·				
116 steps.			·				
a. 118 steps.							
Answer a Exam Level B Cognitive Level	Memory	/: Braidwood	ExamDate:		10/20/00		
Tier: Generic Knowledge and Abilities	RO Group 1 SR	O Group 1					
GENERIC]		
2.2 Equipment Control							
2.2.33 Knowledge of control rod programming	g.			2	.5 2.9		
Explanation of Answer Overlap of banks is at 113 steps. CB"B" begins to move when CB"A" is at 115 steps with a rod height of 228. Overlap on previous fuel cycle was CB"B" began to move when CB"A" is at 116 steps with an overlap of 115 steps due to rod height of 231. 118 steps is determined if rod height of 113 is used with a core height of 231.							
Reference Title and	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Plant Startup	1BwGP 100-2	E.4.b	5	15			
Rod Control System LP	11-RD-XL-01 (28)				14		
Material Required for Examination							
Question Source: Facility Exam Bank Question Modification Method: Significantly Modified							
Question Source Comments: GP 100-2 038							
Record Number: 11 RO Number: 6	SRO Number: 8						

Question Topic Determination of Allowable Exposures. An operator received radiation exposures at BOTH Braidwood and LaSalle Stations during the vear. The exposure record to date this year is: Braidwood LaSalle Deep Dose Equivalent (DDE) 180 mrem 40 mrem Lens Dose Equivalent (LDE) 10 mrem 5 mrem Committed Effective Dose Equivalent (CEDE) 105 mrem 0 mrem Shallow Dose Equivalent (SDE) 10 mrem 10 mrem -Committed Dose Equivalent (CDE) 20 mrem 0 mrem The operator at Braidwood Station has been requested to work in an area where the known radiation rate is 160 mR/hr. The source of the radiation is a nearby HOT SPOT inside a pipe trap where crud has collected and has been determined to be totally gamma radiation. If the work task takes 30 minutes to complete, what is the individual's Total Effective Dose Equivalent (TEDE) for the year? ^{a.} 365 mrem ^{b.} 405 mrem 460 mrem ^{d.} 485 mrem Answer b Exam Level B Cognitive Level Application Facility: Braidwood ExamDate: 10/20/00 Tier: Generic Knowledge and Abilities **RO** Group 1 SRO Group 1 GENERIC Radiation Control 2.3 2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. 2.6 3.0 Explanation of TEDE=CEDE+DDE for BOTH facilities. To date: 325 mrem TODAY: Add 80 mrem [160 mR/hr x 0.5 hours] Answer all DDE by definition. Distractors are combinations with other exposures added, today's exposure absent & all exposures. **Reference Title** Facility Reference Number Section Page Number(s) Revision L.O. 11-MC-XL-03 8 Exposure Review and Authorization BwRP 5300-2 5 G.1.a.6 4 NGET Study Guide NGET Study Guide Rad 50-87 22 NGET Protection Material Required for Examination Question Source: Facility Exam Bank Question Modification Method: Significantly Modified Question Source Comments: 1997 Braidwood NRC Examination

Record Number: 12 RO Number: 7 SRO Number: 9

Question Topic	Facility Ra	diation Co	ntrol						· · · · · · · · · · · · · · · · · · ·
Which of the performing?	following	activities	s would N	IOT require Ra	diation	Protection	consultation pr	ior to	
^{a.} Raising	radioactiv	e materia	al(s) from	n the fuel pool a	above e	stablished	limits.		
b. Uncover	ring conta	minated	process	lines.					
Cleanup of a boric acid spill coverin 2 levels of the Auxiliary Building.									
d. Adding I	boric acid	to the ba	tch tank	•					
Answer d Exam Level S Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00									
Tier: Generic	Knowledge	and Abiliti	es	RO Group	1 SF	RO Group	1		
GENERIC				· · · · · · · · · · · · · · · · · · ·				· · ·]
2.3 Radiatio	on Control]
2.3.2 Know	ledge of fac	ility ALARA	program.					2	2.5 2.9
Explanation of Answer	All distracto	rs involve o	changing ra	adiological conditio	ons that r	equire RP a	ssistance.		
	Reference	Fitle		Facility Reference	Number	Section	Page Number(s)	Revision	L. O.
Radiological Po	osting and L	abeling		BwRP 5010-1		E.8	4	12][]
NGET Study G	uie			NGET Study Gui	de	Radiation Protection	50-87	22	NGET
]						
Material Required	l for Examinat	ion							
Question Source:	New			Questi	on Modific	ation Method:			}
Question Source	Comments:								
Record Number:	13 R	O Number:	S	RO Number: 10	~				

Question Topic Limits for release of potential contaminated equipment							
What are the MINIMUM requirements for Radiological Posted Area (RPA)?	or unconditional releas	e of a wrench	that has bee	en used	in a		
A survey indicates the wrench is							
free of both smearable and fixed co	ontamination.						
b free of smearable contamination bu	it is allowed up to 1000	0 dpm/100cm	² fixed contar	ninatior	۱.		
allowed up to 20 dpm/100cm ² smearable contamination and is allowed up to 5000 dpm/100cm ² fixed contamination.							
allowed up to 100 dpm/100cm ² of either smearable or fixed contamination.							
Answer a Exam Level B Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00							
Tier: Generic Knowledge and Abilities	RO Group 1 SF	O Group 1					
GENERIC							
2.3 Radiation Control							
2.3.4 Knowledge of radiation exposure limits excess of those authorized.	and contamination control	, including perm	issible levels in	2.	5 3.1		
Explanation of Tools/equipment to be uncondition	onally released must be free	e of any remova	ole or fixed cont	aminatior	۱.		
Reference Titlener	Facility Reference Number	Section	Page Number(s)	Revision	L. 0.		
AREA AND EQUIPMENT DECON	BwRP 5721-4	E.1	2	0			
Selected RP LP	11-MC-XL-03	[I],	16	0	2		
			[]				
Material Required for Examination							
Question Source: Facility Exam Bank Question Modification Method:							
Question Source Comments: 1999 Braidwood NRC E	Exam						
Record Number: 8 S	RO Number: 11						

Question Topic Fuel Handling Accident Response							
The following conditions exist on Unit 1:							
 Unit 1 Containment Equipment hatch is removed Refueling operations in progress A HIGH alarm is received on radiation monitors 1RE-AR011/12, Containment Fuel Handling Incident 							
The crew should				an de Bandana and an e a' dan Rajahan Marka (Marka Bandh			
Activate the Unit 1 Containment evaluation	acuation alarm and sta	art containme	nt charcoal fil	ter fans	5.		
Verify Fuel Handling Building is at a	negative pressure ar	nd start the Cr	nmt Mini Purg	je Syste	em.		
Start the Containment Purge System	m and start containme	ent charcoal fi	lter fans.]		
d. Activate the Unit 1 Containment eva	acuation alarm and sta	art the Contai	nment Mini P	urge Sy	vstem.		
Answer a Exam Level S Cognitive Level	Comprehension Facilit	y: Braidwood	ExamDate:		10/20/00		
Tier: Generic Knowledge and Abilities	RO Group 1 SF	RO Group 1					
GENERIC]		
2.3 Radiation Control							
2.3.10 Ability to perform procedures to reduce exposure.	excessive levels of radiat	ion and guard ag	jainst personnel	2	.9 3.3		
Explanation of FHB should be at a negative pres	sure. Cnmt Purge and Mir	ni Purge System	receive isolation	n signals	from		
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. 0.		
OA REFUEL Lesson Plan	11-OA-XL-29/30	N/A	5	7	3		
REFUEL-1	1BwOA REFUEL-1	N/A	1,2,4	54			
AR	1BwAR 4-1AR012J	N/A	1	1E1			
Material Required for Examination							
Question Source: Facility Exam Bank Question Modification Method: Significantly Modified							
Question Source Comments: 1998 Braidwood NRC Exam							
Record Number: 15 RO Number: S	RO Number: 12						

Question Topic Isolation of S	team Supply valve	es to control radiati	ion relea	ses		··········	
Given the following plan	t conditions:				······		
- Unit 1 is at 100 - Unit 2 is at 100 - 0PR09J "CC H - A confirmed Hig - The 0 CC HX h	% power. % power. X Outlet Unit 0 gh Alarm has be as been subsec	Radiation Moni een determined quently isolated	itor" is i I by che I.	n HIGH Alarn emistry.	n.		
The crew should verify	•			· · · · · · · · · · · · · · · · · · ·			
Only 1CC017 is closed	sed and enter th	ne LCOAR for l	Unit 1.				
b. Only 2CC017 is clos	sed and enter th	ne LCOAR for l	Unit 2.				
Both 1CC017 and 2	CC017 are clos	sed and enter t	he I CC	AR for both i	units		
d Dath 100017 and 2]
Both 1CC017 and 2	CCU17 are clos		enter a	I LCOAR.	······································		
Answer C Exam Level R	Cognitive Level		Facilit	y: Braidwood	ExamDate:		10/20/00
GENERIC		RO GIOUP					
2.3 Radiation Control							
2.3.11 Ability to control rad	iation releases.					2	.7 3.2
Explanation of Both vent valve	es receive close si	gnal. Must enter th	ne LCOA	R for both units	•		
Reference Title	0	Facility Reference	Number	idual Section	Page Number(s)	Revision	L. O.
Tech Specs		3.7.7		Condition A	3.7.7-1	Ammen dment 98	
CC HX OUTLET UNIT 0	·····	1BwAR 1-0PR09	J	N/A	1	1E1	
CC System LP	j	11-CC-XL-01	(19)	lia	7-8	0	7
Material Required for Examination	n 1						
Question Source: New		Questi	on Modifi	cation Method:			
Beased Numbers							
Record Number: 16 KON							

Question Topic	Basis for SG level						
Per procedu maintaining	Per procedure 1BwCA-0.0, "LOSS OF ALL AC POWER", which of the following is the basis for maintaining SG Narrow Range levels above 10% when the RCS is being cooled to 350°F?						
a. Narrow	Range level is the onl	ly indication of SG inven	tory available a	fter a loss of a	ll AC po	wer.	
b. Ensure	proper thermal stratifi	cation in the SGs in the	event of a SGT	R.			
c. Ensure	s the capability to cool	down once AC power is	restored.				
^{d.} Ensure	s heat transfer capabil	ity exists to remove hea	t from the RCS.				
Answer d	Exam Level S Cognitive	E Level Memory	acility: Braidwood	ExamDate:		10/20/00	
Tier: Generic	Knowledge and Abilities	RO Group	SRO Group 1				
GENERIC							
2.4 Emerge	ency Procedures / Plan						
2.4.7 Know	ledge of event based EOP	mitigation strategies.			3	.1 3.8	
Explanation of Answer	The analysis basis for EC/ tubes to ensure that suffic	A-0.0 requires that the level ir ient heat x-fer capability exist	n at least one intac s to remove heat f	t S/G be above th rom RCS.	e top of t	he S/G	
	Reference Title	Facility Reference Num	ber Section	Page Number(s)	Revision	L. O.	
Loss of All AC	Power LP	11-CA-XL-01		27	4	6	
Loss of All AC	Power Unit 1	1BwCA-0.0	31	39	WOG1 C		
Emergency Re	esponse Guideline	ERG CA-0.0	Step 16	113	1C		
Material Require	d for Examination						
Question Source	Facility Exam Bank	Question M	odification Method:			· · · · · · · · · · · · · · · · · · ·	
Question Source	Comments: 1999 Braidwoo	od NRC Exam					
Record Number:	17 RO Number:	SRO Number: 13					

Question Topic Implementation Hierarchy for E	P-0			· · · · ·			
An automatic reactor trip has occurred INJECTION. During performance of St	requiring entry to BwE ep 4, the operator has	P-0, REACTO	OR TRIP OR hat SI has N	SAFET DT actu	Y ated.		
What is the NEXT action required of the	e operator?						
Manually actuate SI.							
Transition to 1BwEP ES-0.1, "REA	CTOR TRIP RESPON	SE."					
Procede with Step 5 of BwEP 0.							
Check if SI is required.					·		
Answer d Exam Level R Cognitive Level	Memory Facility	r: Braidwood	ExamDate:		10/20/00		
Tier: Generic Knowledge and Abilities	RO Group 1 SF	O Group 1					
GENERIC							
2.4 Emergency Procedures / Plan							
2.4.13 Knowledge of crew roles and responsi	ibilities during EOP flowcha	rt use.		3	.3 3.9		
Explanation of Answer If an action in the left hand column cannot be performed or an expected response cannot be obtained, the operator should go to the response not obtained column on the right hand side to get the required response or conditional action.							
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Use of Procedures for Operating Department	BwAP 340-1	C.2.b.1	9	12E1			
Reactor Trip or Safety Injection	1BwEP-0	Step 1	3	WOG1			
				С			
EP-0 EP ES-0 Rx Trip or Safety Injection	11-EP-CL-01	II.C	9-10	13	3		
Material Required for Examination							
Question Source: New Question Modification Method:							
Question Source Comments:							
Record Number: 18 RO Number: 10 SRO Number:							

Question Topic EOP Term - CSF Suspended	Action							
As discussed in BwAP 340-1,"Use of Procedures for Operating Department," the required operator action while implementing a Critical Safety Function would be to suspend								
a lower priority RED BwFR to add	ress a higher priority (ORANGE cond	dition.					
6 a higher priority ORANGE BwFR t	o address a lower pri	ority RED cond	dition.					
🛍 the Status Tree pass prior to com	oletion to address an	ORANGE cond	dition.					
BwCA-0.0, "Loss of All AC Power.	11							
Answer b Exam Level R Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 Tier: Generic Knowledge and Abilities RO Group 1 SRO Group 1								
GENERIC]			
2.4 Emergency Procedures / Plan								
2.4.17 Knowledge of EOP terms and definition	ons.			3	.1 3.8			
Explanation of a. wrong because ORANGE ne Answer completed. d. wrong because F	ver takes priority over REI RS are suspended while	D. c. wrong beca in ES-1.3 Steps 1	ust Status Trees -6.	s must be	•			
	Facility Reference Number	Section	Page Number(s)	Revision	L. O.			
Use of Procedures in Operating Department	BwAP 340-1	C.2.c	12-14	12E1				
Trans. to Cold Leg Recirc.	BwEP ES-1.3	Note prior to step 1	2	WOGI C				
Status Trees LP	[1-MC-XL-09	II.H	5-9	9	3			
Material Required for Examination								
Question Source: New	Question Modi	fication Method:						
Question Source Comments:								
Record Number: 19 RO Number: 11	SRO Number:							
Question Topic	EOP procedur	e transitions duri	ng low power ATWS.					
---	---	---	--	-----------------	-------------------------------------	----------------	-----------	----------
The following	g plant condit	ions exist:						
- Unit 2 is in - Reactor po - Indicated i	the process ower is at 3% ntermediate r	of starting up and has beer ange start up	from a refueling of a stabilized to perfo rate is 0 dpm.	utage. orm a	power histo	ry surveilland	e.	
A loss of the	Unit 2 station	n auxiliary trar	nsformer occurs.					
The Unit Sup	pervisor direc	its a reactor tri	p. S reactor at 2 PM 0	5 L ond		ith no roculto		
The Unit Sur	pervisor has e	entered 2BwE	P-0 and is at Step	1 RN	0.		•	
The next pro	cedure actior	n will be to						
^{a.} continue	with 2BwEP	2-0, Step 2.	· ·					
^{6.} transitio	n to 2BwCA-(0.0, "Loss of A	II AC Power."					
^{c.} transitio	n to 2BwFR-S	S.1, "Respons	e to Nuclear Powe	er Ger	neration/ATV	VS."		
d. transitio	n to 2BwOA I	ELEC-3, "Loss	s of 4KV ESF Bus.	."				
Answer C E	xam Level B	Cognitive Level	Application	Facility:	Braidwood	ExamDate:		10/20/00
Tier: Generic	Knowledge and	Abilities	RO Group	1 SRO	Group 1			
GENERIC	·····							
2.4 Emerge	ncy Procedures	/ Plan						
2.4.19 Knowl	edge of EOP la	yout, symbols, ai	nd icons.				2	.7 3.7
Explanation of Answer	R SUR is greate o DGs starting a	er than -0.2 dpm and supplying the	which requires transit e ESF buses. Same f	tion to F	FR-S.1. BwCA C-3	0.0 should not	be entere	ed due
	Reference Title		Facility Reference Nun	nber	Section	Page Number(s)	Revision	L. O.
Reactor Trip Or	Safety Injectior	٦	2BwEP-0	s	steps 1, 2, 3	3, 4	WOGI	
Introduction to I	Emorgonov Bro	anduran			ر · · · · · · · · · · · · · · · · ·	10.14	C	4
][!	 	[0-14]	0	40
Material Required	for Examination	and a large		I [<u> </u>	
Question Source:	New		Question N	Nodificat	tion Method:			
Question Source	Comments:		######################################					
Record Number:	20 RO Nu	mber: 12	RO Number: 14					

Question Topic Scanning requirements for the	CSF Status Trees				
The following conditions exist following	a LOCA on unit 2:				
- AF flow420 g- CNMT Pressure18 g- RCS Pressure234 g- Core Exit TC's650 g- RCPsTrip- SG pressures750 g- Narrow Range SG levels38%	gpm osig and increasing 0 psig °F and increasing ped osig stable (A) 34%(B) 34%	(C) 35%((D)		
Based on the above conditions, which	of the following satisfie	s the minimu	m scanning re	equirem	nents
Continuously coop					
		· · · · · · · · · · · · · · · · · · ·			
Scan at 15 minute intervals.					
Scan at 30 minute intervals.					
Scanning may be terminated.					
Answer b Exam Level S Cognitive Leve	Comprehension Facility	/: Braidwood	ExamDate:		10/20/00
Tier: Generic Knowledge and Abilities	RO Group 1 SF	O Group 1			
GENERIC		· · · · · · · · · · · · · · · · · · ·			
2.4 Emergency Procedures / Plan					
2.4.22 Knowledge of the bases for prioritizin	g safety functions during abr	normal/emergen	cy operations.	3	.0 4.0
Answer Tree scanning should be contin yellow is found, tree scanning fr	ious if any condition higher t equency may be reduced to	han yellow is fou 10-20 minutes.	und. If no condit	ion highe	r than
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Heat Sink Unit 1	1BwST-3	N/A	1	WOG1	
				с	
Use of Procedures in Operating Dept	1BwAP 340-1	C.2.c.4	15	12E1	
Status Trees	I1-MC-XL-09	<u> </u>	6	9	4
Material Required for Examination					
Question Source: Facility Exam Bank	Question Modific	ation Method:	Significantly Modifie	ed	
Question Source Comments: 1996 Braidwood NRC	Exam SRO Question #5				
Record Number: 21 RO Number:	SRO Number: 15				

Question Topic Response to Fire in DG area.				·		
The following alarms have actuated: - Unit Two Area Fire						
- CO2 Storage Lank Trouble						
- On Philogj, the Zone Light for the ZB DG Room is illuminated						
The fire brigade has been dispatched.						
The fire brigade can expect CO2 actuat	ion in the					
2B DG Room ONLY.						
⁶ 2B DG Day Tank Room ONLY.						
2B DG Room and 2B DG Day Tank	Room.					
^{d.} NO actuation due to low CO2 Stora	ge Tank Pressure.		······································			
Answer C Exam Level B Cognitive Level	Comprehension Facility	y: Braidwood	ExamDate:		10/20/00	
Tier: Generic Knowledge and Abilities	RO Group 1 SF	RO Group 1				
GENERIC						
2.4 Emergency Procedures / Plan						
2.4.26 Knowledge of facility protection require equipment usage.	ments including fire brigad	e and portable f	re fighting	2	.9 3.3	
Explanation of Automatic CO2 actuation in DG r	oom will cause CO2 actuat	tion in the corres	ponding day tar	nk room a	also.	
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.	
Fire Protection LP	11-FP-XL-01	11	10	5	6.a	
U2 Area Fire	BwAR 0-39-A4	Α	1	7		
CO2 Storage Tank Trouble	BwAR 0-38-E9	Α	1	6E3		
Material Required for Examination						
Question Source: New	Question Modific	ation Method:				
Question Source Comments:						
Record Number: 22 RO Number: 13 S	RO Number: 16					

Question Topic Station Director Actions during	emergency conditions				
Unit 1 has declared an ALERT due to a Steam Generator Tube Rupture. Offsite dose assessment is in progress. The Shift Manager is the acting Station Director. Which of the following responsibilities CAN NOT be delegated by the SM?					
Notification of the offsite authorities	s of protective action re	ecommendati	ons.		
Authorize exceeding 10CFR100 site boundary limits.					
Decision to issue thyroid blocking agents to onsite personnel.					
Notify the NRC Operations Center	via the ENS Red Phor	1 0 .			
Answer Exam Level S Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 Tier: Generic Knowledge and Abilities RO Group 1 SRO Group 1 GENERIC Image: State S					
2.4 Emergency Procedures / Plan					
2.4.29 Knowledge of the emergency plan.				2	.6 4.0
Explanation of Answer Non-deligable duties (1) Final de and make PARS to offsite author emergency conditions (4) Issuar personnel.	cision to declare the emerg rities (3) Authorization of pe nce of thyroid blocking agen	ency classificat rsonnel exposu ts to ComED er	on (2) Final dec re beyond 10CF nergency worke	ision to n R20 limit rs and on	otify s under site
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Emergency Director Implementing Procedure	BwZP 1000-1	F.1	3	8	
			[]		
Material Required for Examination	۱ (ــــــــــــــــــــــــــــــــــــ				<u> </u>
Question Source: Facility Exam Bank	Question Modific	ation Method:			
Question Source Comments: 1996 Braidwood NRC	Exam SRO Question #14				
Record Number: 23 RO Number: 17					

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Question Topic Actions required for dropped rod(s)						
The following plant conditions exist:						
 Rod D-4 rod bottom light PWR RANGE FLUX RATE RX TRIP ALERT annunciator Reactor Power ROD CONTROL URGENT FAILURE annunciator NOT LIT 1BwOA ROD-3 "Dropped or Misaligned Rod" has been entered. 						
While the crew is taking data for the dropped rod per step 7 of 1BwOA ROD-3, the following indications occur:						
- Rod D-8 rod bottom li	- Rod D-8 rod bottom light LIT					
Which of the following describes t	he action required?					
Reset rate trip and perform d	ropped rod recovery per 1B	wOA ROD-3.				
b. Trip the reactor and enter 1B	wEP-0.					
Restore Tave/Tref, then calcu	ulate QPTR.					
erform SDM surveillance an	id reduce reactor power to le	ess than 70%				
Answer b Exam Level B Cognitiv	e Level Comprehension Facilit	y: Braidwood	ExamDate:			
Tier: Plant Systems	RO Group 1 SF	RO Group 1				
001 Control Rod Drive System	· · · · · · · · · · · · · · · · · · ·					
K4. Knowledge of Control Rod Drive S	System design feature(s) and or in	iterlock(s) which	provide for the	following:		
K4.09 Recovery of dropped rod				3.	.9 4.1	
Explanation of If more than 1 rod has dro Answer would be taken if only one	pped the correct action to take is a rod were dropped.	to trip the reacto	r. All distractors	are actio	ns that	
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.	
Dropped or Misaligned Rod	1BwOA ROD-3	Step 4	4	56		
Dropped or Misaligned Rod-3	11-OA-XL-34	1B	3	7	5	
Material Required for Examination			· · · · · · · · · · · · · · · · · · ·			
Question Source: Facility Exam Bank	Question Modific	ation Method:	Editorially Modified			
Question Source Comments: OA ROD 111						
Record Number: 24 RO Number: 14 SRO Number: 18						

duestion ropic	Determination of	of how much te	mperature change	occurs due to	o a change	in rod height.		J		
Given the follo	wing plant c	conditions or	ו Unit 1:							
80% reactor										
- 60% reactor	power.									
- Core Age is	5200 FFPH									
- RCS Tave is	575°F.									
- RCS Boron Concentration is 600 ppm.										
What will RCS	Tave be fol	llowing a wit	hdrawal of CBD	to 200 step	os? Assur	ne new stable	e plant			
conditions exis	st.									
^a 576.5°F										
▶. 578.5°F										
6 580.5°F										
d. 581.5°F	·									
Answer b Exa	m Level B	Cognitive Leve	Application	Facility: Bi	raidwood	ExamDate:		10/20/00		
Tier: Plant Syst	ems		RO Group	1 SRO GI	roup 1					
Plant Systems [Bod Group] 1] [SRO Group] 1]]		
001 Cor	K5 Knowledge of the operational implications of the following concents as they apply to the Centrel Red Drive System:					the Control Ro	d Drive S	vstem:		
001 Cor K5. Knowledg	e of the operation	ional implicatio	ns of the following c	oncepts as t	ney apply to	K5.54 Definition and units of reactivity				
001 Cor K5. Knowledg K5.54 Definition	e of the operat	ional implicatio reactivity	ons of the following c		ney apply to		2	.8 3.1		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us	⇒ of the operat n and units of ing the 5695.6 mperature cha	ional implicatio reactivity EFPH graph F ange would be	Figure 2 reactivity ac 3.9°F. Final Tave is	dition is 70 p 575°F+3.9°I	ney apply to ocm. Using F=578.9°F.	Figure 5 MTC i	2 2 s 18 PCM	.8 3.1 I/°F.		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Answer Te	e of the operat n and units of ing the 5695.6 mperature cha Reference Title	ional implicatio reactivity EFPH graph F ange would be	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference	ddition is 70 p \$ 575°F+3.9°I Number	ccm. Using F=578.9°F.	Figure 5 MTC i Page Number(s)	s 18 PCN Revision	.8 3.1 I/°F.		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Temp Coef vs Model	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempe	ional implicatio reactivity EFPH graph F ange would be srature	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5	ddition is 70 p 575°F+3.9°	ney apply to ocm. Using F=578.9°F.	Figure 5 MTC i Page Number(s)	2 s 18 PCN Revision 12	.8 3.1 V°F. L. 0.		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Temp Coef vs Mod Rod worth vs step	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempo is CB D and C	ional implicatio reactivity EFPH graph F ange would be erature moving	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5 BwCB-1 Figure 2	ddition is 70 p 575°F+3.9° Number	ney apply to ocm. Using F=578.9°F. Section	Figure 5 MTC i Page Number(s) 4 of 8 5 of 8	2 s 18 PCN Revision 12 14	8 3.1 I/°F. L. O.		
001 Cor K5. Knowledg K5.54 Definitio Explanation of Answer Te Temp Coef vs Mc Rod worth vs step Rx Theory - MTC	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempe is CB D and C and PD	ional implicatio reactivity EFPH graph F ange would be erature moving	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5 BwCB-1 Figure 2	ddition is 70 p 575°F+3.9° Number	ney apply w ocm. Using F=578.9°F.	Figure 5 MTC i Page Number(s) 4 of 8 5 of 8	2 s 18 PCN Revision 12 14 4	8 3.1 //°F. L.O. 3		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Temp Coef vs Mode Temp Rod worth vs step Rx Theory - MTC Material Required for Material Required for	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempe is CB D and C and PD Examination	ional implicatio reactivity EFPH graph F ange would be erature moving	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5 BwCB-1 Figure 2 11-RK-XL-03	ddition is 70 p 575°F+3.9° Number	ney apply w ocm. Using F=578.9°F. Section ⇒ 5 pages 1	Figure 5 MTC i Page Number(s) 4 of 8 5 of 8 -8 - Expanded G	2 s 18 PCN Revision 12 14 4 3raph Onl	8 3.1 I/°F. I.O. 3 y		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Answer Te Temp Coef vs Mod Rod worth vs step Rx Theory - MTC Material Required for Question Source:	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempe is CB D and C and PD Examination	ional implicatio reactivity EFPH graph F ange would be erature moving	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5 BwCB-1 Figure 2 I1-RK-XL-03 -1 Figure 2 pages 1 Questic	Adition is 70 p 575°F+3.9° Number -8 and Figure	ney apply to ocm. Using F=578.9°F. Section ≥ 5 pages 1 Method:	Figure 5 MTC i Page Number(s) 4 of 8 5 of 8 -8 - Expanded G	2 s 18 PCN Revision 12 14 4 Graph Onl	8 3.1 I/°F. L.O. 3		
001 Cor K5. Knowledg K5.54 Definition Explanation of Answer Us Temp Coef vs Mc Temp Coef vs Mc Rod worth vs step Rx Theory - MTC Material Required fo Question Source Co	e of the operat n and units of ing the 5695.6 mperature cha Reference Title derator Tempe is CB D and C and PD r Examination	ional implicatio reactivity EFPH graph F ange would be erature moving 1BwCB	Figure 2 reactivity ac 3.9°F. Final Tave is Facility Reference BwCB-1 Figure 5 BwCB-1 Figure 2 I1-RK-XL-03 -1 Figure 2 pages 1 Questic	ddition is 70 p 575°F+3.9° Number	ney apply w ocm. Using F=578.9°F. Section	Figure 5 MTC i Page Number(s) 4 of 8 5 of 8 -8 - Expanded G	2 s 18 PCW Revision 12 14 4 3raph Onl	8 3.1 1/°F. L. O. 3 y		

Question Topic Control of RCS Tave during m	anual operation				
Given the following plant conditions or	n Ünit 1:				
 The plant is operating at 75% power of the plant is operating at 75% power occurs. 1PT-505, turbine first stage impulses and increasing. 	wer with normal lineup t is in the process of adju lse chamber pressure,	for performing usting N-44 w fails high whe	g a calorimeti vhen a turbine en the turbine	ric. e runba e runsba	ck ack.
Based on these conditions, the NSO s	hould	······			
Drive rods in manual until rod spe temperature is restored.	ed drops below 48 step	os/min, then s	witch to AUT	O until	
Drive rods in manual and continou	isly insert rods until ten	nperature is r	estored.		
Allow automatic insertion until rod until temperature is restored.	speed drops below 48	steps/min, th	en insert rod	s in ma	nual
Allow automatic insertion until rod until temperature is restored.	speed drops below 64	steps/min, th	en insert rod	s in ma	nual
Answer b Exam Level B Cognitive Leve	Comprehension Facilit	y: Braidwood	ExamDate:		10/20/00
Tier: Plant Systems	RO Group 2 SI	RO Group 2			
002 Reactor Coolant System					
Ability to predict and/or monitor change controls including:	s in parameters associated	with operating th	ne Reactor Cool	lant Syste	em
A1.09 RCS T-ave					3.7 3.8
Explanation of Nis are being adjusted, therefor	e rods are in manual. Pt - 5	05 failed high.			
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Rod Control System	11-RD-XL-01] []	7,10,34	12	12,20
Material Required for Examination			<u> [</u>]]	
Question Source: New	Question Modific	cation Method:			
Question Source Comments:					
Record Number: 26 RO Number: 16	SRO Number: 20				

identification of RCS Saturated	conditions				
The following plant conditions exist during a small-break LOCA:					
Core suit TO's read annual in state 500%					
- Core exit TC's read approximately 532°F					
- RCS pressure is 885 psig					
- S/G levels are 25% narrow range Steam prossure is 1002 pairs					
- Steam pressure is 1092 psig - RCS wide range cold leg temperatures are all 525°E					
ree mae range oold leg tempera					
Based on the above conditions, the RC	S is				
a saturated. Decreasing RCS pressu	ire will aid in establishi	ng subcooling].		
subcooled. Increasing S/G pressur	e will aid in increasing	subcooling.			
					J
Subcooled. Decreasing RCS press	ure will aid in increasin	ig subcooling	•		
a. saturated. Decreasing S/G pressur	e will aid in establishin	g subcooling	•	••• • • ••	
Answer d Exam Level B Cognitive Level Comprohension Eacility: Braidwood Examplate 10/20/00					
Tier: Dept Systems					
Tier: Plant Systems	Comprehension Facility RO Group 2	C Group 2	Exampate:		10/20/00
Tier: Plant Systems 002 Reactor Coolant System	Comprehension Factor RO Group 2	C Group 2			10/20/00
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor	Comprehension Facilit RO Group 2 SF or in the control room:	C Group 2			
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to restart	Comprehension Facility RO Group 2' SF 2' or in the control room: recognize and correct satur	C Group 2			3 4.4
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to result Explanation of Answer 885 psig + 15 psig = 900 psia. T	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur sat for 900 psia = 531.95°F ases subcooling.	Braidwood RO Group 2 ration conditions 531.95°F < 53	2°F therefor not	4. t subcoole	3] 4.4, d.
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to r Explanation of Answer 885 psig + 15 psig = 900 psia. T Decreasing RCS pressure decre Reference Title	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur sat for 900 psia = 531.95°F ases subcooling. Facility Reference Number	2 C Group 2 ration conditions 531.95°F < 53 Section	2°F therefor not Page Number(s)	4. t subcoole Revision	3] 4.4 d.
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to r Explanation of Answer 885 psig + 15 psig = 900 psia. T Decreasing RCS pressure decree Reference Title	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur sat for 900 psia = 531.95°F ases subcooling. Facility Reference Number I1-EP-XL-02	Braidwood 2 C Group 2 2 ation conditions 531.95°F < 53 Section II.B	2°F therefor not Page Number(s)	4. t subcoole Revision	3 4.4, d.
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to r Explanation of Answer 885 psig + 15 psig = 900 psia. T Decreasing RCS pressure decre Reference Title	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur sat for 900 psia = 531.95°F ases subcooling. Facility Reference Number [1-EP-XL-02	2 C Group 2 ration conditions 531.95°F < 53 Section II.B	2°F therefor not Page Number(s) 13	4. t subcoole Revision	3 4.4 d. L. O.:
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to r Explanation of Answer 885 psig + 15 psig = 900 psia. T Decreasing RCS pressure decre Reference Title	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur rest for 900 psia = 531.95°F ases subcooling. Facility Reference Number 11-EP-XL-02	Braidwood 2 C Group 2 2 ation conditions 531.95°F < 53 Section II.B	2°F therefor not Page Number(s) 13	4. t subcoole Revision	3 4.4, d. 1
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to r Explanation of Answer 885 psig + 15 psig = 900 psia. T Decreasing RCS pressure decre Reference Title EP-1 Series LP Material Required for Examination Steam Tage	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur rsat for 900 psia = 531.95°F ases subcooling. Facility Reference Number [1-EP-XL-02	Braidwood C Group 2 2 ation conditions 531.95°F < 53 Section II.B	2°F therefor not Page Number(s) 13	4. t subcoole Revision 13	3 4.4 d. L. O. 1
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4.03 Indications and controls necessary to resure decressing RCS pressure decressing RCS pressure decressing RCS pressure decressing Reference Title EP-1 Series LP Material Required for Examination Steam Ta Question Source: Facility Exam Bank	Comprehension Facility RO Group 2 SF or in the control room: recognize and correct satur sat for 900 psia = 531.95°F ases subcooling. Facility Reference Number 11-EP-XL-02 ables Question Modific	Braidwood 2 C Group 2 cation conditions 531.95°F < 53 Section II.B ation Method:	2°F therefor not Page Number(s) 13	4. t subcoole Revision	3] 4.4, d. 1
Tier: Plant Systems 002 Reactor Coolant System A4. Ability to manually operate and/or monitor A4. Base of the system A4.03 Indications and controls necessary to not the system Explanation of Answer Base of the system of the system Base of the system Base of the system of the system Answer Base of the system Base of the system Base of the system Base of the system Base of the system Material Required for Examination Steam Ta Question Source: Facility Exam Bank Question Source Comments: Question # "EP-1 - 016	Comprehension Facility RO Group 2 SF pr in the control room: recognize and correct sature recognize and correct sature Sat for 900 psia = 531.95°F ases subcooling. Facility Reference Number I1-EP-XL-02	2 C.Group 2 ration conditions 531.95°F < 53 Cection II.B Cection Attion Method:	2°F therefor not Page Number(s) 13	4. t subcoole Revision 13	3 4.4 d. 1

Question Topic Loss of ESF Bus which causes a loss of all CC pumps.						
Given the following plant conditions on	Given the following plant conditions on Unit 2:					
Mada 1						
- Mode 1 - 2A and Unit 0 CC numps are OOS						
- A fault occurs de-energizing ESE Bus 242						
structure de chergizing EOF Bus 242						
Which of the following actions must occ	Which of the following actions must occur for the above plant conditions?					
Trip the reactor when CC heat exc	hanger outlet tempera	ture is 105°F.				
Trip the reactor when RCP lower ra	adial bearing temperat	ure is 205°F.				
Trip the reactor when RCP upper n	notor bearing tempera	ture is 195°F				
4 No reactor trip is required CC tom		:				
No reactor trip is required, CC terring	peratures should rema	in constant.				
Answer C Exam Level R Cognitive Level	Comprehension Facilit	y: Braidwood	ExamDate:	10/20/0		
Tier: Plant Systems	RO Group 1 SF	RO Group 1				
003 Reactor Coolant Pump System						
K2. Knowledge of bus power supplies to the	following:					
K2.02 CCW pumps				2.5* 2.6*		
Explanation of A is not a RCP trip criteria. B rad Answer psid.	ial bearing trip setpoint is 2	25°F. D is wrong	g trip setpoint is	less than 200		
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision L. O.		
Startup of a RCP	BwOP RC-1	E	5	9E2 9		
Material Demuired for Examination						
	Ourseller Moult	41 BB 21				
Question Source Comments:		auon method:				
Record Number: 28 RO Number: 18 S	RO Number:					

Question Topic Effects on RCS due to loss of an RCP above P-8					
The following conditions exist on Unit 1	•]
Reactor power 26%					
- Pzr pressure 2235 psig					
- Pzr level 35%					
RCP 1A breaker trips due to sensed undervoltage from bus 157. What is expected as a result of the trip of the RCP?					
The reactor will automatically trip d	ue to the open RCP b	reaker.			
b. The reactor will automatically trip d	ue to RCS loop low flo	ow condition.			
The reactor must be manually tripp	ed by the operator.				
a. A normal plant shutdown will be ini	tiated.				
Answer b Exam Level B Cognitive Level	Comprehension Facili	y: Braidwood	ExamDate:		10/20/00
Tier: Plant Systems	RO Group 1 S	RO Group 1			
003 Reactor Coolant Pump System					
K3. Knowledge of the effect that a loss or ma	Ifunction of the Reactor Co	oolant Pump Sys	stem will have or	n the follo	wing:
K3.01 RCS				3	.7 4.0
Explanation of AUTO trip is expected due to pow	ver > P-8.				
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Reactor Coolant Pump lesson plan	Chp 13	C. 4.a 2)	18	9	8
AC Electrical Distribution lesson plan	Chp 4			8	10.b
Reactor Protection System	[1-RP-XL-02 (60b)	11	16	0	4
Material Required for Examination				<u></u>	
Question Source: Facility Exam Bank	Question Modifi	cation Method:	Significantly Modifie	ed	
Question Source Comments: 1998 Braidwood NRC I	Exam Review pg 20, RO only				
Record Number: 29 RO Number: 19 S	RO Number: 22				

Question Topic Identifying leaking PZR PORV					
The following plant conditions exist:	· · · · · · · · · · · · · · · · · · ·				
- Reactor Tripped					
- All RCPs Running					
- PZR level 48% increasing					
- RCS pressure 1700 psig decreasing					
Which of the following leak locations is	consistent with the pla	nt conditions	above?		
Failure of charging header connect	ion to the RCS.				
Weld failure on pressurizer liquid sp	pace sample line.				
Failure of pressurizer PORV in an i	ntermediate position.				
Weld failure on RCP B discharge p	ining	······	······································		
Answer C Exam Level B Cognitive Level	Comprehension Facility	y: Braidwood	ExamDate:		10/20/00
Plant Systems	RO Group 1 SF	RO Group 1			····
004 Chemical and Volume Control Sys	tem				
K1. Knowledge of the physical connections a System and the following:	nd/or cause-effect relations	ships between C	hemical and Vo	olume Cor	ntrol
K1.29 Effect and detection of leaking PORV c activity in automatic mode	or relief on PZR level and p	ressure, includir	ng VCT makeup	3.	4 4.0
Explanation of Answer					
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Pressurizer System	11-RY-XL-01 (14)	II.B	19	9	19
I&C Process Measurement LP		В	19	3	12
Material Required for Examination					
Question Source: Facility Exam Bank	Question Modific	ation Method:			
Question Source Comments: Question # "EP-1 - 107	II				_
ecord Number: 30 RO Number: 20 SRO Number: 23					

Question Topic Actions required for CV pump trip					
The following plant conditions exist on Unit 1:					
100% nowor					
- RCS Tave is 582°F					
- PZR Pressure is 2235 psig					
All systems were operating normally in Automatic when the 1A CV pump trips. Which of the following					
actions are required per BWAR 1-9-A3,					
Place 1CV121, "Cent Chg Pumps Fl	low Cntrl Vlv", in man	ual and close	e, then start 1	B CV pı	ımp.
🖳 Verify suction source, then start 1B 🤅	CV pump.				
🖾 Isolate letdown, then start 1B CV pu	mp.				
Close THCV182, Crig Hor Back Pre	ess Chtri VIV", then sta	aπ 1B CV pur	np.		
Answer b Exam Level B Cognitive Level	Comprehension Facility	Braidwood	ExamDate:		10/20/00
Plant Systems	RO Group 1 SR	O Group 1			
U04 Cnemical and Volume Control Syste	em	have on the Ch	omical and Valu	ma Cant	[
System:	Iction on the following will	nave on the Ch	emical and volu	ime Conti	
K6.04 Pumps				2.	8 3.1
Explanation of If RCS pressure was less than NC	PP, then a would be the co	prrect answer			
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Chg Pump Trip	BwAR 1-9-A3	[C]	[1]	5e4	
Material Required for Examination	Oliverhee Medile	odio - Mathada	······		·····
Question Source Comments:					
Record Number: 31 RO Number: 21 SR	tO Number: 24		·····]

	Unterminetion if on DU numbruill here here	-
		er
ana ana amin'ny fisiana amin'ny fanisa amin'ny fanisa amin'ny fanisa amin'ny fanisa amin'ny fanisa amin'ny fani		U I
and a second		

The following plant conditions exist on Units 1 and 2:

- Unit 1 is in Mode 5
- 1A RH pump is running supplying S/D Cooling
- 1B DG is OOS for maintenance
- Unit 2 is in Mode 6 for a Refueling Outage
- Unit 2 SATs are OOS for repairs
- 2A RH pump is running supplying S/D Cooling
- Unit 2 ESF Busses are being supplied by Unit 1

Annunciator 1-20-C3, "SAT 142-1 SUDDEN PRESS", actuates concurrent with an overcurrent condition on Bkr 1412.

Concerning the RH systems, what method would the control room operators use to remove decay heat?

	Unit 1	Uni	t 2						
a.	Steam SGs	Steam Steam	SGs						
b.	Bleed and Feed	Steam Steam	SGs						
c.	Start an RH pump	Bleed an	d Feed						
d.	Steam SGs	Start an I	RH pump						
Answe	d Exam Level R	Cognitive Level	Application	Facility	y: Braidwoo	od	ExamDate:		10/20/00
Tier:	Plant Systems		RO Group	3 SF	RO Group	3			
005	Residual Heat R	emoval System							.]
K2.	Knowledge of bus powe	er supplies to the	following:						
K2.01	RHR pumps							3	.0 3.2
Explai Answe	rtion of pumps. 1A DG when breaker 1	1 and 142 requires will start on Unit 412 tripped on ov	s steaming SG on I 1, but it will not loac ercurrent.	Jnit 1. I I onto th	DGs start ne bus due	on Uni e to a l	t 2 supplying po ockout which w	ower to R as activat	H ed
	Reference Title		Facility Reference N	umber	Sectio	n	Page Number(s)	Revision	L. O.
Loss	of RH Cooling		BwOA PRI-10		Table A	·····)	9	58A	
Bus 1	42 Cross Tie Breaker 14	24 Trip	BwAR 1-21-A8		В		1	5E1	
Loss	RH Cooling LP		11-OA-XL-20		11		2	9	4
Materi	al Required for Examination								
Questi	on Source: New		Questio	n Modific	ation Methe	od:			
Quest	on Source Comments:								
Recor	Number: 32 RO Ni	umber: 22 S	RO Number:						

Question Topic Tech spec actions for a CCW p	oump trip					
The following plant conditions exist:						
Unit 1 is at 100%		U	nit 2 is in MO	DE 4		
1A CC pump is running		24	A CC numn is			
1B CC nump is OOS		2	R CC pump is	e in etandhy		
0 CC pump is aligned to Bus 141		0	CC HX is alic	aned to Unit 1		
		0				
Which of the following applies?						
No Tech Spec actions apply.						
Unit 1 is in a 7 day LCO to restore	required CC pur	np to c	operable stati	JS.		
Linit 2 in in a 7 day I CO to restore	required CC LIX	1				ا <u>۔</u> ۔۔۔۔
Unit 2 is in a 7 day LCO to restore	required CC HX	to ope	erable status.			
💁 Unit 1 and unit 2 are in a 7 day LC	O to restore requ	uired C	C pump to o	perable statu	S.	
Answer b Exam Level S Cognitive Level	Application	Facilit	y: Braidwood	ExamDate:		10/20/00
Tier: Plant Systems	RO Group	3 SF	RO Group 3			
008 Component Cooling Water System	n					
2.1 Conduct Of Operations						لد [
2 1 12 Ability to apply technical specifications	for a system				2	9 4 0
Answer	/iii not auto start due	e to 1A	CC pump is not	INPIL		
Reference Title international	Facility Reference N	umber	Section	Page Number(s)	Revision	L. O.
Tech Specs	3.7.7		Condition B	377-1	Ammen	[]
	·	J			dment	·]
					98	
CC System LP	I1-CC-XL-01	(19)	11	19	6	16
		<u> </u>				
Material Required for Examination		J			J	· · · · · · · · · · · · · · · · · · ·
Question Source: New	Questio	n Modific	ation Method:			
Question Source Comments:				L]
Record Number: 33 RO Number: 5	RO Number: 25		· · · · · · · · · · · · · · · · · · ·]

Question Topic Conditions in facility license concerning spraying using Normal and Aux Spray

What are the parameters and values used by the operator to ensure the temperature difference between the PZR and the spray fluid are within the specified limit(s) in the PRESSURE AND TEMPERATURE LIMIT REPORT when initiating PZR spray?

For normal spray, the difference between ...

RCS hot leg loop temperature and PZR vapor space temperature limit is 50°F, and for aux spray, the difference between Regenerative Hx charging inlet temperature and PZR vapor space limit is 320°F.

B RCS cold leg loop temperature and PZR vapor space temperature limit is 50°F, and for aux spray, the difference between Regenerative Hx charging outlet temperature and PZR vapor space limit is 320°F.

RCS hot leg loop temperature and PZR vapor space temperature limit is 320°F, and for aux spray, the difference between Regenerative Hx charging inlet temperature and PZR vapor space limit is 320°F.

RCS cold leg loop temperature and PZR vapor space temperature limit is 320°F, and for aux spray, the difference between Regenerative Hx charging outlet temperature and PZR vapor space limit is 320°F.

Answer d	Exam Level	R	Cognitive Level	Memory	Fac	il ity: Braidwood	1	ExamDate:		10/20/00
Tier: Plant S	Systems			RO	Group 2	SRO Group	2			
010	Pressurizer l	Pressu	ire Control Syste	em						
2.1 Condu	ict Of Operat	ions					•			
2.1.10 Kno	2.1.10 Knowledge of conditions and limitations in the facility license.									
Explanation of Answer	xplanation of 320°F delta T for normal and aux spray. Normal spray is cold leg and vapor space. Aux Spray is outlet regen HX (1TI-126) and vapor space									
	Reference	Title	and support of the	Facility Re	erence Numbe	r Section	n F	age Number(s)	Revision	L. O.
TRM - PZR T	emperature l	₋imits		3.4.c			3	.4.c-1	1	
Plant heat up	lesson plan]	I1-GP-XL-()1	1, 11	1	-15	13	1,2,3
Pzr Temp Lin	nit Surveilland	e		1BwOS TF	RM 3.4.c.1	F.5-F.7	2	.,3	0E2	
Material Require	ed for Examina	tion								
Question Sourc	e: 👔 Facility Ex	am Bai	nk		Question Mod	ification Method	d:			
Question Sourc	e Comments:	199	8 Braidwood NRC E	xam						
Record Number	: 34 R	O Num	ber: 23 S	RO Number:						

Question Topic Pressu	rizer Pressure Master C	ontroller setpoint failure				
The unit is at 100% setpoint fails to 218 pressure control ren	power, steady state 5 psig. Assume a s mains in automatic.	e, NOP/NOT. The Pre step change in the set	ssurizer Pres point and ass	sure Master (ume that pre	Controll ssurizer	er
Which of the follow	ing is the immediate	automatic response c	f the system?)		
a. Spray valves o	pen, Variable Heate	rs deenergize				
🕨 PORV 455A or	oens, Spray valves o	pen, Variable Heaters	s energize.			
c. Spray valves o	pen, Variable Heate	rs energize.				
d. Spray valves c	lose, Variable Heate	rs deenergize.	· · · · · · · · · · · · · · · · · · ·	······		
Answer a Exam Leve	B Cognitive Level	Comprehension Facilit	y: Braidwood	ExamDate:		10/20/00
Tier: Plant Systems		RO Group 2 SI	RO Group 2			
010 Pressuriz	er Pressure Control Syst	em				
K6. Knowledge of th System:	e effect of a loss or malf	unction on the following wil	I have on the Pr	essurizer Press	ure Contr	ol
K6.01 Pressure dete	ction systems				2	.7 3.1
Explanation of Controlli Answer 2185 psi	ng pressure fails lower th g.	nan actual value - system r	esponds to lowe	r pressure from	2235 psi	g to
Referen	ice Title	Facility Reference Number	Section Section	Page Number(s)	Revision	L. Ö.
Pressurizer System		I1-RY-XL-01 (14)		30	9	21
Material Required for Even	ination					<u> </u>
Question Source: Facility	/ Exam Bank	Question Modifi	ation Method:	Editorially Modified		
Question Source Comment	s: 1996 Braidwood NRC I	Exam RO Question #99 SRO Qu	estion #89			
Record Number: 35	RO Number: 24 S	RO Number: 26				

Question Topic	Vhy PZR Level Transmitters and	re Post Accident Monitors						
Per Tech Spec Accident Monit	Per Tech Specs, which of the following is NOT a reason for designating 1LT459 and 1LT460 as Post Accident Monitoring Instrumentation?							
^{a.} Used to de	Used to determine whether to terminate SI.							
^{b.} Used to de	etermine if SI reinitiation i	is required.		····				
c. Used to ve	erify unit conditions neces	ssary to establish natu	ral circulation	l.				
d. Used to ev	aluate RCP trip criteria.							
Answer d Exa	Answer d Exam Level S Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00							
Tier: Plant Syste	ems	RO Group 2 SF	RO Group 2					
011 Pres	surizer Level Control System							
2.1 Conduct O	f Operations							
2.1.12 Ability to	apply technical specifications	for a system.			2	.9 4.0		
Explanation of PZ Answer USE	R water level is used to detern ed to verify the unit conditions	nined whether to terminate necessary to establish nat	SI or to re-initia ural circulation.	te SI if it has be	en stoppe	e. Also		
Real Real Real Real Real Real Real Real	leference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Technical Specific	ations	3.3.3.6	Basis	B.3.3.3-7	0			
Intro to Technical	Specifications LP	11-MC-XL-13 (3)	111	20	1	6		
Material Required for	Examination							
Question Source:	Question Source:							
Question Source Cor	nments:							
ecord Number: 36 RO Number: 27								

Question Topic RPS Protection for DNB							
Which of the following Reactor Protection System Trips protects against DNB accidents?							
IR High Flux							
b. High Pressurizer Pressure							
High Pressurizer Level							
Power Range High Negative Rate			·····				
Answer d Exam Level B Cognitive Level	Memory Facili	y: Braidwood	ExamDate:		10/20/00		
Tler: Plant Systems	RO Group 2 S	RO Group 2					
012 Reactor Protection System							
K5. Knowledge of the operational implication	s of the following concepts	as they apply to	the Reactor Pr	otection S	System:		
K5.01 DNB				3.	3* 3.8		
Explanation of Answer analysis. b - protects against over backup to the high pressurizer protects against over backup to the high pressurizer protects against over	ower excursions while in IR erpressure. c - protects sa ressure trip. d - protects a	and is not taker fety valves, prev gainst high flux p	n credit for in the vents water ham beaking from dro	e accident mer, and pping roc	is a Is.		
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Reactor Protection system	11-RP-XL-02 (60b)	[]	9, 12, 16	6	5		
Material Required for Examination							
Question Source: New	Question Modifi	cation Method:					
Question Source Comments:							
Record Number: 37 RO Number: 25 S	RO Number: 28						

Question Topic Monitoring component status using TSLBs on an ESF actuation signal							
The Status light for 1SI8801B is DARK following a SI actuation. 1SI8801B is							
FULL OPEN and is NOT in its requ	uired safeguards p	osition.					
CLOSED and is NOT in its required	d safeguards posi	tion.					
FULL OPEN and is in its required s	safeguards positio	n					
CLOSED and is in its required safe	equards position						
Answer h Exam level B Cognitive level		Facility: Braidwood			10/20/00		
Tier: Plant Systems	RO Group	1 SRO Group 1	LAdmDate.		10/20/00		
013 Engineered Safety Features Actua	ation System		······				
A4. Ability to manually operate and/or monitor	or in the control room:						
A4.01 ESFAS-initiated equipment which fails	to actuate			4	.5 4.8		
Explanation of 1SI8801B receives open signal of Answer	on SI. Light comes on	when valve is open.					
Reference Title	Facility Reference Nur	mber Section	Page Number(s)	Revision	L. O.		
EP-0 Series LP	11-EP-XL-01		13	13	3		
SI8801B P&ID	20E-1-4030 SI 6			K			
Material Required for Examination							
Question Source: New Question Modification Method: Question Source Comments:							
Record Number: 38 RO Number: 26 S	SRO Number: 29						

Question Topic Automatic Isolation of	MSIVs
A normal Unit 1 heatup is in pro	ogress per 1BwGP 100-1 with the following plant conditions:
-RCS pressure	1850 psig
-RCS pressurization rate	15 psig/min
-RCS temperature	485°F
-RCS heat up rate	10°F/hr
-S/G pressure	575 psig
If the ourrent trend continues w	thick of the following ecoure FIDOTO
in the current trend continues, w	The following occurs FIRST?
a MSIVs close.	
PZR PORV opens.	
Lowest setpoint S/G safety	valve opens.
Eirst group of steam dumps	s throttle open.
Answer a Exam Level R Cogn	tive Level Comprehension Facility: Braidwood ExamDate: 10/20/00
Tier: Plant Systems	RO Group 1 SRO Group 1
013 Engineered Safety Featu	Ires Actuation System
K4. Knowledge of Engineered Safe the following:	ty Features Actuation System design feature(s) and or interlock(s) which provide for
K4.03 Main Steam Isolation System	
Explanation of From 1850 psig. until P	-11(1930) with pressurization rate of 15 psig/min takes 5.33 until P-11. PORV opens
@ 2235#(larger than 19	30#). Stm dumps will take 390 min to get >550°F with current HUR.
Reference Title	Facility Reference Number Section Page Number(s) Revision L. O. The
Main Steam System LP	I1-MS-XL-01 (23) II 9,16-26, 41 1 19
Material Required for Examination	
Question Source: Facility Exam Bank	Question Modification Method:
Question Source Comments: 1996 Braid	wood NRC Exam RO Question #22 SRO Question #25
Record Number: 39 RO Number:	27 SRO Number:

Question Topic Rod Bottom Lights during startup							
Rods are being withdrawn in manual during a reactor startup, with all systems operable.							
For the Control Banks, which of the following describes the status of the DRPI rod bottom lights at the moment the ROD AT BOTTOM annunciator alarm clears?							
🚨 ˈBanks A, B, C, & D OFF.							
^{b.} Banks A, B, C, & D ON.							
🖾 Banks A, B, C OFF; Bank D Of	N.						
^a Bank A OFF; Banks B, C, & D	ON.						
Answer d Exam Level B Cognitive Level	Memory Facilit	y: Braidwood	ExamDate:		10/20/00		
Tier: Plant Systems	RO Group 2 SF	RO Group 1					
014 Rod Position Indication System]		
K4. Knowledge of Rod Position Indication Sy	stem design feature(s) and	l or interlock(s) v	vhich provide fo	r the follo	wing:		
K4.04 Zone reference lights				2	.6 2.9		
Explanation of Control Bank A less than or equa	ll to 9 steps withdrawn give	s the alarm.					
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.		
Rod Position Indication	11-PI-XL-01	11	12	1	5		
Rod at Bottom	1BwAR 1-10-E6	Setpoint	1	5			
Material Required for Examination]		
Question Source: Facility Exam Bank	Question Source: Facility Exam Bank Question Modification Method:						
Question Source Comments: 1996 Braidwood NRC E	Exam RO Question #37		· · · · · · · · · · · · · · · · · · ·				
Record Number: 40 RO Number: 28 S	RO Number: 30						

Question topic Calorimetric Adjustments								
Which of the following components is being DIRECTLY adjusted by the gain adjust at the NL panel								
potentiameter following a calorimetric c	alibration?	adjuotod by the ga	in adjust at ti	ie ni panei				
Summing and level amplifier								
Detector output current								
Upper and Lower Detector Average	ing Circuit		· · · · · · · · · · · · · · · · · · ·					
d Detector high voltage power supply	/							
Answer a Exam Level B Cognitive Level	Memory	Facility: Braidwood	ExamDate:	10/20/00				
Tier: Plant Systems	RO Group	1 SRO Group 1						
015 Nuclear Instrumentation System								
A1. Ability to predict and/or monitor changes System controls including:	in parameters asso	ociated with operating th	e Nuclear Instru	umentation				
A1.01 NIS calibration by heat balance				3.5 3.8				
Explanation of Gain potentiometer adjusts gain	of summing level ar	nplifier to calibrate PR o	hannel.					
Reference Title	Facility Reference N	umber Section	Page Number(s)	Revision L. O.				
Power Range Nis	l1-NI-XL-03 (33) II	5-14	1 4				
Material Descripted for Exemplecture								
Question Source Comments: Farley 1998	wuestion	r mounication method:						
Record Number: 41 RO Number: 29 S	RO Number: 31							

Question Topic Apply QPTR Tech Specs		·····			
The following plant conditions exist on	Unit 2:		,,, _,, _,, _		
-Reactor is operating at 100% rated	thermal power				
-Annunciator 2-10-A4 "PWR RNG L	JPPER DET FLUX DE	V HIGH" has	alarmed		
-All control rods are positioned with	In 12 steps of their gro	oup demand o a is 1 04	ounters		
		113 1.04			
Assuming QPTR is not reduced, within	two hours reactor pow	ver must be re	educed to		
a. 50%		······			
b. 74%					
88%		······			
d. 94%					
Answer c Exam Level S Cognitive Level	Comprehension Facilit	y: Braidwood	ExamDate:		10/20/00
Tier: Plant Systems	RO Group 1 SI	RO Group]		
015 Nuclear Instrumentation System					
2.1 Conduct Of Operations		· · · · · · · · · · · · · · · · · · ·			
2.1.12 Ability to apply technical specifications	for a system.			2	.9 4.0
Explanation of Reduce thermal power greater the Answer	nan or equal to 3% from RT	P for each 1% c	of QPTR >1.00		
Reference Title	Facility Reference Number	Section	Page Number(s)	Revision	L. O.
Tech Specs	PD Limits	3.2.4	3.2.4-1	Ammen	
				ament 98	
"PWR RNG UPPER DET FLUX DEV HIGH	1BwAR 1-10-A4	N/A	1	6E1	
Power Range NI LP	11-NI-XL-03 (33)		22-24	1	10
Material Required for Examination					
Question Source: New	Question Modific	ation Method:			
Record Number: 42 KO Number:	SRU Number: 32				

Question Topic Reactor trip due to failure of IR									
A plant start-up is in progress. The P-10 permissive light has just -come "ON ". ユッハミ "クテト"									
No operator actions have been taken.									
Which of the following will result in an automatic reactor trip?									
Trip of one RCP.									
Power range channel N41 fails	HIGH.								
🖾 Intermediate Range channel N	35 fails HIGH.								
The NSO places the Block/Res	set Switch for SR channe	I 31 to the "Re	set" position.						
Answer C Exam Level R Cognitive L	evel Comprehension Fac	lity: Braidwood	ExamDate:		10/20/00				
Tier: Plant Systems	RO Group 1	SRO Group 1							
015 Nuclear Instrumentation Syste	em								
K4. Knowledge of Nuclear Instrumentati	on System design feature(s) a	and or interlock(s)) which provide f	or the fo	llowing:				
K4.05 Reactor trip					4.3 4.5				
Explanation of Answer Answer Above P-10 and below P-8, Ranges are automatically bl 4 (B incorrect). A failure of a function, (C correct)	reactor trip occurs on 2 RCPs ocked from energizing, (D inc an IR will cause a trip because	trip (A incorrect) prrect). Power ra until the trip is b	. Above P-10, th nge high flux (hi locked by the op	ne Sourd gh or lo perator it	ce w) is 2 of will				
Reference Title	Facility Reference Number	Section	Page Number(s)	Revisio	n L.O.				
Braidwood Big Notes	NI-3 Intermediate Range Detector	e NI-3][1	5					
Reactor Protection System	11-RP-XL-02 (60b)		8-11, 14	6	4				
Material Required for Examination									
Question Source: New	Question Modi	fication Method:							
Question Source Comments:			·····						
Record Number: 43 RO Number: 30	SRO Number:								

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| Question Topic               | Effect of Open                        | circuit on CETC                         | S                                  |                              |                  |                                    |                       |          |
|------------------------------|---------------------------------------|-----------------------------------------|------------------------------------|------------------------------|------------------|------------------------------------|-----------------------|----------|
| Which of the<br>conditions a | following is or reached?              | correct for an (                        | OPEN in a F                        | RVLIS or C                   | ETC thermoo      | couple after s                     | teady st              | ate      |
| <sup>a.</sup> RVLIS v        | vill indicate c                       | ore uncovery.                           |                                    |                              |                  |                                    |                       |          |
| <sup>b.</sup> Subcoo         | in Margin Mo                          | onitor will indic                       | ate increase                       | ed subcooli                  | ng.              |                                    |                       |          |
| c. Control                   | Board indicat                         | tion for the affe                       | ected therm                        | ocouple wi                   | ll indicate les  | s than 35°F.                       | · · · · · ·           |          |
| <sup>d.</sup> Control        | Board indicat                         | tion for the affe                       | ected therm                        | ocouple wi                   | ll indicate gre  | eater than 230                     | 00°F.                 |          |
| Answer d E                   | xam Level R                           | Cognitive Level                         | Memory                             | Facility                     | /: Braidwood     | ExamDate:                          |                       | 10/20/00 |
| Tier: Plant Sy               | stems                                 |                                         | RO Gr                              | oup 1 SF                     | to Group 1       |                                    |                       |          |
| 017 Ir                       | -Core Tempera                         | ture Monitor Syst                       | tem                                |                              |                  |                                    |                       | ]        |
| A2. Ability to prediction    | o (a) predict the<br>ons, use proced  | impacts of the folures to correct, co   | llowing on the<br>ontrol, or mitig | In-Core Tem<br>ate the conse | perature Monito  | or System and (b<br>se abnormal op | ) based o<br>eration: | on those |
| A2.01 Thern                  | nocouple open a                       | and short circuits                      |                                    |                              |                  |                                    | 3                     | .1 3.5   |
| Explanation of<br>Answer     | When an open o<br>signal for the af   | occurs, a capacito<br>fected TC to > 23 | or discharges<br>00.               | to ground thr                | ough a resistor. | This drives the                    | display/o             | utput    |
|                              | Reference Title                       |                                         | Facility Refere                    | ence Number                  | Section          | Page Number(s)                     | Revision              | L. O.    |
| Inadequate Co                | re Cooling Dete                       | ction                                   | 11-IT-XL-01                        | (34b)                        | 11               | 6, 9, 10                           | 7                     | 4,5,6    |
|                              | · · · · · · · · · · · · · · · · · · · |                                         |                                    |                              |                  |                                    |                       |          |
|                              |                                       |                                         |                                    |                              |                  |                                    |                       |          |
| Material Required            | for Examination                       |                                         | a                                  |                              |                  |                                    |                       | ]        |
| Question Source:             | New                                   |                                         | Q                                  | uestion Modific              | ation Method:    |                                    | · · · · · · · ·       |          |
| Question Source              | Comments:                             |                                         |                                    |                              |                  |                                    |                       |          |
| Record Number:               | 44 RO Nu                              | imber: 31 S                             | RO Number:                         |                              |                  |                                    |                       |          |

| Question Topic CETC Failures                                                                                                                                                                                                                                                                                                               |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Given the following plant conditions on Unit 1:                                                                                                                                                                                                                                                                                            |              |
| -100% power.<br>-Train A CETC power supply (MCC 131x1 ckt15) has been deenergized for breaker replace<br>-Train B CETC has only 10 thermocouples operable which are currently indicating:<br>1-610°F 6-613°F<br>2-610°F 7-612°F<br>3-613°F 8-612°F<br>4-640°F 9-611°F<br>5-613°F 10-613°F<br>-MCB display for train B CETC indicates 615°F | ement.       |
| CETC #4 fails high.                                                                                                                                                                                                                                                                                                                        |              |
| MCB temperature would indicate                                                                                                                                                                                                                                                                                                             |              |
| 612°F                                                                                                                                                                                                                                                                                                                                      | <u> </u>     |
| 615°F                                                                                                                                                                                                                                                                                                                                      |              |
| € 731°F                                                                                                                                                                                                                                                                                                                                    | L            |
| 781°E                                                                                                                                                                                                                                                                                                                                      | <br>         |
| Annual D Cognitive Level Annual Braidwood EvamDate                                                                                                                                                                                                                                                                                         | 10/20/00     |
| Tier: Plant Systems RO Group 1 SRO Group 1                                                                                                                                                                                                                                                                                                 | 10/20/00     |
| 017 In-Core Temperature Monitor System                                                                                                                                                                                                                                                                                                     |              |
| A4. Ability to manually operate and/or monitor in the control room:                                                                                                                                                                                                                                                                        |              |
| A4.01 Actual in-core temperatures                                                                                                                                                                                                                                                                                                          | 3.8 4.1      |
| Explanation of Answer II f less than 10 TCs are operable, the microprocessor divides by the appropriate number to obtain a average. 612°F is the average of 9 which is correct. 615°F is the average of 10. 781°F adds 2300 the failed TC to average 10. 731°F adds 1800°F for the failed TC to average 10.                                | n<br>)°F for |
| Reference Title Facility Reference Number Section Page Number(s) Revision                                                                                                                                                                                                                                                                  | n L.O.       |
| Inadequate Core Cooling I1-IT-XL-01 II.A.2 9 7                                                                                                                                                                                                                                                                                             | 5            |
|                                                                                                                                                                                                                                                                                                                                            |              |
|                                                                                                                                                                                                                                                                                                                                            |              |
| Material Required for Examination                                                                                                                                                                                                                                                                                                          |              |
| Question Modification Method:                                                                                                                                                                                                                                                                                                              |              |
| Record Number: 45 RO Number: 32 SRO Number: 33                                                                                                                                                                                                                                                                                             |              |

| Question Topic RCFC effects on #2 RCP seal                                                 |                                         |                  |                 |           |          |  |  |  |
|--------------------------------------------------------------------------------------------|-----------------------------------------|------------------|-----------------|-----------|----------|--|--|--|
| The following conditions exist with Unit 1 in MODE 5:                                      |                                         |                  |                 |           |          |  |  |  |
| - Containment temperature - 88°F                                                           |                                         |                  |                 |           |          |  |  |  |
| - 2C RCP - RUNNING                                                                         |                                         |                  |                 |           |          |  |  |  |
| - 2C RCFC - STOPPED                                                                        |                                         |                  |                 |           |          |  |  |  |
| The adverse consequence of starting the 2C RCFC is that 2C RCP seal number                 |                                         |                  |                 |           |          |  |  |  |
| 2 may CLOSE causing the number                                                             | 1 seal leakoff flow inc                 | lication to INC  | CREASE.         |           |          |  |  |  |
| <sup>6</sup> 2 may OPEN causing the number 7                                               | 1 seal leakoff flow indi                | cation to DEC    | REASE.          |           |          |  |  |  |
| 1 may OPEN causing the number 2                                                            | 1 seal leakoff flow indi                | cation to INCI   | REASE.          |           |          |  |  |  |
| 1 may CLOSE causing the number                                                             | 1 seal leakoff flow inc                 | lication to DE   | CREASE.         |           |          |  |  |  |
| Answer b Exam Level S Cognitive Level                                                      | Memory Facilit                          | y: Braidwood     | ExamDate:       |           | 10/20/00 |  |  |  |
| Tier: Plant Systems                                                                        | RO Group 1 SF                           | RO Group 1       |                 |           |          |  |  |  |
| 022 Containment Cooling System                                                             |                                         |                  |                 |           | ]        |  |  |  |
| 2.1 Conduct Of Operations                                                                  |                                         |                  |                 |           |          |  |  |  |
| 2.1.10 Knowledge of conditions and limitation                                              | s in the facility license.              |                  |                 | 2         | .7 3.9   |  |  |  |
| Explanation of Startup of an RCFC may affect the Answer to open causing #1 seal leakoff to | ne associated RCPs tempe<br>o decrease. | rature sensitive | seal cavity and | allow the | #2 seal  |  |  |  |
| Reference Title                                                                            | Facility Reference Number               | Section          | Page Number(s)  | Revision  | L. O.    |  |  |  |
| RCFC startup                                                                               | 1BwOP VP-5                              | E.5              | 2               | 52E4      |          |  |  |  |
| RCP LP                                                                                     | I1-AP-XL-01 (13)                        |                  | 8               | 9         | 3,4      |  |  |  |
|                                                                                            |                                         |                  |                 |           |          |  |  |  |
| Material Required for Examination                                                          |                                         |                  |                 |           | ]        |  |  |  |
| Question Source: Facility Exam Bank                                                        | Question Modific                        | ation Method:    |                 |           |          |  |  |  |
| Question Source Comments: 1996 Braidwood NRC I                                             | Exam RO Question #19 SRO Que            | estion #23       | ·               |           |          |  |  |  |
| Record Number: 46 RO Number: S                                                             | RO Number: 34                           |                  |                 |           |          |  |  |  |

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| Question Topic Effect on CNMT RCFCs                                                                                               | · · · · · · · · · · · · · · · · · · ·                                          |                       |           |                                       |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------|-----------|---------------------------------------|--|--|--|
| Given the following Unit 2 conditions:                                                                                            |                                                                                |                       |           |                                       |  |  |  |
|                                                                                                                                   |                                                                                |                       |           |                                       |  |  |  |
| -2A and 2C Reactor Containment Fan Coolers (RCFC) a                                                                               | -2A and 2C Reactor Containment Fan Coolers (RCFC) are operating in HIGH speed. |                       |           |                                       |  |  |  |
| -2B and 2D RCFCs are stopped and in standby.                                                                                      |                                                                                |                       |           |                                       |  |  |  |
| -Normal cooling water lineup for the RCFCs exists.                                                                                |                                                                                |                       |           |                                       |  |  |  |
| What will be the status of the RCFCs 15 seconds after an SI signal occurs concurrent with a loss of offsite power?                |                                                                                |                       |           |                                       |  |  |  |
| Only 2A and 2B RCFCs running in HIGH speed.                                                                                       |                                                                                |                       |           |                                       |  |  |  |
| Only 2B and 2D RCFCs running in LOW speed.                                                                                        |                                                                                |                       |           |                                       |  |  |  |
| ALL RCFCs running in LOW speed.                                                                                                   |                                                                                |                       |           | · · · · · · · · · · · · · · · · · · · |  |  |  |
| NO RCFCs are running.                                                                                                             |                                                                                |                       |           |                                       |  |  |  |
| Answer d Exam Level B Cognitive Level Comprehension Facilit                                                                       | y: Braidwood                                                                   | ExamDate:             |           | 10/20/00                              |  |  |  |
| Tier: Plant Systems RO Group 1 SF                                                                                                 | RO Group 1                                                                     |                       |           |                                       |  |  |  |
| 022 Containment Cooling System                                                                                                    |                                                                                |                       |           |                                       |  |  |  |
| K2. Knowledge of bus power supplies to the following:                                                                             |                                                                                |                       |           |                                       |  |  |  |
| K2.01 Containment cooling fans                                                                                                    |                                                                                |                       | 3.        | 0* 3.1                                |  |  |  |
| Explanation of Answer Secured fans will start after 20 second time delay. DGs will fast will shift to low after 20 sec time delay | supply electrical                                                              | power on loss         | of bus. F | ans in                                |  |  |  |
| Reference Title                                                                                                                   | Section                                                                        | Page Number(s)        | Revision  | L. O.                                 |  |  |  |
| RCFC Start-up   1BwOP VP-5                                                                                                        | E.6                                                                            | 2                     | 52E4      |                                       |  |  |  |
| Initial Licensed Operator Containment                                                                                             | II.C.1.a                                                                       | 46; 60                | 3         | 6                                     |  |  |  |
| ESF System I1-KF-XL-01 (61)                                                                                                       | II.C                                                                           | 21                    | 1         | 7                                     |  |  |  |
| Material Required for Examination                                                                                                 |                                                                                |                       |           | ]                                     |  |  |  |
| Question Source: Facility Exam Bank Question Modific                                                                              | ation Method:                                                                  | Significantly Modifie | ed        |                                       |  |  |  |
| Question Source Comments: 1997 Braidwood NRC Exam                                                                                 |                                                                                |                       |           |                                       |  |  |  |
| Record Number: 47 RO Number: 33 SRO Number: 35                                                                                    |                                                                                |                       |           |                                       |  |  |  |

| Question Topic Actions to RCFCs on a high cor                                   | ntainment pressu                                                                    | re          |                   | ······································ | ······································ | •••••   |  |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|-------------------|----------------------------------------|----------------------------------------|---------|--|
| The plant has just tripped from 100% po<br>automatically shifting to low speed? | ower. Which c                                                                       | of the fol  | owing will res    | sult in the RC                         | FCs                                    |         |  |
| Two channels of containment press                                               | sure reading 3                                                                      | .5 psig.    |                   |                                        |                                        |         |  |
| <b>b.</b> Two channels of pressurizer pressu                                    | ure reading 18                                                                      | 80 psig.    |                   |                                        |                                        |         |  |
| 🖾 Two channels of containment temp                                              | erature readin                                                                      | g 125°F     |                   |                                        |                                        |         |  |
| d. Two undervoltage conditions sense                                            | ed on the 6.9 k                                                                     | (V buse:    | s.                |                                        |                                        |         |  |
| Answer a Exam Level R Cognitive Level                                           | Answer a Exam Level R Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 |             |                   |                                        |                                        |         |  |
| Tier: Plant Systems                                                             | RO Group                                                                            |             | O Group 1         |                                        |                                        |         |  |
| 022 Containment Cooling System                                                  |                                                                                     |             |                   |                                        |                                        |         |  |
| K4. Knowledge of Containment Cooling Syste                                      | em design feature                                                                   | e(s) and o  | r interlock(s) wh | ich provide for t                      | he follow                              | ing:    |  |
| K4.02 Correlation of fan speed and flowpath of                                  | changes with con                                                                    | tainment    | pressure          |                                        | 3.1                                    | 1* 3.4* |  |
| Explanation of SI Setpoints Pzr press 1829<br>Answer trip not SI                | Cnmt Temp ha                                                                        | s no effec  | t Cnmt pre        | ss 3.4 Loss                            | of RCP i                               | s RX    |  |
| Reference Title                                                                 | Facility Reference                                                                  | Number      | Section           | Page Number(s)                         | Revision                               | L, O.   |  |
| ESF System LP                                                                   | 11-KF-XL-01                                                                         | (61)        | II.C              | 11-13                                  | 5                                      | 7       |  |
|                                                                                 |                                                                                     |             |                   |                                        |                                        |         |  |
|                                                                                 |                                                                                     |             |                   |                                        |                                        |         |  |
| Material Required for Examination                                               |                                                                                     |             |                   |                                        |                                        |         |  |
| Question Source: New                                                            | Quest                                                                               | ion Modific | ation Method:     |                                        |                                        | ]       |  |
| Question Source Comments:                                                       |                                                                                     |             |                   |                                        |                                        |         |  |
| Record Number: 48 RO Number: 34 S                                               | RO Number:                                                                          |             |                   |                                        |                                        |         |  |

| Question Topic                                                                                                       | Question Topic Containment Spray System radiation levels                            |                                                |                                                |                   |                  |                                   |                     |           |  |
|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|-------------------|------------------|-----------------------------------|---------------------|-----------|--|
| During initial actuation of the Containment Spray System during a LOCA, radiation levels in the RWST are expected to |                                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| a increase due to spray add tank recirculation to the RWST.                                                          |                                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| increase due to containment recirc. sump recirculation to the RWST.                                                  |                                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| stay the same due to NO recirculation aligned to the RWST.                                                           |                                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| stay the same due to spray add tank recirculation to the RWST.                                                       |                                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| Answer <sub>C</sub> E                                                                                                | Answer C Exam Level B Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 |                                                |                                                |                   |                  |                                   |                     |           |  |
| Tier: Plant Sys                                                                                                      | stems                                                                               | ·····                                          | RO Group                                       | 2 SF              | RO Group 1       |                                   |                     |           |  |
| 026 Co                                                                                                               | ontainment Spra                                                                     | ay System                                      |                                                |                   |                  |                                   |                     |           |  |
| A2. Ability to prediction                                                                                            | (a) predict the i                                                                   | mpacts of the follures to correct. co          | lowing on the Conta<br>ontrol, or mitigate the | inment<br>e conse | t Spray System a | and (b) based o<br>se abnormal op | n those<br>eration: |           |  |
| A2.09 Radiat                                                                                                         | ion hazard pote                                                                     | ntial of BWST                                  |                                                |                   |                  |                                   | 2.5                 | 5* [2.9*] |  |
| Explanation of Answer                                                                                                | No recirculation suction, not RWS                                                   | to the RWST fror<br>ST.                        | n the recirc. sump c                           | or CS s           | ystem. The CS    | eductor recirc.                   | goes to C           | S pump    |  |
| Anner (1969) and                                                                                                     | Reference Title                                                                     |                                                | Facility Reference N                           | umber             | Section          | Page Number(s)                    | Revision            | L. O.     |  |
| Containment Sp                                                                                                       | oray System LP                                                                      |                                                | I1-CS-XL-01 (59)                               |                   | III.B            | 2B-29                             | 1                   | 11        |  |
| P&ID CNMT Sp                                                                                                         | ray                                                                                 |                                                | M-46                                           |                   | N/A              | 1A, 1B                            | AY                  |           |  |
|                                                                                                                      |                                                                                     |                                                | ·                                              |                   |                  |                                   |                     |           |  |
| Material Required                                                                                                    | for Examination                                                                     |                                                |                                                |                   |                  |                                   |                     |           |  |
| Question Source:                                                                                                     | New                                                                                 |                                                | Question                                       | Modific           | ation Method:    |                                   |                     |           |  |
| Question Source C                                                                                                    | Comments:                                                                           | w                                              |                                                |                   |                  |                                   |                     |           |  |
| Record Number:                                                                                                       | 49 RO Nur                                                                           | tecord Number: 49 RO Number: 35 SRO Number: 36 |                                                |                   |                  |                                   |                     |           |  |

| Question Topic Fire in Containment Charcoal Filter Units                                      |                                                           |                                    |                                    |                       |          |  |  |  |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------|------------------------------------|-----------------------|----------|--|--|--|
| A fire has occurred in the 2B Containment Charcoal Filter Unit. Deluge is actuated at         |                                                           |                                    |                                    |                       |          |  |  |  |
| 0PM02J in the Main Control Room.                                                              |                                                           |                                    |                                    |                       |          |  |  |  |
| 1PM09J, Fire Panel in the Main Control Room.                                                  |                                                           |                                    |                                    |                       |          |  |  |  |
| 🔄 2B Containment Charcoal Filter Ur                                                           | iit.                                                      |                                    |                                    |                       | ]        |  |  |  |
| 2VP01J on 426' Electrical Penetral                                                            | ion Area.                                                 |                                    |                                    |                       |          |  |  |  |
| Answer d Exam Level B Cognitive Level                                                         | Memory Facili                                             | y: Braidwood                       | ExamDate:                          |                       | 10/20/00 |  |  |  |
| Tier: Plant Systems                                                                           | RO Group 3                                                | RO Group 2                         |                                    |                       |          |  |  |  |
| 027 Containment Iodine Removal Syst                                                           | iem                                                       |                                    |                                    | ·····                 | ]        |  |  |  |
| A2. Ability to (a) predict the impacts of the fo<br>predictions, use procedures to correct, c | llowing on the Containmen<br>ontrol, or mitigate the cons | t lodine Remova<br>equences of tho | al System and (b<br>se abnormal op | ) based c<br>eration: | on those |  |  |  |
| A2.01 High temperature in the filter system                                                   |                                                           |                                    |                                    | 3.0                   | J* 3.3*  |  |  |  |
| Explanation of Self-explanatory<br>Answer                                                     |                                                           |                                    |                                    |                       |          |  |  |  |
| Reference Title                                                                               | Facility Reference Number                                 | Section                            | Page Number(s)                     | Revision              | L. O.    |  |  |  |
| operation of the containment Charcoal Filter<br>Manual Deluge System                          | 1BwOP FP-35                                               | F.4                                | 3                                  | 1                     |          |  |  |  |
| Fire Protection LP                                                                            | I1-FP-XL-01 (57)                                          |                                    | 19-22                              | 1                     | 5        |  |  |  |
| Material Required for Examination                                                             |                                                           |                                    |                                    |                       |          |  |  |  |
| Question Source: New                                                                          | Question Modifi                                           | cation Method:                     |                                    |                       |          |  |  |  |
| Question Source Comments:                                                                     |                                                           |                                    |                                    |                       |          |  |  |  |
| Record Number: 50 RO Number: 36                                                               | SRO Number: 37                                            |                                    |                                    |                       |          |  |  |  |

| Question Topic Maximum hydrogen concentration prior to which loss of | drogen removal | capability will o                      | ccur      |          |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------------------------------|-----------|----------|--|--|--|--|
| The following plant conditions exist:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                |                                        |           |          |  |  |  |  |
| - A LOCA has occurred on Unit 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                        |           |          |  |  |  |  |
| - E-0 has been completed and the crew has transitioned to E-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                        |           |          |  |  |  |  |
| - From E-1 the crew transitioned to FR-C.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                |                                        |           |          |  |  |  |  |
| - The Post-LOCA Purge Exhaust Fan is de-energized due t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | o an electrica | al fault on Bu                         | s 134V4   | 4.       |  |  |  |  |
| Which of the following containment hydrogen concentrations is                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | the MAXIM      | IM concepts                            | tion wh   | viah     |  |  |  |  |
| the Hydrogen Recombiners may be placed in service WITHOU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                | TATION WITH                            | H THE     | TSC?     |  |  |  |  |
| a 0.5%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ······         |                                        | ·····     |          |  |  |  |  |
| <b>b</b> . 4.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                        |           |          |  |  |  |  |
| £ 6.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                |                                        |           | ······   |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                        |           |          |  |  |  |  |
| 8.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                                        |           |          |  |  |  |  |
| Answer b Exam Level B Cognitive Level Memory Facility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Braidwood      | ExamDate:                              |           | 10/20/00 |  |  |  |  |
| Tier: Plant Systems RO Group 3 SRC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | O Group 2      |                                        |           |          |  |  |  |  |
| 028 Hydrogen Recombiner and Purge Control System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |                                        |           | ]        |  |  |  |  |
| K3. Knowledge of the effect that a loss or malfunction of the Hydrogen R on the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ecombiner and  | Purge Control S                        | System w  | ill have |  |  |  |  |
| K3.01 Hydrogen concentration in containment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                | ······································ | 3         | .3 4.0   |  |  |  |  |
| Explanation of S5% Consult with TSC5% do not put into service.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                | • ••• • • • • • • • •                  |           |          |  |  |  |  |
| Facility Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Section        | Page Number(s)                         | Revision  | L. O.    |  |  |  |  |
| Respond to Inadequate Core Cooling 1BwFR-C.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Step 6         | 11                                     | WOG<br>1C |          |  |  |  |  |
| FR Procedures LP  11-FR-XL-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 11             | 5                                      | 7         | 3        |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                |                                        |           |          |  |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                |                                        |           |          |  |  |  |  |
| Question Source: New Question Modifica                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ation Method:  |                                        |           |          |  |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                |                                        |           |          |  |  |  |  |
| Record Number: 51 RO Number: 37 SRO Number: 38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                |                                        |           |          |  |  |  |  |

| Question Topic Containment Purge Alignment                                                                                    | Requirements.                                                                 |                                       |                                    |                      |          |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------|------------------------------------|----------------------|----------|--|--|--|--|
| In Modes 1-4, the Containment Normal Purge Valves and the Mini Purge Valves                                                   |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| are sealed closed, may be opened as needed.                                                                                   |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| b. are sealed closed, are sealed closed                                                                                       |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| may be opened as needed, may be opened as needed                                                                              |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| a. may be opened as needed, are se                                                                                            | aled closed                                                                   |                                       |                                    |                      |          |  |  |  |  |
| Answer a Exam Level S Cognitive Level                                                                                         | Memory                                                                        | y: Braidwood                          | ExamDate:                          |                      | 10/20/00 |  |  |  |  |
| Tier: Plant Systems                                                                                                           | RO Group 2 SF                                                                 | C Group 2                             |                                    |                      |          |  |  |  |  |
| 029 Containment Purge System                                                                                                  |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| 2.1 Conduct Of Operations                                                                                                     |                                                                               |                                       | ·····                              |                      |          |  |  |  |  |
| 2.1.10 Knowledge of conditions and limitation                                                                                 | ns in the facility license.                                                   |                                       |                                    | 2                    | .7 3.9   |  |  |  |  |
| Explanation of Since normal purge valves are 4<br>Answer conditions and thus must be sea<br>isolation criteria and may be ope | 8" in diameter, they are not<br>led closed. The 8" mini pur<br>ned as needed. | qualified to clos<br>ge valves are do | e automatically<br>esigned to meet | under DE<br>the cnmt | BA<br>:  |  |  |  |  |
| Reference Title                                                                                                               | Facility Reference Number                                                     | Section                               | Page Number(s)                     | Revision             | L. O.    |  |  |  |  |
| Tech Specs -Containment Isolation Valves                                                                                      | B.3.6.3                                                                       | 3.6.3                                 | 3.6.3-2                            | 0                    |          |  |  |  |  |
| Cnmt Vent and Purge System LP                                                                                                 | 11-VP-XL-01 (42)                                                              | V                                     | 32                                 | 4                    | 10       |  |  |  |  |
|                                                                                                                               |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| Material Required for Examination                                                                                             |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| Question Source: New                                                                                                          | Question Modific                                                              | ation Method:                         |                                    |                      |          |  |  |  |  |
| Question Source Comments:                                                                                                     |                                                                               |                                       |                                    |                      |          |  |  |  |  |
| Record Number: 52 RO Number:                                                                                                  | SRO Number: 39                                                                |                                       |                                    |                      |          |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Question Topic Actions for loss of SFP Cooling                                                                                                                                      |                                                                                                 |                                                                                       |                                                           |                                                      |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|--|
| The following conditions exist:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                     |                                                                                                 |                                                                                       |                                                           |                                                      |  |
| -Unit 1 is at 100% power<br>-Unit 2 is currently off loading fuel to the Spent Fuel Pool<br>-Current Spent Fuel Pool temperature is 105°F<br>-1FC01P "SFP Cooling Pump" is OOS for maintenance<br>-2FC01P "SFP Cooling Pump" was running and tripped for unknown reasons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                     |                                                                                                 |                                                                                       |                                                           |                                                      |  |
| Per 0BwOA REFUEL-3, which of the fo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | bllowing actions should                                                                                                                                                             | take place:                                                                                     |                                                                                       |                                                           |                                                      |  |
| Start one FHB Charcoal Booster F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | an and two Aux Buildir                                                                                                                                                              | ng Charcoal E                                                                                   | Booster Fans.                                                                         |                                                           |                                                      |  |
| Align a RWST to the SFP and star                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | t one Aux Building Cha                                                                                                                                                              | arcoal Booste                                                                                   | r Fan.                                                                                |                                                           |                                                      |  |
| Align Recycle Hold Up Tank to the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SFP.                                                                                                                                                                                |                                                                                                 |                                                                                       |                                                           |                                                      |  |
| Place the Skimmer Loop in Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9.                                                                                                                                                                                  |                                                                                                 |                                                                                       |                                                           |                                                      |  |
| Answer a Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Memory Facilit                                                                                                                                                                      | y: Braidwood                                                                                    | ExamDate:                                                                             |                                                           |                                                      |  |
| 033 Sport Fuel Pool Cooling Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                     | RO Group 2                                                                                      |                                                                                       |                                                           |                                                      |  |
| O33         Spent Fuel Pool Cooling System           A2.         Ability to (a) predict the impacts of the following on the Spent Fuel Pool Cooling System and (b) based on those                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                     |                                                                                                 |                                                                                       |                                                           |                                                      |  |
| A2. Ability to (a) predict the impacts of the for<br>predictions, use procedures to correct, of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | llowing on the Spent Fuel F                                                                                                                                                         | Pool Cooling Sys                                                                                | tem and (b) bas                                                                       | ed on the                                                 | ose                                                  |  |
| A2. Ability to (a) predict the impacts of the for<br>predictions, use procedures to correct, of<br>A2.02 Loss of SFPCS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | llowing on the Spent Fuel F<br>control, or mitigate the cons                                                                                                                        | Pool Cooling Sys<br>equences of tho                                                             | tem and (b) bas<br>se abnormal ope                                                    | ed on the<br>eration:                                     | ose                                                  |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not be control).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ollowing on the Spent Fuel F<br>control, or mitigate the cons<br>ons for lowering level- not te<br>ot pass through SFP cooler                                                       | Pool Cooling Sys<br>equences of tho<br>emperature contr                                         | tem and (b) bas<br>se abnormal op<br>rol. D is wrong ,                                | eration:                                                  | ose<br>.7 <u>3.0</u><br>clarity                      |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not temperate control (does not temperate cont temperature control | ollowing on the Spent Fuel F<br>control, or mitigate the cons<br>ons for lowering level- not te<br>ot pass through SFP cooler<br>Facility Reference Number                          | Pool Cooling Sys<br>equences of tho<br>emperature contr<br>).<br>Section                        | tem and (b) bas<br>se abnormal op<br>ol. D is wrong ,<br>Page Number(s)               | eration:<br>2<br>ensures<br>Revision                      | 7         3.0           clarity         1            |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not temperature control (does not temperature control (does not temperature)         Loss of Spent Fuel Pit Cooling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ontrol, or mitigate the cons<br>ons for lowering level- not te<br>ot pass through SFP cooler<br>Facility Reference Number<br>OBwOA REFUEL-3                                         | Pool Cooling Sys<br>equences of tho<br>emperature contr<br>).<br>Section                        | tem and (b) bas<br>se abnormal ope<br>ol. D is wrong ,<br>Page Number(s)              | eration:<br>2<br>ensures<br>Revision                      | 7     3.0       clarity                              |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not temperature control (does not temperature control (does not temperature)         Loss of Spent Fuel Pit Cooling         Loss of Spent Fuel Cooling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ontrol, or mitigate the cons<br>ons for lowering level- not te<br>ot pass through SFP cooler<br>Facility Reference Number<br>0BwOA REFUEL-3<br>0BwOA REFUEL-3                       | Pool Cooling Sys<br>equences of tho<br>emperature contr<br>).<br>Section<br>Step 1<br>PBIG      | tem and (b) bas<br>se abnormal op<br>ol. D is wrong ,<br>Page Number(s)               | eration:<br>2<br>ensures<br>Revision<br>0<br>0            | .7     3.0                                           |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not temperature control (does not temperature control (does not temperature)         Loss of Spent Fuel Pit Cooling         Loss of Spent Fuel Cooling         Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ontrol, or mitigate the cons<br>ons for lowering level- not te<br>ot pass through SFP cooler<br>Facility Reference Number<br>OBwOA REFUEL-3<br>OBwOA REFUEL-3                       | Pool Cooling Sys<br>equences of tho<br>emperature control.<br>Step 1<br>PBIG                    | tem and (b) bas<br>se abnormal op<br>ol. D is wrong ,<br>Page Number(s)<br>2          | eration:<br>2<br>ensures<br>Revision<br>0<br>0            | DSE       .7       .3.0                              |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer         B & C are wrong; these are action not temperature control (does not temperature control (does not temperature control (does not temperature)         Loss of Spent Fuel Pit Cooling         Loss of Spent Fuel Pit Cooling         Material Required for Examination         Question Source:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ontrol, or mitigate the cons<br>ons for lowering level- not te<br>of pass through SFP cooler<br><b>Facility Reference Number</b><br>OBwOA REFUEL-3<br>OBwOA REFUEL-3                | Pool Cooling Sys<br>equences of tho<br>emperature control.<br>Section<br>Step 1<br>PBIG<br>PBIG | tem and (b) bas<br>se abnormal operation<br>ol. D is wrong ,<br>Page Number(s)<br>2   | eration:<br>2<br>ensures<br>Revision<br>0<br>0            | DSE       .7       3.0                               |  |
| A2.       Ability to (a) predict the impacts of the for predictions, use procedures to correct, or predictions, use procedures to correct, or A2.02         Loss of SFPCS         Explanation of Answer       B & C are wrong; these are action not temperature control (does not temperature control (does not temperature)         Image: Comparison of Cooling       B & C are wrong; these are action not temperature control (does not temperature)         Image: Cooling       Image: Cooling         Image: Coolin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ons for lowering level- not te<br>ons for lowering level- not te<br>ot pass through SFP cooler<br>Facility Reference Number<br>OBwOA REFUEL-3<br>OBwOA REFUEL-3<br>Question Modifie | Pool Cooling Sys<br>equences of the<br>emperature contribu-<br>Section<br>Step 1<br>PBIG        | tem and (b) bas<br>se abnormal operations<br>fol. D is wrong ,<br>Page Number(s)<br>2 | ed on the<br>eration:<br>2<br>ensures of<br>Revision<br>0 | DSE       7     3.0       clarity       L.O.       3 |  |

| Question Topic Controlling S/G Level Channel failure                                                  |                                                                                                                                   |                          |                         |                   |           |          |  |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------|-------------------|-----------|----------|--|
| The plant is operating at 100% power when the Controlling S/G Level Channel on 'A' S/G fails to 100%. |                                                                                                                                   |                          |                         |                   |           |          |  |
| If no operator action is taken, what is th                                                            | e expected plan                                                                                                                   | respon                   | se?                     |                   | ·         |          |  |
| Feedwater flow to 'A' S/G will INITI<br>STABILIZE at a level HIGHER THA                               | ALLY INCREAS                                                                                                                      | E, then [                | DECREASE                | E causing S/0     | G level t | 0        |  |
| Feedwater flow to 'A' S/G will INITI<br>STABILIZE at a level LOWER THA                                | Feedwater flow to 'A' S/G will INITIALLY DECREASE, then INCREASE causing S/G level to<br>STABILIZE at a level LOWER THAN PROGRAM. |                          |                         |                   |           |          |  |
| Reactor trip will occur on Lo-Lo S/C                                                                  | G level.                                                                                                                          |                          |                         |                   |           |          |  |
| Reactor trip will occur due to turbin                                                                 | e trip.                                                                                                                           |                          |                         |                   |           |          |  |
| Answer C Exam Level B Cognitive Level                                                                 | Comprehension                                                                                                                     | Facility:                | Braidwood               | ExamDate:         |           | 10/20/00 |  |
| Tier: Plant Systems                                                                                   | RO Group                                                                                                                          | 2 SRO (                  | Group 2                 |                   |           |          |  |
| 035 Steam Generator System                                                                            |                                                                                                                                   |                          |                         |                   |           |          |  |
| K4. Knowledge of Steam Generator System                                                               | design feature(s) an                                                                                                              | d or interle             | ock(s) which            | provide for the f | ollowing: |          |  |
| K4.01 S/G level control                                                                               |                                                                                                                                   |                          |                         |                   | 3         | .6 3.8   |  |
| Answer A. & B. Incorrect because the level the MFRV will close and remain of                          | vel input to SGWLC<br>closed. ( P-14 cause                                                                                        | will contin<br>s turbine | ue to see 100<br>trip.) | 0% level. D. Inc  | orrect be | cause    |  |
| Reference Title                                                                                       | Facility Reference N                                                                                                              | mber                     | Section                 | Page Number(s)    | Revision  | L. O.    |  |
| Steam Generator Water Level                                                                           | 11-FW-XL-01                                                                                                                       | [1]                      |                         | 3                 | 6         | 16       |  |
|                                                                                                       |                                                                                                                                   |                          |                         |                   |           |          |  |
|                                                                                                       |                                                                                                                                   |                          |                         |                   |           |          |  |
| Material Required for Examination                                                                     |                                                                                                                                   |                          |                         |                   |           |          |  |
| Question Source: New                                                                                  | Question                                                                                                                          | Modificatio              | on Method:              |                   |           |          |  |
| Question Source Comments:                                                                             |                                                                                                                                   |                          |                         |                   |           |          |  |

Record Number: 54 RO Number: 39 SRO Number: 41

| Question Topic Isolation of MRSS                                                           |                         |                   |                | ·        |          |
|--------------------------------------------------------------------------------------------|-------------------------|-------------------|----------------|----------|----------|
| Which of the following will close the MSIVs?                                               |                         |                   |                |          |          |
| 3.4 psig Cnmt pressure on 2/3 channels.                                                    |                         |                   |                |          |          |
| 640 psig steam line pressure > P-11 on 1/3 channels on 1/4 lines.                          |                         |                   |                |          |          |
| -100 psi/50sec < P-11 with SI blocked on 1/3 channels on 1/4 lines.                        |                         |                   |                |          |          |
| 8.2 psig Cnmt pressure on 2/3 channels.                                                    |                         |                   |                |          |          |
| Answer d Exam Level B Cognitive Level                                                      | Memory Fa               | cility: Braidwood | ExamDate:      |          | 10/20/00 |
| Tier: Plant Systems RO Group 2 SRO Group 2                                                 |                         |                   |                |          |          |
| 039 Main and Reheat Steam System                                                           |                         |                   |                |          |          |
| A3. Ability to monitor automatic operations of the Main and Reheat Steam System including: |                         |                   |                |          |          |
| A3.02 Isolation of the MRSS 3.1 3.5                                                        |                         |                   |                |          |          |
| Explanation of 8.2 psig Cnmt pressure on 2/3 channels.                                     |                         |                   |                |          |          |
| Reference Title                                                                            | Facility Reference Numb | er Section        | Page Number(s) | Revision | L. O.    |
| Main Steam system LP                                                                       | I1-MS-XL-01 (23)        |                   | 8, 9           | 8        | 5        |
|                                                                                            |                         |                   |                |          |          |
|                                                                                            |                         |                   |                |          |          |
| Material Required for Examination                                                          |                         |                   |                |          |          |
| Question Source: New Question Modification Method:                                         |                         |                   |                |          |          |
| Question Source Comments:                                                                  |                         |                   |                |          |          |
| Record Number: 55 RO Number: 40 S                                                          | RO Number: 42           |                   |                |          |          |
Question Topic Discharge pressure needed to exceed SG pressure that has increased to all the safety setpoints

All steam generator pressures increase following a transient event. Steam generator pressures are being maintained by all twenty steam generator safety valves. The LOWEST approximate discharge pressure of the MFW pumps necessary to provide flow to the steam generators would be...

| 🏝 1115 psig.                                   |                                                 |                     |                |                   |
|------------------------------------------------|-------------------------------------------------|---------------------|----------------|-------------------|
| <sup>b.</sup> 1175 psig.                       |                                                 |                     |                |                   |
| 🕵 [1205 psig.                                  |                                                 |                     |                |                   |
| <b>d.</b> 1235 psig.                           |                                                 |                     |                |                   |
| Answer d Exam Level R Cognitive Leve           | Comprehension                                   | acility: Braidwood  | ExamDate:      | 10/20/00          |
| Tier: Plant Systems                            | RO Group                                        | 2 SRO Group 2       |                |                   |
| 039 Main and Reheat Steam System               | ······                                          |                     |                |                   |
| K3. Knowledge of the effect that a loss or m   | alfunction of the Main a                        | nd Reheat Steam Sy  | stem will have | on the following: |
| K3.04 MFW pumps                                |                                                 |                     |                | 2.5 2.6           |
| Explanation of Highest Safety setpoiont is 123 | 5 psig                                          |                     |                |                   |
| Reference Title                                | Facility Reference Num                          | ber Section         | Page Number(s) | Revision L.O.     |
| Main Steam System                              | [11-MS-XL-01 (23)                               |                     | 5              | 8 3               |
|                                                |                                                 |                     |                |                   |
|                                                |                                                 |                     |                |                   |
| Material Required for Examination              |                                                 |                     |                |                   |
| Question Source:                               | Question M                                      | odification Method: |                |                   |
| Question Source Comments:                      | 2014-01-02-00000-000000-000000-000000000-000000 |                     |                |                   |
| Record Number: 56 RO Number: 41                | SRO Number:                                     |                     |                |                   |

| Question Topic Steam Dump effect on fuel clac                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                           |                  |                  |           |        |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|------------------|-----------|--------|--|--|--|
| The following conditions exist on Unit 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ·<br>·<br>·                 |                  |                  |           |        |  |  |  |
| -Reactor Power is at 50%, steady state.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                             |                  |                  |           |        |  |  |  |
| - The Steam Dumps are in the Tave                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MODE and in Automa          | itic             |                  |           |        |  |  |  |
| -The Reactor Operator adjusts the s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | team dump controller        | potentiomete     | er from 7.28 to  | o 8.00    |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                  |                  |           |        |  |  |  |
| Which of the following is a correct plant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | effect of the potentior     | neter change     | ?                |           |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                  |                  |           |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                  |                  |           |        |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                             |                  |                  |           |        |  |  |  |
| increases due to increased steam of the s | demand.                     |                  |                  |           |        |  |  |  |
| b. decreases due to a decrease in ste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | am demand.                  |                  |                  | ·         |        |  |  |  |
| remains constant due to the potent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | iometer only in circuit     | during Manua     | al Mode.         |           |        |  |  |  |
| e remains constant due to the potent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | iometer only in the circ    | cuit durina ST   | EAM PRESS        |           | lode   |  |  |  |
| Answer d Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Comprehension Facilit       | v: Braidwood     | ExamDate:        |           |        |  |  |  |
| Tier: Plant Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RO Group 3 SF               | RO Group 3       | <i>.</i>         |           |        |  |  |  |
| 041 Steam Dump System and Turbine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Bypass Control              |                  |                  |           |        |  |  |  |
| K5. Knowledge of the operational implication<br>Turbine Bypass Control:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | s of the following concepts | as they apply to | the Steam Dur    | np Syste  | m and  |  |  |  |
| K5.06 Effect of power change on fuel cladding                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | g                           |                  |                  | 2         | .5 2.8 |  |  |  |
| Explanation of 7.28 maintains 1092 psig. x/1500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | = .8 where x=1200 psig. H   | ligher pressure  | controlled in SG | ; therefo | re     |  |  |  |
| steam dumps would close if in the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | e steam pressure mode.      |                  |                  |           |        |  |  |  |
| Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Facility Reference Number   | Section          | Page Number(s)   | Revision  | L. O.  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | [1-DU-XL-01 (24)            | 11               | 3                | 7         | 11     |  |  |  |
| Big Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Main Steam Dumps            | N/A              | MS-4             | 4         |        |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                             |                  | []               |           |        |  |  |  |
| Question Source: New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Question Modific            | ation Method:    |                  |           |        |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                             |                  |                  |           | ]      |  |  |  |
| tecord Number: 57 RO Number: 42 SRO Number: 43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                  |                  |           |        |  |  |  |

,

| Question Topic Determination of required plant actions on                                                                                                   | a lowering con   | donoor voouwe       |                  |             |          |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|------------------|-------------|----------|--|--|--|
|                                                                                                                                                             | a lowering com   |                     |                  |             |          |  |  |  |
| Unit 2 is operating at 50% power ramping up to full power. Main Condenser pressure is slowly rising. Pressure is currently at 5"HgA and rising at 0.5"/min. |                  |                     |                  |             |          |  |  |  |
| In 6 minutes the crew should                                                                                                                                |                  |                     |                  |             |          |  |  |  |
| a Initiate a Turbine Runback.                                                                                                                               |                  |                     |                  |             |          |  |  |  |
| b. Increase turbine power to 620 MW.                                                                                                                        |                  |                     |                  |             |          |  |  |  |
| Manually trip the reactor and go to 2BwEP-0                                                                                                                 | •                |                     |                  |             |          |  |  |  |
| a. Select MW OUT and ramp down @ 0.5 MW/                                                                                                                    | min.             |                     |                  |             |          |  |  |  |
| Answer C Exam Level R Cognitive Level Application                                                                                                           | n Facilit        | <b>y:</b> Braidwood | ExamDate:        |             | 10/20/00 |  |  |  |
| Tier: Plant Systems RO                                                                                                                                      | Group 2 Sr       | RO Group 2          |                  |             | ·        |  |  |  |
| 055 Condenser Air Removal System                                                                                                                            |                  |                     |                  |             |          |  |  |  |
| K3. Knowledge of the effect that a loss or malfunction of                                                                                                   | the Condenser    | Air Removal S       | stem will have a | on the foll | owing    |  |  |  |
| K3.01 Main condenser                                                                                                                                        |                  |                     |                  | 2           | 5 27     |  |  |  |
| Explanation of Current power is 1175 MW x .5 = 588MW. T                                                                                                     | urbine trip prev | vents main cond     | enser overpress  | urization.  |          |  |  |  |
| Reference Title                                                                                                                                             | erence Number    | Section             | Page Number(s)   | Revision    | L. O.    |  |  |  |
| Loss of Condenser Vacuum 2BwOA SE                                                                                                                           | C-3              |                     | 3, 9             | 54          |          |  |  |  |
| Loss of Condenser Vacuum LP [1-OA-XL-3                                                                                                                      | 8                | ]]                  | 3                | 8           | 5        |  |  |  |
|                                                                                                                                                             |                  |                     |                  |             |          |  |  |  |
| Material Required for Examination Figure 1BwOA SEC-                                                                                                         | 3-1              |                     |                  |             |          |  |  |  |
| Question Source: New                                                                                                                                        | Question Modific | ation Method:       |                  |             |          |  |  |  |
| Question Source Comments:                                                                                                                                   |                  |                     |                  |             |          |  |  |  |
| Record Number: 58 RO Number: 43 SRO Number:                                                                                                                 |                  |                     |                  |             |          |  |  |  |

| Question Topic Auto start of CD/CB Pump                                                                    |                                                                                                |                  |             |          |  |  |  |  |  |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------|-------------|----------|--|--|--|--|--|
| What is the SEQUENCE that occurs when a Main Feed pump LOW NPSH signal is actuated?                        |                                                                                                |                  |             |          |  |  |  |  |  |
| The CD 152 valve (CD pump recirc) opens, the CD/CB a starts.                                               | The CD 152 valve (CD pump recirc) opens, the CD/CB aux oil pump starts, the CD/CB pump starts. |                  |             |          |  |  |  |  |  |
| <b>b</b> The CD/CB pump starts then the CD 152 valve (CD pum                                               | p recirc) oper                                                                                 | IS.              |             |          |  |  |  |  |  |
| The CD 152 valve (CD pump recirc) closes, the CD/CB a starts.                                              | aux oil pump s                                                                                 | tarts, the CD    | /CB pur     | np       |  |  |  |  |  |
| Legislation The CD/CB pump starts then the CD 152 valve (CD pum                                            | p recirc) close                                                                                | es.              |             |          |  |  |  |  |  |
| Answer C Exam Level B Cognitive Level Memory Facili                                                        | <b>ty:</b> Braidwood                                                                           | ExamDate:        |             | 10/20/00 |  |  |  |  |  |
| Tier: Plant Systems RO Group 1 S                                                                           | RO Group 1                                                                                     |                  |             |          |  |  |  |  |  |
| 056 Condensate System                                                                                      |                                                                                                |                  |             |          |  |  |  |  |  |
| K1. Knowledge of the physical connections and/or cause-effect relation following:                          | ships between C                                                                                | Condensate Sys   | tem and t   | he       |  |  |  |  |  |
| K1.03 MFW .                                                                                                |                                                                                                |                  | 2.0         | 3* 2.6   |  |  |  |  |  |
| Explanation of Oil pump has to start and provide adequate oil pressure pri<br>Answer prior to CD/CB start. | or to CD/CB pun                                                                                | np starting; CD1 | 52 will clo | Se       |  |  |  |  |  |
| Reference Title                                                                                            | Section                                                                                        | Page Number(s)   | Revision    | L. O.    |  |  |  |  |  |
| License System Description Cond/FW System 11-CD-XL-01 Chapter 25                                           | II.A.4.e                                                                                       | 1, 15            | 12          | 6.d      |  |  |  |  |  |
| FW Pump NPSH LOW 1BwAR 1-16-E1                                                                             | N/A                                                                                            | 1                | 5E2         |          |  |  |  |  |  |
| 20E-1-4030CB06                                                                                             |                                                                                                |                  |             |          |  |  |  |  |  |
| Material Required for Examination                                                                          |                                                                                                |                  |             |          |  |  |  |  |  |
| Question Source: Facility Exam Bank Question Modifi                                                        | cation Method:                                                                                 |                  |             |          |  |  |  |  |  |
| Question Source Comments: 1997 Braidwood NRC Exam                                                          |                                                                                                |                  |             |          |  |  |  |  |  |
| Record Number: 59 RO Number: 44 SRO Number: 44                                                             |                                                                                                |                  |             |          |  |  |  |  |  |

| Question Topic MFW System Tech Specs                                                                                                                                 |                               |               |                                       |          |        |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------|---------------------------------------|----------|--------|--|--|--|--|--|--|
| Per Tech Specs, which of the following is a correct listing of Technical Specification Feedwater Isolation Valves associated with the Unit 2 Main Feed Water System? |                               |               |                                       |          |        |  |  |  |  |  |  |
| 2FW009, "FW Isolation Valve",                                                                                                                                        | 2FW009, "FW Isolation Valve", |               |                                       |          |        |  |  |  |  |  |  |
| 2FW035, "SG Feedwater Tempering Is<br>2FW510, "FW Regulating Value"                                                                                                  | olation Valve"                |               |                                       |          |        |  |  |  |  |  |  |
| 2FW510A, "FW Regulating Valve ,                                                                                                                                      | ve".                          |               |                                       |          |        |  |  |  |  |  |  |
| ,                                                                                                                                                                    | ,                             |               |                                       |          |        |  |  |  |  |  |  |
| AND                                                                                                                                                                  |                               |               |                                       |          |        |  |  |  |  |  |  |
| 2FW006A, "S/G FW Shutoff VLV" a                                                                                                                                      | and 2FW043, "SG FW            | IV Bypass Iso | plation Valve.                        | 11       |        |  |  |  |  |  |  |
| E 2FW006A "S/G FW Shutoff VI V"                                                                                                                                      | and 2E\M046 "S/G E\A          |               | Cont "                                |          | ]      |  |  |  |  |  |  |
|                                                                                                                                                                      |                               |               |                                       |          | ]      |  |  |  |  |  |  |
| 2FW034, "SG Tempering Flow Cor                                                                                                                                       | ntrol Valve" and 2FW0         | 46, "S/G FWI  | V Byp Flow C                          | Cont."   |        |  |  |  |  |  |  |
| 2FW034, "SG Tempering Flow Cor                                                                                                                                       | ntrol Valve" and 2FW0         | 43, "SG FWI   | V Bypass Isol                         | ation Va | alve." |  |  |  |  |  |  |
| Answer d Exam Level R Cognitive Level                                                                                                                                | Memory Facilit                | y: Braidwood  | ExamDate:                             |          |        |  |  |  |  |  |  |
| Tier: Plant Systems                                                                                                                                                  | RO Group 1 SF                 | RO Group 1    |                                       |          | ]      |  |  |  |  |  |  |
| 059 Main Feedwater System                                                                                                                                            |                               |               | · · · · · · · · · · · · · · · · · · · |          |        |  |  |  |  |  |  |
| 2.1 Conduct Of Operations                                                                                                                                            |                               |               |                                       |          |        |  |  |  |  |  |  |
| 2.1.12 Ability to apply technical specifications                                                                                                                     | for a system.                 |               |                                       | 2        | .9 4.0 |  |  |  |  |  |  |
| Explanation of Unit 2 FWIVs are FW009, 034, 0                                                                                                                        | 35, 043, 510, 510A            |               |                                       |          |        |  |  |  |  |  |  |
| Reference Title                                                                                                                                                      | Facility Reference Number     | Section       | Page Number(s)                        | Revision | L. O.  |  |  |  |  |  |  |
| Condensate and Feedwater LP                                                                                                                                          | 1I-CD-XL-01 (25)              | lii.A         | 54                                    | 12       | 16     |  |  |  |  |  |  |
| ESFAS Instrumentation B.3.3.2 Basis B3.3.2-28 0                                                                                                                      |                               |               |                                       |          |        |  |  |  |  |  |  |
|                                                                                                                                                                      | <u>D.0.0.2</u>                | J             |                                       |          |        |  |  |  |  |  |  |
|                                                                                                                                                                      |                               |               |                                       |          |        |  |  |  |  |  |  |
| Material Required for Examination                                                                                                                                    |                               |               |                                       |          |        |  |  |  |  |  |  |
| Material Required for Examination Question Source: New Question Source Comments:                                                                                     | Question Modific              | ation Method: |                                       |          |        |  |  |  |  |  |  |
| Material Required for Examination       Question Source:       New       Question Source Comments:       Becord Number:                                              | Question Modific              | ation Method: |                                       |          |        |  |  |  |  |  |  |

| Question Topic Effect of failure of S/G steam pressure channel                                                       |                            |                |                 |             |          |  |  |  |
|----------------------------------------------------------------------------------------------------------------------|----------------------------|----------------|-----------------|-------------|----------|--|--|--|
| The following conditions exist on Unit 1:                                                                            |                            |                |                 |             |          |  |  |  |
| -Reactor power is 100%<br>-All systems are normal<br>-1FT-512 is selected for steam flow input into SGWLC for S/G 1A |                            |                |                 |             |          |  |  |  |
| With NO OPERATOR ACTION, what is failing low?                                                                        | the effect of the press    | sure transmitt | er associated   | l with F    | Г-512    |  |  |  |
| 1A S/G level will decrease, feed pump s                                                                              | speed                      |                |                 |             |          |  |  |  |
| will decrease, and S/G level will de                                                                                 | crease below the LO-2      | 2 setpoint.    |                 |             |          |  |  |  |
| b. is unaffected, and S/G level will ret                                                                             | urn to normal.             |                |                 |             |          |  |  |  |
| will increase, and S/G level will retu                                                                               | Irn to normal              |                |                 |             |          |  |  |  |
| is unoffected and S/C level will dea                                                                                 |                            |                |                 |             |          |  |  |  |
| is unanected, and S/G level will dec                                                                                 | crease below LO-2 se       | ipoint.        |                 |             |          |  |  |  |
| Answer a Exam Level B Cognitive Level                                                                                | Comprehension Facilit      | y: Braidwood   | ExamDate:       |             | 10/20/00 |  |  |  |
| 050 Main Foodwater Sustam                                                                                            |                            |                |                 |             |          |  |  |  |
| Ka Knowledge of the effect that a loss or me                                                                         | Ifunction of the Main Fred | watar Quatara  |                 |             |          |  |  |  |
|                                                                                                                      |                            | water System w |                 |             | <u> </u> |  |  |  |
|                                                                                                                      | - C P1AT 1 1               |                |                 |             | .5 .7.   |  |  |  |
| Answer causing feed pump speed and FV                                                                                | N header pressure to decr  | ease.          | Delta-P progran | n will deci | rease    |  |  |  |
| Reference Title                                                                                                      | Facility Reference Number  | Section        | Page Number(s)  | Revision    | L. O.    |  |  |  |
| FW EH controls/ schematic                                                                                            | EHC-6/DP                   |                |                 | [1]         |          |  |  |  |
| MFP Speed Control                                                                                                    | 11-FW-XL-02 (37b)          | ]]]            | 24/25           | 5           | 19       |  |  |  |
| SGWLC lesson plan                                                                                                    | 11-FW-XL-01 (27)           | [ <b>]</b>     | 15-16           | 1           | 11       |  |  |  |
| Material Required for Examination                                                                                    |                            |                |                 |             |          |  |  |  |
| Question Source: Facility Exam Bank                                                                                  | Question Modific           | ation Method:  |                 |             |          |  |  |  |
| Question Source Comments: 1998 Braidwood NRC E                                                                       | xam                        |                |                 |             |          |  |  |  |
| Record Number: 61 RO Number: 46 S                                                                                    | RO Number: 45              |                |                 |             |          |  |  |  |

| Question Topic Aux. Feedwater Operations                               | During RCS Cooldown            |                                        |                                        |            |          |
|------------------------------------------------------------------------|--------------------------------|----------------------------------------|----------------------------------------|------------|----------|
| A Unit 1 RCS cooldown is in progres                                    | s with the A auxiliary feed    | dwater pump                            | maintaining le                         | evel in a  | all      |
| steam generators. Instrument bus 1                                     | 11 is deenergized.             |                                        |                                        |            |          |
| Auxiliary feedwater system flow cont                                   | rol valves (1AF005a-d)         |                                        |                                        |            |          |
| Fail as is.                                                            |                                |                                        |                                        |            |          |
| <sup>6.</sup> Fail Open.                                               |                                |                                        |                                        |            |          |
| Fail Closed.                                                           |                                |                                        |                                        |            |          |
| a. Are not affected.                                                   |                                |                                        |                                        |            |          |
| Answer C Exam Level B Cognitive Le                                     | vel Comprehension Facilit      | y: Braidwood                           | ExamDate:                              |            | 10/20/00 |
| Tier: Plant Systems                                                    | RO Group 1 SF                  | RO Group 1                             |                                        |            |          |
| 061 Auxiliary / Emergency Feedwa                                       | ter System                     | ······································ | ······································ | · ·        |          |
| A3. Ability to monitor automatic operation                             | s of the Auxiliary / Emergency | Feedwater Sys                          | em including:                          |            | · · · ·  |
| A3.02 RCS cooldown during AFW operation                                | ions                           |                                        |                                        | 4          | .0 4.0   |
| Explanation of Bus 111 affects train A and M<br>Answer flow is senced. | ICB pots go to 0 and valves fa | il closed once flo                     | ow is sensed. F                        | ails as is | if no    |
| Reference Title                                                        | Facility Reference Number      | Section                                | Page Number(s)                         | Revision   | L. O.    |
| Aux. Feedwater System Lesson Plan                                      | [11-AF-XL-01 (26)              | II.A.7.d.3.e                           | 15                                     | 9          | 15       |
|                                                                        |                                |                                        |                                        |            |          |
|                                                                        |                                |                                        |                                        |            |          |
| Material Required for Examination                                      |                                |                                        |                                        |            |          |
| Question Source: New                                                   | Question Modific               | ation Method:                          |                                        |            |          |
| Question Source Comments:                                              |                                |                                        |                                        |            |          |
| Record Number: 62 RO Number: 47                                        | SRO Number: 46                 |                                        |                                        |            |          |

| Question Topic Automatic operation of SX suction                                                                                                                                                   | on valves                          |                                       | ······               |          |          |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------|----------------------|----------|----------|--|--|--|--|
| Which of the following will result in a shift of Unit 1 Auxiliary Feedwater (AF) System suction from the Condensate Storage Tank to the Essential Service Water System while in Mode 3 at NOT/NOP? |                                    |                                       |                      |          |          |  |  |  |  |
| AF pump suction pressure of                                                                                                                                                                        |                                    |                                       |                      |          |          |  |  |  |  |
| 17 psia coincident with a loss of offsite power.                                                                                                                                                   |                                    |                                       |                      |          |          |  |  |  |  |
| 19 psia coincident with Lo-Lo level in ALL steam generators.                                                                                                                                       |                                    |                                       |                      |          |          |  |  |  |  |
| 17 psia coincident with Pressurizer pressure of 1850 psig.                                                                                                                                         |                                    |                                       |                      |          |          |  |  |  |  |
| d. 19 psia coincident with a phase B is                                                                                                                                                            | olation.                           |                                       |                      |          |          |  |  |  |  |
| Answer a Exam Level R Cognitive Level                                                                                                                                                              | Comprehension Facility             | /: Braidwood                          | ExamDate:            |          | 10/20/00 |  |  |  |  |
| Tier: Plant Systems                                                                                                                                                                                | RO Group 1 SR                      | O Group 1                             |                      |          |          |  |  |  |  |
| 061 Auxiliary / Emergency Feedwater S                                                                                                                                                              | System                             |                                       |                      |          |          |  |  |  |  |
| A3. Ability to monitor automatic operations of                                                                                                                                                     | the Auxiliary / Emergency          | Feedwater Syst                        | em including:        |          |          |  |  |  |  |
| A3.04 Automatic AFW isolation                                                                                                                                                                      |                                    |                                       |                      | 4        | .1 4.2   |  |  |  |  |
| Explanation of Low pump suction pressure of 18.<br>Answer initiation (3) RCP Bus Undervoltage                                                                                                      | 1 psia with any of the follo<br>ge | wing will switch                      | to ESW: (1) Lo-      | Lo SGW   | L (2) SI |  |  |  |  |
| Reference Title                                                                                                                                                                                    | Facility Reference Number          | Section                               | Page Number(s)       | Revision | L. O.    |  |  |  |  |
| Motor Driven AFW pump _A startup on Recirc                                                                                                                                                         | 1BwOP AF-5                         | E.7                                   | 3                    | 13E2     |          |  |  |  |  |
| Auxiliary Feedwater System                                                                                                                                                                         | 11-AF-XL-01 (26)                   | II.C                                  | 19                   | 9        | 10       |  |  |  |  |
|                                                                                                                                                                                                    |                                    |                                       |                      |          |          |  |  |  |  |
| Material Required for Examination                                                                                                                                                                  |                                    |                                       |                      |          |          |  |  |  |  |
| Question Source: Facility Exam Bank                                                                                                                                                                | Question Modific                   | ation Method:                         | Editorially Modified |          |          |  |  |  |  |
| Question Source Comments: 1996 Braidwood NRC Es                                                                                                                                                    | xam SRO Question #34               |                                       |                      |          |          |  |  |  |  |
| Record Number: 63 RO Number: 48 SF                                                                                                                                                                 | RO Number:                         | · · · · · · · · · · · · · · · · · · · |                      |          |          |  |  |  |  |

| Question Topic                                 | Question Topic Determination of offsite power sources through which breakers                                                                                                                                        |                                              |                  |                    |            |          |  |  |  |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------|--------------------|------------|----------|--|--|--|
| A Reactor T<br>failed to ope<br>RCP status?    | A Reactor Trip has just occurred on Unit 1. Following the main generator trip, Automatic Bus Transfer failed to operate for Busses 156 and 157. Which ONE of the following describes the 6.9 KV Bus AND RCP status? |                                              |                  |                    |            |          |  |  |  |
| All Feed<br>Only the                           | l and Load Breakers Open<br>e 1A and 1B RCPs trip due                                                                                                                                                               | on Busses 156 and 15<br>to Bus Undervoltage. | 57.              |                    |            |          |  |  |  |
| <ul> <li>All Load</li> <li>Only the</li> </ul> | Breakers Open on Busses<br>1A and 1B RCPs trip due                                                                                                                                                                  | s 156 and 157.<br>to Bus Underfrequenc       | γy.              |                    |            |          |  |  |  |
| All Load<br>All RCP                            | Breakers Open on Busses<br>s trip due to Bus Undervolt                                                                                                                                                              | s 156 and 157.<br>age.                       |                  |                    |            |          |  |  |  |
| d. All Feed<br>All RCP                         | l and Load Breakers Open<br>s trip due to Bus Underfreq                                                                                                                                                             | on Busses 156 and 15<br>uency.               | 57.              |                    |            |          |  |  |  |
| Answer a E                                     | xam Level B Cognitive Level                                                                                                                                                                                         | Comprehension Facilit                        | y: Braidwood     | ExamDate:          |            | 10/20/00 |  |  |  |
| Tier: Plant Sy                                 | stems                                                                                                                                                                                                               | RO Group 2 SF                                | RO Group 2       |                    |            |          |  |  |  |
| 062 A                                          | .C. Electrical Distribution                                                                                                                                                                                         |                                              |                  |                    |            |          |  |  |  |
| K1. Knowled<br>the follo                       | dge of the physical connections a wing:                                                                                                                                                                             | ind/or cause-effect relation                 | ships between A  | A.C. Electrical Di | stribution | and      |  |  |  |
| K1.04 Off-sit                                  | e power sources                                                                                                                                                                                                     |                                              |                  |                    | 3          | .7 4.2   |  |  |  |
| Explanation of<br>Answer                       | RCPs A and B powered from Bu                                                                                                                                                                                        | ses 156, 157. Undervoltag                    | e does not actua | ate on a de-ene    | rgized bu  | S.       |  |  |  |
| 1                                              | Reference Title                                                                                                                                                                                                     | Facility Reference Number                    | Section          | Page Number(s)     | Revision   | L. O.    |  |  |  |
| Electrical Lineu                               | p- Unit 1                                                                                                                                                                                                           | 1BwOP RC-E1                                  | N/A              | 1                  | 1E3        |          |  |  |  |
| AC Electrical P                                | ower                                                                                                                                                                                                                | 11-AP-XL-01 (4)                              | 111              | 23-25              | 8          | 10       |  |  |  |
| ¢.                                             |                                                                                                                                                                                                                     |                                              |                  |                    |            |          |  |  |  |
| Material Required                              | for Examination                                                                                                                                                                                                     |                                              |                  |                    |            |          |  |  |  |
| Question Source:                               | Question Source: Facility Exam Bank Question Modification Method:                                                                                                                                                   |                                              |                  |                    |            |          |  |  |  |
| Question Source                                | Comments: 1996 Braidwood NRC I                                                                                                                                                                                      | Exam RO Question #43 SRO Que                 | estion #47       |                    |            |          |  |  |  |
| Record Number:                                 | 64 RO Number: 49 S                                                                                                                                                                                                  | RO Number: 47                                |                  |                    |            |          |  |  |  |

| Question Topic: Knowledge of how RTBs are affected due to a loss of DC Bus Power Supply                                    |                                          |                  |                                  |           |          |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------|----------------------------------|-----------|----------|--|--|--|--|
| During operation at power with the Reactor Trip Breakers closed, a LOSS of 125 VDC control power                           |                                          |                  |                                  |           |          |  |  |  |  |
| to one of the Reactor Trip Breakers occurs.                                                                                |                                          |                  |                                  |           |          |  |  |  |  |
| Which of the following describes how that Reporter Trip Presker will represent 2                                           |                                          |                  |                                  |           |          |  |  |  |  |
| The ODEN to the following describes now that Reactor Trip Breaker Will respond?                                            |                                          |                  |                                  |           |          |  |  |  |  |
|                                                                                                                            | o the SHUNT coll.                        |                  |                                  |           |          |  |  |  |  |
| <b>b.</b> Trips OPEN due to loss of power to                                                                               | the UNDERVOLTAG                          | E coil.          |                                  |           |          |  |  |  |  |
| c. Is NOT capable of tripping on a SH                                                                                      | IUNT trip.                               |                  |                                  |           |          |  |  |  |  |
| Is NOT capable of tripping on an U                                                                                         | NDERVOLTAGE trip.                        |                  |                                  |           |          |  |  |  |  |
| Answer C Exam Level B Cognitive Level                                                                                      | Memory Facilit                           | y: Braidwood     | ExamDate:                        |           | 10/20/00 |  |  |  |  |
| Tier: Plant Systems                                                                                                        | RO Group 2 SF                            | O Group 1        | •••••••••••••••••••••••••••••••• |           |          |  |  |  |  |
| 063 D.C. Electrical Distribution                                                                                           |                                          |                  |                                  |           | ]        |  |  |  |  |
| K2. Knowledge of bus power supplies to the                                                                                 | following:                               |                  |                                  |           |          |  |  |  |  |
| K2.01 Major dc loads                                                                                                       |                                          |                  |                                  | 2.9       | 9* 3.1*  |  |  |  |  |
| A. Incorrect because the shunt of<br>Answer Answer A. Incorrect because the shunt of<br>coil is supplied with 48V power fr | coil is normally de-energize<br>om SSPS. | d. B. & D. Incol | rrect because th                 | ie underv | oltage   |  |  |  |  |
| Reference Title                                                                                                            | Facility Reference Number                | Section          | Page Number(s)                   | Revision  | L. O.    |  |  |  |  |
| Electrical Prints                                                                                                          | 20E-1-4030-RD6                           | N/A              | 1                                | Ρ         |          |  |  |  |  |
| Solid State Protection System                                                                                              | I1-RP-XL-01 (60a)                        | []               | 13                               | 3         | 4, 10    |  |  |  |  |
|                                                                                                                            |                                          |                  |                                  |           |          |  |  |  |  |
| Material Required for Examination                                                                                          |                                          |                  |                                  |           | ]        |  |  |  |  |
| Question Source: New                                                                                                       | Question Modific                         | ation Method:    |                                  |           |          |  |  |  |  |
| Calestion Source Comments: [1996 Calloway NRC E)                                                                           |                                          |                  |                                  |           | ]        |  |  |  |  |
| Record Number: 65 RO Number: 50 SRO Number: 48                                                                             |                                          |                  |                                  |           |          |  |  |  |  |

| Question Topic Local trips required due to loss of MCB Control Power |                              |                                        |                   |             |                                       |  |  |  |
|----------------------------------------------------------------------|------------------------------|----------------------------------------|-------------------|-------------|---------------------------------------|--|--|--|
| Given the following conditions:                                      |                              |                                        |                   |             |                                       |  |  |  |
|                                                                      |                              |                                        |                   |             |                                       |  |  |  |
| - Unit 2 is in MODE 3 at 500°F                                       |                              |                                        |                   |             |                                       |  |  |  |
| - The MCB Indication for DC Bus 21                                   | i indicates 0 volts          |                                        |                   |             |                                       |  |  |  |
| - Pressuitzer Spray Valve 2R1455B                                    | is stuck open                |                                        |                   |             |                                       |  |  |  |
|                                                                      |                              |                                        |                   |             |                                       |  |  |  |
| Which of the following will stop the RCS                             | depressurization?            |                                        |                   |             |                                       |  |  |  |
| Energize all Pressurizer heaters.                                    |                              |                                        |                   |             |                                       |  |  |  |
| Trip the 2D RCP locally at its break                                 | er.                          |                                        |                   |             | · · · · · · · · · · · · · · · · · · · |  |  |  |
| C Isolate Instrument Air to Containme                                | ont                          |                                        |                   |             |                                       |  |  |  |
|                                                                      |                              |                                        |                   |             |                                       |  |  |  |
| Secure the 2C RCP from the Main                                      | Control Room.                |                                        |                   |             |                                       |  |  |  |
| Answer b Exam Level B Cognitive Level                                | Comprehension Facility       | /: Braidwood                           | ExamDate:         |             | 10/20/00                              |  |  |  |
| Tier: Plant Systems                                                  | RO Group 2 SF                | O Group 1                              |                   |             |                                       |  |  |  |
| 063 D.C. Electrical Distribution                                     |                              | ······································ |                   |             |                                       |  |  |  |
| K4. Knowledge of D.C. Electrical Distribution                        | design feature(s) and or in  | terlock(s) which                       | provide for the   | following   | :                                     |  |  |  |
| K4.04 Trips                                                          |                              |                                        |                   | 2.6         | 3? 2.9?                               |  |  |  |
| Explanation of Tripping 2D RCP secures mode                          | of force through spray valve | e. Valve is stuc                       | k open so isolati | ing air wil | l not                                 |  |  |  |
| help. 2C RCP provides flow thro                                      | ugh 1RY455C.                 |                                        |                   |             |                                       |  |  |  |
| Reference Title                                                      | Facility Reference Number    | Section                                | Page Number(s)    | Revision    | L. O.                                 |  |  |  |
| loss of DC Bus                                                       | 2BwOA ELEC-1                 |                                        |                   | 55B         |                                       |  |  |  |
| 125VDC System LP                                                     | 11-DC-XL-01 (8c)             |                                        | 9-19              | 6           | 3                                     |  |  |  |
|                                                                      |                              |                                        |                   |             |                                       |  |  |  |
| Material Required for Examination                                    |                              |                                        |                   |             |                                       |  |  |  |
| Question Source: New                                                 | Question Modific             | ation Method:                          | L                 |             |                                       |  |  |  |
|                                                                      |                              |                                        |                   |             |                                       |  |  |  |
| Record Number: 66 RO Number: 51 S                                    | RO Number: 49                |                                        |                   |             |                                       |  |  |  |

| Quest           | Question Topic Amount of pressure needed in Diesel Starting Air Tanks to start diesels |                               |          |               |               |                    |              |                            |                   |                       |           |          |
|-----------------|----------------------------------------------------------------------------------------|-------------------------------|----------|---------------|---------------|--------------------|--------------|----------------------------|-------------------|-----------------------|-----------|----------|
| The             | The 1A DG is not running.                                                              |                               |          |               |               |                    |              |                            |                   |                       |           |          |
| Whi             | ch of th                                                                               | e followin                    | a com    | hinationa     | of Diogol C   | onorate            |              |                            |                   |                       |           |          |
| mair            | ntain th                                                                               | e 1A Dies                     | sel Ge   | nerator O     | PERABLE r     | enerato<br>per Bw( | OP DO        | Receiver pr<br>G-1 "Diesel | essures<br>Genera | s is suff<br>tor Alia | iclent to | n        |
| Star            | ndby Co                                                                                | ondition?"                    |          |               | <b>_</b>      |                    |              |                            | Concia            |                       |           | 5        |
|                 |                                                                                        |                               |          |               |               |                    |              |                            |                   |                       |           |          |
|                 |                                                                                        |                               |          |               |               |                    |              |                            |                   |                       |           |          |
|                 | Rece                                                                                   | iver A (PS                    | IG)      | Rece          | iver B (PSI   | G)                 |              |                            |                   |                       |           |          |
| a.              |                                                                                        | 170                           |          | 1             | 00            |                    |              |                            |                   |                       |           |          |
| b.              | (                                                                                      | 0                             |          | 2             | 40            |                    |              |                            | <u> </u>          |                       |           |          |
| C.              |                                                                                        | 170                           |          | 1             | 70            |                    |              |                            |                   |                       |           |          |
| <b>d.</b>       | (                                                                                      | )                             |          | 1             | 70            |                    |              |                            |                   |                       |           |          |
| Answe           | er b                                                                                   | Exam Level                    | B        | Cognitive Lev | el Memory     |                    | Facilit      | v. Braidwood               |                   | mDate:                |           | 10/20/00 |
| Tier:           | Plant S                                                                                | Systems                       |          |               | RO            | Group              | 2 <b>S</b> F | RO Group                   | <b></b> _         |                       | ·····     | 10/20/00 |
| 064             |                                                                                        | Emergency                     | Diesel   | Generators    |               |                    |              |                            |                   |                       | ·         |          |
| K1.             | Knowle<br>and the                                                                      | edge of the p<br>e following: | physica  | l connection  | s and/or caus | e-effect           | relation     | ships betweer              | n Emerge          | ncy Dies              | el Genera | ators    |
| K1.05           | Star                                                                                   | ting air syste                | em       |               |               |                    |              |                            |                   |                       | 3         | .4 3.9   |
| Explan<br>Answe | ation of                                                                               | One air rec                   | ceiver > | 175 psig for  | D/G to be dec | clared op          | erable       | if DG secured              | 1.                |                       |           |          |
| <b>1</b> 44     | 111                                                                                    | Reference                     | Title    |               | Facility Re   | ference N          | umber        | Section                    | Page N            | lumber(s)             | Revision  | L. O.    |
| DG A            | lignment                                                                               | to Standby                    | Conditi  | on            | 1BwOP D       | G-1                |              | E.6                        | 4                 |                       | 11        |          |
| Emer            | gency D                                                                                | G and Auxili                  | aries Ll | <b>&gt;</b>   | I1-DG-XL-     | 01 (9)             |              | 1                          | 11-12             |                       | 1         | 2        |
| Materia         | al Require                                                                             | d for Examina                 | ation    |               |               |                    |              |                            | ] [               |                       |           |          |
| Questi          | on Source                                                                              | e: New                        |          |               |               | Question           | Modific      | ation Method:              |                   |                       |           |          |
| Questi          | on Source                                                                              | Comments:                     |          |               |               |                    | 8            |                            |                   |                       |           |          |
| Record          | I Number:                                                                              | 67 F                          | RO Numb  | oer: 52       | SRO Number:   | 50                 |              |                            |                   |                       |           | J        |

| The 2A Diesel Generator is NOT running. The lead Fuel Oil Transfer pump starts in response to low level in the Fuel Oil Day Tank. This pump fails to develop adequate discharge pressure but continues to run.         The second Fuel Oil Transfer pump will         Image: Not start because it is not selected to start on low level.         Image: Not start unless DG engine speed reaches 100 RPM.         Image: start if in AUTO.         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: a start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Answer       a         Image: start immediately if the running pump is placed in Pull Out.         Image: start immediately if the start on log start >20 Group </th |  |  |  |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|
| The second Fuel Oil Transfer pump will         NOT start because it is not selected to start on low level.         NOT start unless DG engine speed reaches 100 RPM.         start if in AUTO.         start immediately if the running pump is placed in Pull Out.         Answer       a         Exam Level       B         Cognitive Level       Memory         Facility:       Braidwood         ExamDate:       10/20/00         Tier:       Plant Systems         RO Group       2         064       Emergency Diesel Generators         K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks       3.2         Start       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s) Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                           |  |  |  |  |  |  |  |  |
| NOT start because it is not selected to start on low level. NOT start unless DG engine speed reaches 100 RPM. start if in AUTO. start if in AUTO. start immediately if the running pump is placed in Pull Out. Answer a Exam Level B Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00 Tier: Plant Systems RO Group 2' SRO Group 2 064 Emergency Diesel Generators K6. 'Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators: K6.08 Fuel oil storage tanks 2 3.2 3.3 Explanation of Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST. Reference Title Facility Reference Number Section Page Number(s) Revision LO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |
| b. NOT start unless DG engine speed reaches 100 RPM.         c. start if in AUTO.         d. start immediately if the running pump is placed in Pull Out.         Answer       a Exam Level B Cognitive Level Memory Facility Braidwood ExamDate 10/20/00         Tier:       Plant Systems         064       Emergency Diesel Generators         K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks       3.2         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Page Number(s) Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |  |  |  |  |  |
| c. start if in AUTO.         d. start immediately if the running pump is placed in Pull Out.         Answer       a       Exam Level       B       Cognitive Level       Memory       Facility: Braidwood       ExamDate:       10/20/00         Tier:       Plant Systems       RO Group       2       SRO Group       2         064       Emergency Diesel Generators       K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks       3.2       3.3         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s) Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |  |
| d. start immediately if the running pump is placed in Pull Out.         Answer       a       Exam Level       B       Cognitive Level       Memory       Facility:       Braidwood       ExamDate:       10/20/00         Tier:       Plant Systems       RO Group       2       SRO Group       2         064       Emergency Diesel Generators       Ro       K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks       3.2       3.3         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |
| Answer       a       Exam Level       B       Cognitive Level       Memory       Facility:       Braidwood       ExamDate:       10/20/00         Tier:       Plant Systems       RO Group       2       SRO Group       2         064       Emergency Diesel Generators       2       SRO Group       2         K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:       3.2       3.3         K6.08       Fuel oil storage tanks       3.2       3.3         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |
| Tier:       Plant Systems       RO Group       2       SRO Group       2         064       Emergency Diesel Generators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |  |  |  |  |  |
| 064       Emergency Diesel Generators         K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks         Storage tanks       3.2         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |  |  |  |  |  |  |  |
| K6.       Knowledge of the effect of a loss or malfunction on the following will have on the Emergency Diesel Generators:         K6.08       Fuel oil storage tanks         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  |  |  |  |  |  |  |  |
| K6.08       Fuel oil storage tanks       3.2       3.3         Explanation of Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.       Storage tank. Stby pump auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |
| Explanation of<br>Answer       Both pumps auto start on DG start >280 rpm. Lead pump cycles on LO level in storage tank. Stby pump<br>does not cycle on LO level in ST.         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |  |  |  |  |  |  |  |
| Reference Title Facility Reference Number Section Page Number(s) Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |
| EDG and Auxiliaries         I1-DG-XL-01         Ch.9         II         8, 9         7         2a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |  |  |  |  |  |  |  |
| Question Modification Method:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |  |  |  |  |  |  |  |

| Question Topic Required termination of radioactive release on low circ water flow.             |                                                          |                                   |                                 |          |           |  |  |  |  |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|---------------------------------|----------|-----------|--|--|--|--|
| The following plant conditions exist:                                                          |                                                          |                                   |                                 |          |           |  |  |  |  |
| - A high flow liquid radioactive waste d                                                       | ischarge is in progress                                  | IAW BwOP                          | WX-501T1, "                     | Liquid   |           |  |  |  |  |
| Radioactive Tank 0WX011 Release Fo                                                             | rm."<br>• mala and handlandardia                         | 0500                              |                                 |          |           |  |  |  |  |
| <ul> <li>Circulating water blowdown flow in the release header indicates 6500 gpm.</li> </ul>  |                                                          |                                   |                                 |          |           |  |  |  |  |
| The operator should…                                                                           |                                                          |                                   |                                 |          |           |  |  |  |  |
| Increase circulating water blowdow                                                             | n flow to greater than                                   | 8000 gpm.                         |                                 |          |           |  |  |  |  |
| Verify 0AOV WX-353 Release Tar                                                                 | nk Outlet, is closed and                                 | t ensure the r                    | elease is terr                  | ninated  | 4         |  |  |  |  |
|                                                                                                |                                                          |                                   |                                 | matec    | •••]      |  |  |  |  |
| verity the relase tank discharge hig                                                           | h radiation header ala                                   | irm is NOT lit.                   |                                 |          |           |  |  |  |  |
| Check the high flow release rate le                                                            | ss than the calculated                                   | value.                            |                                 |          |           |  |  |  |  |
| Answer b Exam Level R Cognitive Level                                                          | Comprehension Facilit                                    | y: Braidwood                      | ExamDate:                       |          | 10/20/00  |  |  |  |  |
| Tier: Plant Systems                                                                            | RO Group 1 SF                                            | RO Group 1                        |                                 |          |           |  |  |  |  |
| 068 Liquid Radwaste System                                                                     |                                                          |                                   |                                 |          | ]         |  |  |  |  |
| A2. Ability to (a) predict the impacts of the fo<br>use procedures to correct, control, or mit | llowing on the Liquid Radw<br>tigate the consequences of | aste System and<br>those abnormal | d (b) based on th<br>operation: | hose pre | dictions, |  |  |  |  |
| A2.04 Failure of automatic isolation                                                           |                                                          |                                   |                                 |          | 3.3 3.3   |  |  |  |  |
| Explanation of WX 353 auto closes on less than                                                 | 7000 gpm circ. water flow                                | ,                                 |                                 |          |           |  |  |  |  |
| Reference Title                                                                                | Facility Reference Number                                | Section                           | Page Number(s)                  | Revision | L. O.     |  |  |  |  |
| Radiation Monitoring LP                                                                        | 11-AR-XL-01                                              | 2.C.2.b                           | 13                              | 1        | 4.b       |  |  |  |  |
| Liquid Radioactive Tank 0WX01T Release<br>Form                                                 | BwOP WX-501T1                                            | G                                 | 1, 31-35                        | 14       | ][]       |  |  |  |  |
|                                                                                                |                                                          |                                   |                                 |          |           |  |  |  |  |
| Material Required for Examination                                                              |                                                          |                                   |                                 |          |           |  |  |  |  |
| Question Source: New Question Modification Method:                                             |                                                          |                                   |                                 |          |           |  |  |  |  |
| Question Source Comments:                                                                      |                                                          |                                   |                                 |          |           |  |  |  |  |
| Record Number: 69 RO Number: 54 S                                                              | SRO Number:                                              |                                   |                                 |          |           |  |  |  |  |

| Question Topic Waste gas high vent stac                                                                           | k activity                                                                                                                 |                   |                |           |          |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-----------|----------|--|--|--|--|
| The waste gas discharge control modulating valve (RCV 014)                                                        |                                                                                                                            |                   |                |           |          |  |  |  |  |
| must be opened by first dialing the controller to 50%, then placing the open control switch to the OPEN position. |                                                                                                                            |                   |                |           |          |  |  |  |  |
| will close automatically and an alarm setpoint on 0PR2J.                                                          | will close automatically and an alarm will be activated when vent stack activity exceeds the high alarm setpoint on 0PR2J. |                   |                |           |          |  |  |  |  |
| controls pressure at 1.3 psig fr                                                                                  | om a gas decay tank to the                                                                                                 | e hold up tank    | (S.            |           |          |  |  |  |  |
| a maintains a constant downstream pressure to ensure a constant discharge flowrate.                               |                                                                                                                            |                   |                |           |          |  |  |  |  |
| Answer b Exam Level B Cognitive                                                                                   | Level Memory Facilit                                                                                                       | y: Braidwood      | ExamDate:      |           | 10/20/00 |  |  |  |  |
| Tier: Plant Systems                                                                                               | RO Group 1 SF                                                                                                              | RO Group 1        |                |           |          |  |  |  |  |
| 071 Waste Gas Disposal System                                                                                     | I                                                                                                                          |                   |                |           |          |  |  |  |  |
| A1. Ability to predict and/or monitor cha<br>controls including:                                                  | anges in parameters associated                                                                                             | with operating th | e Waste Gas D  | isposal S | /stem    |  |  |  |  |
| A1.06 Ventilation system                                                                                          |                                                                                                                            |                   |                | 2.        | 5 2.8    |  |  |  |  |
| Explanation of valve will close automatical                                                                       | ly on high rad level.                                                                                                      |                   |                |           |          |  |  |  |  |
| Reference Title                                                                                                   | Facility Reference Number                                                                                                  | Section           | Page Number(s) | Revision  | L. O.    |  |  |  |  |
| Gaseous Rad Waste LP                                                                                              | 11-PS-XL-01 (46)                                                                                                           | II.C.7            | 13             | 6         | 3        |  |  |  |  |
|                                                                                                                   |                                                                                                                            |                   |                |           |          |  |  |  |  |
|                                                                                                                   |                                                                                                                            |                   |                |           |          |  |  |  |  |
| Material Required for Examination                                                                                 | vide I1-PS-XL-01, Figure 46-1                                                                                              |                   |                |           |          |  |  |  |  |
| Question Source: Facility Exam Bank                                                                               | Question Modific                                                                                                           | ation Method:     |                |           |          |  |  |  |  |
| Question Source Comments: Question 46-GA                                                                          | S RW 022/SGW0022                                                                                                           |                   |                |           |          |  |  |  |  |
| Record Number: 70 RO Number: 55                                                                                   | 5 SRO Number: 52                                                                                                           |                   |                |           |          |  |  |  |  |

| Question Topic | Waste Gas Decay 7 | ank Operations |
|----------------|-------------------|----------------|
|----------------|-------------------|----------------|

When aligned for normal operation (BwOP GW-1), what is the response to high pressure sensed at the in-service Gas Decay Tank?

An alarm is generated that...

- alerts the operator to manually place a standby Gas Decay Tank in service.
- indicates auto swap of in-service Gas Decay Tank to selected standby Gas Decay Tank, and alerts the operator to align another standby Gas Decay Tank.
- indicates auto swap of in-service Gas Decay Tank to selected standby Gas Decay Tank and auto swap of standby Gas Decay Tank to new standby Gas Decay Tank.

d shuts down the Waste Gas Compressors and isolates the in-service Gas Decay Tank.

| Answer b Exam Level R Cognitive Level                                                                       | Memory Facilit            | <b>y:</b> Braidwood | ExamDate:      |          | 10/20/00 |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------|---------------------------|---------------------|----------------|----------|----------|--|--|--|--|--|
| Tier: Plant Systems                                                                                         | RO Group 1 SF             | RO Group 1          |                |          |          |  |  |  |  |  |
| 071 Waste Gas Disposal System                                                                               |                           |                     |                |          |          |  |  |  |  |  |
| 2.1 Conduct Of Operations                                                                                   |                           |                     |                |          |          |  |  |  |  |  |
| 2.1.28 Knowledge of the purpose and function of major system components and controls.                       |                           |                     |                |          |          |  |  |  |  |  |
| Explanation of Auto swap to standby WGD Tank at 95 psig. Another tank must be manually aligned for standby. |                           |                     |                |          |          |  |  |  |  |  |
| Reference Title                                                                                             | Facility Reference Number | Section             | Page Number(s) | Revision | L. O.    |  |  |  |  |  |
| Gas Decay Tank OA Press Hi                                                                                  | BwAR 0GW02J-1-A2          | N/A                 | 1              | 6        |          |  |  |  |  |  |
| Gas Radwaste sys lesson plan                                                                                | Chap 46                   |                     | 11             | 6        | 6        |  |  |  |  |  |
|                                                                                                             |                           |                     |                |          |          |  |  |  |  |  |
| Material Required for Examination                                                                           |                           |                     |                |          |          |  |  |  |  |  |
| Question Source:                                                                                            |                           |                     |                |          |          |  |  |  |  |  |
| Question Source Comments: 1998 Braidwood NRC                                                                | Exam                      |                     |                |          |          |  |  |  |  |  |
| Record Number: 71 RO Number: 56                                                                             | SRO Number:               |                     |                |          |          |  |  |  |  |  |

| Question Topic Knowledge of radiation detector                                                                                   | r and radiation detected.  |                    |                |               |  |  |  |  |  |
|----------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------|----------------|---------------|--|--|--|--|--|
| The Fuel Handling Incident FHB Monitors 0AR055/56 use which of the following detector types and detect which types of radiation? |                            |                    |                |               |  |  |  |  |  |
| Geiger-Mueller (G-M) tube, gamma and beta                                                                                        |                            |                    |                |               |  |  |  |  |  |
| 🖾 Geiger-Mueller (G-M) tube, gamma and alpha                                                                                     |                            |                    |                |               |  |  |  |  |  |
| Compensated Ion Chamber, gamm                                                                                                    | a and beta                 |                    |                |               |  |  |  |  |  |
| a. Uncompensated Ion Chamber, gamma and alpha                                                                                    |                            |                    |                |               |  |  |  |  |  |
| Answer a Exam Level R Cognitive Level                                                                                            | Memory Facil               | ity: Braidwood     | ExamDate:      | 10/20/00      |  |  |  |  |  |
| Tier: Plant Systems                                                                                                              | RO Group 1                 | SRO Group 1        |                |               |  |  |  |  |  |
| 072 Area Radiation Monitoring System                                                                                             |                            |                    |                | ]             |  |  |  |  |  |
| K5. Knowledge of the operational implication                                                                                     | s of the following concept | s as they apply to | the ARM syste  | em:           |  |  |  |  |  |
| K5.01 Radiation theory, including sources, ty                                                                                    | pes, units, and effects    |                    |                | 2.7 3.0       |  |  |  |  |  |
| Explanation of FHI detector is a GM tube and de                                                                                  | etects gamma and beta.     |                    |                |               |  |  |  |  |  |
| Reference Title                                                                                                                  | Facility Reference Number  | Section            | Page Number(s) | Revision L.O. |  |  |  |  |  |
| Radiation Monitoring LP                                                                                                          | I1-AR-XL-01 (49)           | ll.A.1.a           | 6, 43          | 7 2           |  |  |  |  |  |
|                                                                                                                                  |                            |                    |                |               |  |  |  |  |  |
|                                                                                                                                  |                            |                    |                |               |  |  |  |  |  |
| Material Required for Examination                                                                                                |                            |                    |                |               |  |  |  |  |  |
| Question Source: New                                                                                                             | Question Modif             | ication Method:    |                |               |  |  |  |  |  |
| Question Source Comments:                                                                                                        |                            |                    |                |               |  |  |  |  |  |
| Record Number: 72 RO Number: 57 S                                                                                                | RO Number:                 |                    |                |               |  |  |  |  |  |

| Question Topic Radiation Monitor Control Room                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |                   |                |           |                                       |  |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------|----------------|-----------|---------------------------------------|--|--|--|--|
| The Main Control Room Outside Air Intake Radiation Monitors (gaseous) are separated into Train A and Train B (0RE-PR031B and 0RE-PR032B for Train A and 0RE-PR033B and 0RE-PR034B for Train B).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |                   |                |           |                                       |  |  |  |  |
| Which of the following is correct regarding the Main Control Room Outside Air Inlet Radiation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |                   |                |           |                                       |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |                   |                |           |                                       |  |  |  |  |
| The MINIMUM conditions to initiate auto                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | omatic actions are        |                   |                |           |                                       |  |  |  |  |
| IRE-PR031B and 0RE-PR034B ar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | e in the OPERATE FA       | LURE condi        | tion.          |           |                                       |  |  |  |  |
| ORE-PR031B and 0RE-PR033B ar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | e in the OPERATE FA       | URE condi         | tion           |           |                                       |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |                   |                |           | · · · · · · · · · · · · · · · · · · · |  |  |  |  |
| ©RE-PR031B in HIGH alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |                   |                |           |                                       |  |  |  |  |
| ORE-PR031B and ORE-PR033B ar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | e in HIGH alarm.          |                   |                |           |                                       |  |  |  |  |
| Answer c Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Memory Facilit            | y: Braidwood      | ExamDate:      |           | 10/20/00                              |  |  |  |  |
| Tier: Plant Systems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RO Group 2 SF             | RO Group 2        |                |           |                                       |  |  |  |  |
| 073 Process Radiation Monitoring Sys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | tem                       |                   |                |           | ]                                     |  |  |  |  |
| A1. Ability to predict and/or monitor changes<br>System controls including:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | in parameters associated  | with operating th | e Process Radi | ation Mo  | nitoring                              |  |  |  |  |
| A1.01 Radiation levels                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                           |                   |                | 3         | .2 3.5                                |  |  |  |  |
| Explanation of 2 MCR outside air monitors in OI<br>Answer HIGH alarm condition (any train)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | PERATE FAILURE condition  | on (same train) 1 | MCR outside a  | ir monito | r in                                  |  |  |  |  |
| Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Facility Reference Number | Section           | Page Number(s) | Revision  | L. O.                                 |  |  |  |  |
| MCR OUT AIR IN OB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | BwAR 2-0PR34J             | N/A               | 1              | 3         |                                       |  |  |  |  |
| Tech Specs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3.3.7                     | Basis             | B.3.3.7-1      | 0         |                                       |  |  |  |  |
| Radiation Monitoring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I1-AR-XL-01 (49)          |                   |                |           | 5                                     |  |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                           |                   |                |           |                                       |  |  |  |  |
| Question Source:         New         Question Modification Method:         Image: Control of the second se |                           |                   |                |           |                                       |  |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                           |                   |                |           |                                       |  |  |  |  |
| Record Number: 73 RO Number: 58 SRO Number: 53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                           |                   |                |           |                                       |  |  |  |  |

| Question Topic ESF Bus Power Supply SX                                                                                 |                                       |           |                |          |            |  |  |  |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------|----------------|----------|------------|--|--|--|
| The unit is presently at 90% and shutting down due to a loss of Instrument Bus 114. All systems are in automatic.      |                                       |           |                |          |            |  |  |  |
| A Loss of Coolant Accident (LOCA) occurs. Which of the following statements best describes response of the 1B SX pump? |                                       |           |                |          |            |  |  |  |
| Will automatically start on low system pressure.                                                                       |                                       |           |                |          |            |  |  |  |
| Will have to be manually started.                                                                                      | · · · · · · · · · · · · · · · · · · · |           |                |          |            |  |  |  |
| Cannot be started from the control                                                                                     | room.                                 |           |                | /        |            |  |  |  |
| d. Will automatically start on a Manua                                                                                 | I SI actuation.                       |           |                |          |            |  |  |  |
| Answer b Exam Level B Cognitive Level Comprehension Facility: Braidwood ExamDate:                                      |                                       |           |                |          |            |  |  |  |
| Tier: Plant Systems                                                                                                    | RO Group 2 SR                         | O Group 2 |                |          |            |  |  |  |
| 075 Circulating Water System                                                                                           |                                       |           |                |          |            |  |  |  |
| K2. Knowledge of bus power supplies to the                                                                             | following:                            |           |                |          |            |  |  |  |
| K2.03 Emergency/essential SWS pumps                                                                                    |                                       |           |                | 2.6      | 5*] [2.7*] |  |  |  |
| Explanation of Train B ESF loads will not actuate                                                                      | e or reset                            |           |                |          |            |  |  |  |
| Reference Title                                                                                                        | Facility Reference Number             | Section   | Page Number(s) | Revision | L. O.      |  |  |  |
| Loss of Instrument Bus                                                                                                 | 1BwOA ELEC-2                          | Table D   | 18             | 7A       |            |  |  |  |
| Essential Service Water LP                                                                                             | 11-SX-XL-01 (20)                      |           |                | 1        | 5c         |  |  |  |
|                                                                                                                        |                                       |           |                |          |            |  |  |  |
| Material Required for Examination                                                                                      |                                       |           |                |          |            |  |  |  |
| Question Source:         Facility Exam Bank         Question Modification Method:         Significantly Modified       |                                       |           |                |          |            |  |  |  |
| Question Source Comments: Modified OA ELEC036                                                                          |                                       |           |                |          |            |  |  |  |
| Record Number: 74 RO Number: 59 SRO Number: 54                                                                         |                                       |           |                |          |            |  |  |  |

| Question Topic CAUTION on emergency start of                                                                                                                                        | of SX pump            |                       |                |           |           |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|----------------|-----------|-----------|--|--|
| Given the following Unit 1 conditions:                                                                                                                                              |                       |                       |                |           |           |  |  |
| -Reactor power - 100%<br>-1B D/G surveillance test in progre<br>-1B SX pump - running<br>-1A SX pump - available                                                                    | ess - full load       |                       |                |           |           |  |  |
| The 1B SX pump tripped due to electrical problem with Bus 142. The US directs a start of the 1A SX pump.                                                                            |                       |                       |                |           |           |  |  |
| What is the SEQUENCE for starting the                                                                                                                                               | e 1A SX pump in t     | hese conditions?      |                |           |           |  |  |
| The operator will                                                                                                                                                                   |                       |                       |                |           |           |  |  |
| a. take the 1A SX pump switch to STA                                                                                                                                                | ART and release.      | The pump will sta     | nt after a del | ay.       |           |  |  |
| take the 1A SX pump switch to STA                                                                                                                                                   | ART and hold unti     | I the pump starts.    |                |           |           |  |  |
| start the auxiliary oil pump, take the immediately start.                                                                                                                           | e 1A SX pump sw       | itch to START and     | l release. Th  | e pump    | ) will    |  |  |
| start the auxiliary oil pump, wait 5 s until the pump starts.                                                                                                                       | econds, take the      | 1A SX pump swit       | ch to START    | and ho    | old       |  |  |
| Answer b Exam Level B Cognitive Level                                                                                                                                               | Comprehension         | Facility: Braidwood   | ExamDate:      | ·····     | 10/20/00  |  |  |
| Tier: Plant Systems                                                                                                                                                                 | RO Group              | 3 SRO Group 3         |                |           |           |  |  |
| 076 Service Water System                                                                                                                                                            |                       |                       |                |           |           |  |  |
| A2. Ability to (a) predict the impacts of the fol                                                                                                                                   | lowing on the Service | e Water System and (k | ) based on tho | se predic | tions,    |  |  |
| use procedures to correct, control, or mit                                                                                                                                          | igate the consequence | ces of those abnormal | operation:     |           | c* ' 2 7* |  |  |
|                                                                                                                                                                                     |                       |                       |                |           | 5 3.7     |  |  |
| Explanation of Lube oil pressure interlock in the start ckt creates a delay in the start of the SX pump. Per procedure emergency start does not require start of Aux Lube Oil pump. |                       |                       |                |           |           |  |  |
| Reference Title                                                                                                                                                                     | Facility Reference Nu | nber Section          | Page Number(s) | Revision  | L. O.     |  |  |
| Essential Service Water Pump Startup                                                                                                                                                | BwOP SX-1             | E.5 & NOTE            | 2              | 6E3       |           |  |  |
| Essential Service Water System LP                                                                                                                                                   | 11-SX-XL-01 (20)      | 11                    | 8,9,14         | 1         | 6         |  |  |
|                                                                                                                                                                                     |                       |                       |                |           |           |  |  |
| Material Required for Examination                                                                                                                                                   |                       |                       |                |           |           |  |  |
| Question Source:         Facility Exam Bank         Question Modification Method:                                                                                                   |                       |                       |                |           |           |  |  |
|                                                                                                                                                                                     |                       |                       |                |           |           |  |  |
| Record Number: 75 RO Number: 60 S                                                                                                                                                   | RO Number: 55         |                       |                |           |           |  |  |

| Question Topic CC HX Tube Leak                                                                                                                                                                                                                                        |                                       |                            |                   |          |          |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------|-------------------|----------|----------|--|--|--|--|
| Which of the following would occur on a small tube leak in the Component Cooling Water (CC) Heat Exchanger?                                                                                                                                                           |                                       |                            |                   |          |          |  |  |  |  |
| Automatic CC System makeup from the Primary Water System only would occur, providing the necessary level for CC pump operation.                                                                                                                                       |                                       |                            |                   |          |          |  |  |  |  |
| CC System liquid inventory would increase, thus increasing the CC flowrate to components cooled by the CC System.                                                                                                                                                     |                                       |                            |                   |          |          |  |  |  |  |
| CC would leak into the Essential Service Water (SX) System, potentially contaminating the SX System.                                                                                                                                                                  |                                       |                            |                   |          |          |  |  |  |  |
| CC surge tank level would increase                                                                                                                                                                                                                                    | e, which would cause v                | vater to overf             | low through t     | he ven   | t valve. |  |  |  |  |
| Answer c Exam Level B Cognitive Level<br>Tier: Plant Systems                                                                                                                                                                                                          | Application Facility<br>RO Group 3 SF | y: Braidwood<br>RO Group 3 | ExamDate:         |          | ]        |  |  |  |  |
| 076 Service Water System                                                                                                                                                                                                                                              |                                       |                            | ·····             |          | ]        |  |  |  |  |
| K3. Knowledge of the effect that a loss or ma                                                                                                                                                                                                                         | alfunction of the Service Wa          | ater System will           | have on the follo | owing:   |          |  |  |  |  |
| K3.03 Reactor building closed cooling water                                                                                                                                                                                                                           |                                       |                            |                   | 3.       | 5* 3.9*  |  |  |  |  |
| Explanation of A CC HX tube leak would cause CC to leak into the SX system due to the CCs higher pressure. CC tank<br>M/U will come from Demin Water first @50% and then from the PW (if needed) @45%. Both remaining distractors show SX leaking into the CC system. |                                       |                            |                   |          |          |  |  |  |  |
| Reference Title                                                                                                                                                                                                                                                       | Facility Reference Number             | Section                    | Page Number(s)    | Revision | L. O.    |  |  |  |  |
| Component Cooling System LP                                                                                                                                                                                                                                           | 11-CC-XL-01 (19)                      | []]                        | 20, 21            | 6        | 3        |  |  |  |  |
|                                                                                                                                                                                                                                                                       |                                       |                            |                   |          |          |  |  |  |  |
|                                                                                                                                                                                                                                                                       |                                       |                            |                   |          |          |  |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                     |                                       |                            |                   |          |          |  |  |  |  |
| Question Source:         Facility Exam Bank         Question Modification Method:         I                                                                                                                                                                           |                                       |                            |                   |          |          |  |  |  |  |
| Question Source Comments: 19CC-033                                                                                                                                                                                                                                    |                                       |                            |                   |          |          |  |  |  |  |
| Record Number: 76 RO Number: 56                                                                                                                                                                                                                                       |                                       |                            |                   |          |          |  |  |  |  |

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| Questi          | ion Topic       | Action      | s require   | ed due to low air p | pressure             |                      |                  |          | ·····    |
|-----------------|-----------------|-------------|-------------|---------------------|----------------------|----------------------|------------------|----------|----------|
| Whe             | n doe           | s the ST    | BY sta      | tion air compre     | essor start?         |                      |                  |          |          |
| а.              | 85 psi          | ig.         |             |                     |                      |                      |                  |          |          |
| b.              | 90 psi          | ig.         |             |                     |                      |                      |                  | ·····    |          |
| Ċ.              | 95 psi          | ig.         |             |                     |                      |                      | ·····            |          |          |
| <b>d.</b>       | 105 p           | sig.        |             |                     |                      |                      |                  |          | 5        |
| Answe           | d               | Exam Lev    | el R        | Cognitive Level     | Memory               | Facility: Braidwood  | ExamDate:        |          | 10/20/00 |
| Tier:           | Plant           | Systems     |             |                     | RO Group             | 3 SRO Group          | 3                |          |          |
| 078             |                 | Instrume    | nt Air Sy   | stem                |                      |                      |                  |          |          |
| A3.             | Ability         | / to monito | or autom    | atic operations of  | the Instrument Air   | System including:    |                  |          |          |
| A3.01           | I Air           | pressure    |             |                     |                      |                      |                  | 3        | .1 3.2   |
| Explan<br>Answe | nation of<br>er | Plant w     | ill trip on | SGWL Low level      |                      |                      |                  |          |          |
|                 |                 | Refere      | nce Title   |                     | Facility Reference N | umber Section        | n Page Number(s) | Revision | L. O.    |
| SA/IA           | Syster          | n LP        |             |                     | 11-SA-XL-01 (53)     | [                    |                  | 8        | 6        |
| Materia         | al Requi        | red for Exa | nination    |                     | L                    | J [                  |                  | J [      |          |
| Questi          | ion Sour        | ce: New     |             |                     | Question             | n Modification Metho | d::::::          |          |          |
| Questi          | on Sour         | ce Commer   | its:        |                     |                      |                      |                  |          |          |
| Record          | d Numbe         | er: 77      | RO Nu       | mber: 62 S          | RO Number:           |                      |                  |          |          |

| Question Topic IA/SA Cross connect                                                                                                                                                                                                                                             |                              |                  |                    |          |          |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------|--------------------|----------|----------|--|--|--|--|
| Unit 1 is currently in Mode 4.<br>1A RH train is in service providing shutdown cooling.<br>RCS temp - 340°F                                                                                                                                                                    |                              |                  |                    |          |          |  |  |  |  |
| RCS pressure - 350 psig                                                                                                                                                                                                                                                        |                              |                  |                    |          |          |  |  |  |  |
| Unit 2 is in Mode 1 at 100% power.                                                                                                                                                                                                                                             |                              |                  |                    |          |          |  |  |  |  |
| Equipment OOS for maintenance:                                                                                                                                                                                                                                                 | $\frac{1}{2} = 1 + 1 + 0$    |                  |                    |          |          |  |  |  |  |
| 1B CW pump "OC" WS p                                                                                                                                                                                                                                                           | oump                         |                  |                    |          |          |  |  |  |  |
| 1A CC pump U2 SA Co                                                                                                                                                                                                                                                            | mpressor                     |                  |                    |          |          |  |  |  |  |
| A loss of the Unit 1 SAT occurs due to a                                                                                                                                                                                                                                       | a sudden pressure act        | uation.          |                    |          |          |  |  |  |  |
| With NO operator action, Unit 1 will experience an uncontrolled and Unit 2 will                                                                                                                                                                                                |                              |                  |                    |          |          |  |  |  |  |
| cooldown trip on Lo-Lo S                                                                                                                                                                                                                                                       | S/G level.                   |                  |                    |          |          |  |  |  |  |
| b. heatup not be affecte                                                                                                                                                                                                                                                       | d                            |                  |                    |          | ]        |  |  |  |  |
| cooldown not be affected                                                                                                                                                                                                                                                       | b                            |                  |                    |          | ·        |  |  |  |  |
| heatup trip on Lo-Lo                                                                                                                                                                                                                                                           | S/G level.                   |                  |                    | · · ·    |          |  |  |  |  |
| Answer d Exam Level B Cognitive Level                                                                                                                                                                                                                                          | Application Facilit          | y: Braidwood     | ExamDate:          |          | 10/20/00 |  |  |  |  |
| Tier: Plant Systems                                                                                                                                                                                                                                                            | RO Group 2 SF                | RO Group 2       |                    |          |          |  |  |  |  |
| 079 Station Air System                                                                                                                                                                                                                                                         |                              | ·····            |                    |          |          |  |  |  |  |
| K4. Knowledge of Station Air System design                                                                                                                                                                                                                                     | feature(s) and or interlock( | s) which provide | e for the followin | g:       |          |  |  |  |  |
| K4.01 Cross-connect with IAS                                                                                                                                                                                                                                                   |                              |                  |                    | 2        | .9 3.2   |  |  |  |  |
| Explanation of Loss of all station air compressors. Unit 1- 144, Unit 0-143 (both powered from SAT). Unit 2 OOS. With loss of IA 1RH606/607 fail open, 1RH618/619 fail closed.Power is lost to the 1A RH pump and RH pumps will not re-start. Unit 2 FRV and FRBV fail closed. |                              |                  |                    |          |          |  |  |  |  |
| Reference Title                                                                                                                                                                                                                                                                | Facility Reference Number    | Section          | Page Number(s)     | Revision | L. O.    |  |  |  |  |
| Station Air/Instrument Air LP                                                                                                                                                                                                                                                  | 11-SA-XL-01 (53)             | lll.D            | 36-41              | 1        | 11       |  |  |  |  |
| Loss Of IA                                                                                                                                                                                                                                                                     | 1BwOA SEC-4                  | Step, Table A    | 3,16               | ЗA       |          |  |  |  |  |
| DG Relaying DG-2 (Bignotes) N/A 1 3                                                                                                                                                                                                                                            |                              |                  |                    |          |          |  |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                              |                              |                  |                    |          |          |  |  |  |  |
| Question Source: New Question Modification Method:                                                                                                                                                                                                                             |                              |                  |                    |          |          |  |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                                      |                              |                  |                    |          |          |  |  |  |  |
| Record Number: 78 RO Number: 63 S                                                                                                                                                                                                                                              | RO Number: 57                |                  |                    |          |          |  |  |  |  |

| Question Topic Containment Design Features                                             |                               |                             |                    |           | ]        |
|----------------------------------------------------------------------------------------|-------------------------------|-----------------------------|--------------------|-----------|----------|
| The design of the Containment Equipme                                                  | ent Hatch                     |                             |                    |           |          |
| is sized to allow reactor vessel hear                                                  | d "O" ring passage.           |                             |                    |           |          |
| b. will allow only 2 personnel to enter                                                | /exit containment at or       | ne time.                    |                    |           | ]        |
| has a door at each end; one of white design basis accident.                            | ch has been tested to         | ensure conta                | inment integr      | ity durir | ıg a     |
| a is equipped with pneumatically inte                                                  | rlocked inner and oute        | er doors.                   |                    |           |          |
| Answer a Exam Level R Cognitive Level                                                  | Memory Facility               | : Braidwood                 | ExamDate:          |           | 10/20/00 |
| Tier: Plant Systems                                                                    | RO Group 3 SF                 | O Group 2                   |                    |           |          |
| 103 Containment System                                                                 |                               |                             |                    |           |          |
| K4. Knowledge of Containment System desig                                              | gn feature(s) and or interloc | ck(s) which prov            | ide for the follow | ving:     |          |
| K4.04 Personnel access hatch and emergend                                              | cy access hatch               |                             |                    | 2         | .5 3.2   |
| Explanation of More than 2 pepople can fit into t<br>Answer pneumatically interlocked. | he hatch. Both doors ensu     | red to protect ag           | ainst DBA. Doo     | rs not    |          |
| Reference Title                                                                        | Facility Reference Number     | Section                     | Page Number(s)     | Revision  | L. O.    |
| Primary Containment                                                                    | 11-PC-XL-01 (40)              | 11                          | 11,15              | 6         | 4        |
| Technical Specifications                                                               | Bases                         | B.3.6.2                     | B.3.6.2-1          | 0         |          |
| Material Required for Examination                                                      |                               |                             |                    |           |          |
| Question Source: New                                                                   | Question Modific              | ation Method:               |                    |           | J        |
| Question Source Comments:                                                              |                               | aneannaichte stationaiste 🕅 | L                  |           |          |
| Record Number: 79 RO Number: 64 S                                                      | RO Number:                    |                             |                    |           |          |

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| Question Topic Opening disconnect switches causing Rod Control Urgent Failure Alarms                                                                                                                                                                                  |                                                           |                      |                 |            |          |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------|-----------------|------------|----------|--|--|--|
| Unit 1 is at 36% power, when a rapid drop in reactor power occurs and a rod bottom light (DRPI panel) appears for a rod in Control Bank A. The crew enters 1BwOA ROD-3, Dropped or Misaligned Rod, for determining, correcting, and recovering a dropped control rod. |                                                           |                      |                 |            |          |  |  |  |
| Which of the following actions will actuate the ROD CONT URGENT FAILURE (Annun. 1-10-C6) alarm during the dropped rod recovery?                                                                                                                                       |                                                           |                      |                 |            |          |  |  |  |
| Resetting Group 1A step counter                                                                                                                                                                                                                                       | to ZERO.                                                  |                      |                 |            |          |  |  |  |
| Resetting Control Bank A P/A Co                                                                                                                                                                                                                                       | onverter to ZERO.                                         |                      |                 |            |          |  |  |  |
| Withdrawing the dropped rod to i                                                                                                                                                                                                                                      | ts bank position.                                         |                      |                 |            |          |  |  |  |
| Copening the Lift Coil Disconnect                                                                                                                                                                                                                                     | switches for the unaffec                                  | ted rods in Cl       | 3 "A".          | <b></b>    |          |  |  |  |
| Answer C Exam Level B Cognitive Lev                                                                                                                                                                                                                                   | el Comprehension Facilit                                  | y: Braidwood         | ExamDate:       |            | 10/20/00 |  |  |  |
| Tier: Emergency and Abnormal Plant Evolu                                                                                                                                                                                                                              | tions RO Group 1 SI                                       | RO Group 1           |                 |            |          |  |  |  |
| 005 Inoperable/Stuck Control Rod                                                                                                                                                                                                                                      |                                                           |                      |                 |            |          |  |  |  |
| AK2. Knowledge of the interrelations betwe                                                                                                                                                                                                                            | en Inoperable/Stuck Control F                             | Rod and the follo    | wing:           |            |          |  |  |  |
| AK2.02 Breakers, relays, disconnects, and                                                                                                                                                                                                                             | control room switches                                     |                      |                 | 2          | .5 2.6   |  |  |  |
| Explanation of<br>Answer Opening disconnect switches<br>urgent failure will come in whe                                                                                                                                                                               | for unaffected rods in group v<br>n the rod is withdrawn. | vill not directly ca | ause the urgent | failure. T | 'he      |  |  |  |
| Reference Title                                                                                                                                                                                                                                                       | Facility Reference Number                                 | Section              | Page Number(s)  | Revision   | L. O.    |  |  |  |
| Dropped or Misaligned Rod                                                                                                                                                                                                                                             | 1BwOA ROD-3                                               | Step 17              | 15              | 56         |          |  |  |  |
| OA ROD LP                                                                                                                                                                                                                                                             | [1-OA-XL-34                                               |                      | 3-10            | 7          | 2, 5     |  |  |  |
|                                                                                                                                                                                                                                                                       |                                                           |                      |                 |            |          |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                     |                                                           |                      |                 |            |          |  |  |  |
| Question Source: New Question Modification Method:                                                                                                                                                                                                                    |                                                           |                      |                 |            |          |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                             |                                                           |                      |                 |            |          |  |  |  |
| Record Number: 65 SRO Number: 58                                                                                                                                                                                                                                      |                                                           |                      |                 |            |          |  |  |  |

| Question Topic Condition                   | ons requiring MANUAL                             | trip                                           |                                       | · ··· · · · · · · · · · · · · · · · · |                                       | ]        |
|--------------------------------------------|--------------------------------------------------|------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|----------|
| Given the following                        | Unit 1 conditions:                               |                                                | · · · · · · · · · · · · · · · · · · · |                                       |                                       |          |
| Reactor power i                            | s at 100% steady st                              | ate                                            |                                       |                                       |                                       |          |
|                                            | 1                                                | 2                                              | 3                                     | 4                                     |                                       |          |
| Power range NIS                            | 102%                                             | 103%                                           | 102%                                  | 102%                                  |                                       |          |
| PZR pressure                               | 1880 psig(455)                                   | 1910 psig(456) 2                               | 2500 psig(457)                        | 1905 psig                             | g(458)                                |          |
| PZR level                                  | 90%(459)                                         | 92%(460)                                       | 90%(461)                              | 72%(462                               | 2)                                    |          |
| Tave                                       | 584°F                                            | 585°F                                          | 582°F                                 | 586°F                                 |                                       |          |
| SG levels                                  | 43%(1A)                                          | 34%(1B)                                        | 89%(1C)                               | 40%(1D)                               |                                       |          |
| (all S/G instrun                           | nents for a S/G read                             | the same level)                                |                                       |                                       |                                       |          |
| What is the FIRST r                        | required action for th                           | nese conditions?                               |                                       |                                       |                                       |          |
| a Verify a turbine                         | runback is initiated                             | •                                              |                                       |                                       |                                       |          |
|                                            |                                                  | <u></u>                                        |                                       |                                       | · · · · · · · · · · · · · · · · · · · |          |
| Reduce power<br>100% power.                | to LESS THAN 100                                 | % indicated to ensui                           | e 8 hour avera                        | ge does NOT                           | excee                                 | Ľ        |
| Trip the reactor                           | and initiate actions                             | of 1BwEP-0.                                    |                                       |                                       |                                       |          |
| d. Initiate a MANU                         | JAL Safety Injection                             | and initiate actions                           | of 1BwEP-0.                           |                                       |                                       | ·····    |
| Answer <sub>C</sub> Exam Leve              | B Cognitive Level                                | Comprehension Fac                              | ility: Braidwood                      | ExamDate:                             |                                       | 10/20/00 |
| Tier: Emergency and                        | Abnormal Plant Evolutio                          | ns RO Group 2                                  | SRO Group 2                           |                                       |                                       |          |
| 007 Reactor T                              | rip                                              |                                                |                                       |                                       |                                       |          |
| EA2. Ability to determi                    | ne and interpret the follo                       | wing as they apply to Re                       | eactor Trip:                          |                                       |                                       |          |
| EA2.05 Reactor trip fire                   | st-out indication                                | 3                                              |                                       |                                       | 3                                     | .4 3.9   |
| Explanation of SG 3 is a Answer trip at 10 | above P-14 (SG High -2<br>0% power requires auto | Level) which actuates F                        | WI, trips main feed                   | l pumps & trips t                     | urbine.                               | furbine  |
|                                            | co Titlo                                         | Facility Paferoneo Numbo                       | r Contian                             | Page Number(c)                        | Povicion                              | 10       |
| Reactor Trip or Sofety I                   | aiostion Unit 1                                  |                                                |                                       | rage number(s)                        | 1C                                    | L. U.    |
|                                            |                                                  |                                                | P                                     |                                       |                                       |          |
| EP-U Series LP                             |                                                  | 11-EP-XL-01                                    |                                       | 5                                     | 13                                    | 6        |
| Steam Generator LP                         |                                                  | 11-SM-XL-01 (22)                               |                                       | 24                                    | 6                                     | 6        |
| Material Required for Exam                 | ination                                          | ) 2/463/09950/0550/050000000000000000000000000 |                                       |                                       |                                       |          |
| Question Source: Facility                  | / Exam Bank                                      | Question Mod                                   | ification Method:                     | L                                     |                                       |          |
| Question Source Comment:                   | s: 1997 Braidwood NRC                            | Exam                                           |                                       |                                       |                                       |          |
| Record Number: 81                          | RO Number: 66                                    | SRO Number: 59                                 |                                       |                                       |                                       |          |

| Question Topic Basis for throttling AFW flow in ES-0.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                |                 |                |          |                                         |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------|----------------|----------|-----------------------------------------|--|--|--|
| A reactor trip has occurred due to a turbine trip from full power. Narrow range steam generator levels are off scale low.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                 |                |          |                                         |  |  |  |
| Why does 1BwEP ES-0.1, Reactor Trip Response, instruct the operator to feed the steam generators at greater than 500 GPM?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                 |                |          |                                         |  |  |  |
| Enhance natural circulation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                |                 |                |          |                                         |  |  |  |
| Provide an adequate heat sink for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | decay heat removal.                            |                 |                |          |                                         |  |  |  |
| Ensure the steam generator U-tube                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | es remain "wet" preven                         | nting dry stea  | n generators   | •        |                                         |  |  |  |
| Prevent the formation of steam in t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | he steam generator fe                          | ed ring.        |                |          | · . · · · · · · · · · · · · · · · · · · |  |  |  |
| Answer b Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Memory Facility                                | y: Braidwood    | ExamDate:      | ·····    | 10/20/00                                |  |  |  |
| Tler: Emergency and Abnormal Plant Evolutio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ns RO Group 2 SF                               | RO Group 2      |                |          |                                         |  |  |  |
| 007 Reactor Trip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                |                 |                |          |                                         |  |  |  |
| EK3. Knowledge of the reasons for the followi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ng responses as they apply                     | to Reactor Trip | •<br>•         |          |                                         |  |  |  |
| EK3.01 Actions contained in EOP for reactor t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | rip                                            |                 |                |          | 4.0 4.6                                 |  |  |  |
| Explanation of Arswer A |                                                |                 |                |          |                                         |  |  |  |
| Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Facility Reference Number                      | Section         | Page Number(s) | Revision | 1 L. O.                                 |  |  |  |
| E-0, Background                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ERG ES-0.1                                     | Step            | 19             | 1C       |                                         |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                | Description     | ·              | 40       |                                         |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | [11-EP-XL-01                                   |                 | 33             | 13       | 3                                       |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                |                 |                | l        |                                         |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                |                 |                |          |                                         |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                 |                |          |                                         |  |  |  |
| Record Number: 82 RO Number: 67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Record Number: 82 RO Number: 67 SRO Number: 60 |                 |                |          |                                         |  |  |  |

| Question Topic PRZ Level - effective method of                                                                                                                         | of control                                    |                                        |                     |          |                                       |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------|---------------------|----------|---------------------------------------|--|--|
| Given the following plant conditions on Unit 1:                                                                                                                        |                                               |                                        |                     |          |                                       |  |  |
| -A reactor trip and SI signal have b<br>-ALL RCPs are stopped<br>-RCS subcooling is inadequate<br>-PZR level is 68% and INCREASIN<br>-CNMT pressure is 6 psig and slow | een generated due to a<br>IG<br>Iy INCREASING | a PZR vapor                            | space LOCA          |          |                                       |  |  |
| The US is directing actions of 1BwEP E                                                                                                                                 | ES-1.2 "Post LOCA Co                          | oldown And [                           | Depressurizat       | ion" and | 1                                     |  |  |
| is checking to see if an RCP should be                                                                                                                                 | started.                                      |                                        |                     |          | -                                     |  |  |
| Which of the following describes the co                                                                                                                                | prrect actions?                               |                                        |                     |          |                                       |  |  |
| Start the 1A or 1B RCP.                                                                                                                                                |                                               |                                        |                     |          |                                       |  |  |
| Start the 1C or 1D RCP.                                                                                                                                                |                                               |                                        |                     |          | · · · · · · · · · · · · · · · · · · · |  |  |
| Do NOT start an RCP since PZR l                                                                                                                                        | evel in inadequate.                           |                                        |                     |          |                                       |  |  |
| Do NOT start an RCP since subco                                                                                                                                        | oling is inadequate.                          |                                        |                     |          |                                       |  |  |
| Answer d Exam Level S Cognitive Level                                                                                                                                  | Comprehension Facilit                         | y: Braidwood                           | ExamDate:           |          | 10/20/00                              |  |  |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                           | ons RO Group 2 SI                             | RO Group 2                             |                     |          |                                       |  |  |
| 008 Pressurizer Vapor Space Accider                                                                                                                                    | nt                                            |                                        |                     |          |                                       |  |  |
| 2.1 Conduct Of Operations                                                                                                                                              |                                               |                                        |                     | 16       |                                       |  |  |
| 2.1.20 Ability to execute procedure steps.                                                                                                                             |                                               | ······································ | · • •••••• · •••••• | 4        | 3 4.2                                 |  |  |
| Explanation of Must have adequate subcooling                                                                                                                           | to start an RCP. S/G level                    | is adequate.                           |                     |          |                                       |  |  |
| Reference Title                                                                                                                                                        | Facility Reference Number                     | Section                                | Page Number(s)      | Revision | L. O.                                 |  |  |
| Post LOCA Cooldown and Depressurization                                                                                                                                | 1BwEP ES-1.2                                  | Step 11                                | 15                  | WOG1     |                                       |  |  |
|                                                                                                                                                                        |                                               | N/                                     | 27.28               | 12       | 4                                     |  |  |
|                                                                                                                                                                        |                                               |                                        | 27,20               |          |                                       |  |  |
| Material Required for Examination                                                                                                                                      |                                               | J                                      |                     | J        | L                                     |  |  |
| Question Source: New Question Modification Method:                                                                                                                     |                                               |                                        |                     |          |                                       |  |  |
| Question Source Comments:                                                                                                                                              | · · · · · · · · · · · · · · · · · · ·         |                                        |                     |          |                                       |  |  |
| Record Number: 83 RO Number:                                                                                                                                           | SRO Number: 61                                |                                        |                     |          |                                       |  |  |

| Question Topic Determine downstream tailpipe                   | temperature with a stuck o            | pen safety valve                      | <b>).</b>                             |             | j        |
|----------------------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-------------|----------|
| The plant is operating at 100% power w<br>pressure is 20 psig. | when a pressurizer safe               | ety valve inad                        | vertently lifts                       | The P       | RT       |
| Which of the following most closely app                        | proximates the tail pipe              | temperature                           | of the open s                         | safety va   | alve?    |
| a 235°F                                                        |                                       | • • • • • • • • • • • • • • • • • • • | · · · · · · · · · · · · · · · · · · · |             |          |
| <b>b</b> 265°F                                                 |                                       |                                       |                                       |             |          |
| <b>c</b> 295°F                                                 |                                       |                                       |                                       | · ··· ··· · |          |
| d. 325°F                                                       | · · · · · · · · · · · · · · · · · · · |                                       |                                       |             |          |
| Answer b Exam Level B Cognitive Level                          | Comprehension Facility                | r: Braidwood                          | ExamDate:                             |             | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolution                   | ns RO Group 2 SF                      | O Group 2                             |                                       |             |          |
| 008 Pressurizer Vapor Space Acciden                            | t                                     |                                       |                                       |             | ]        |
| AK2. Knowledge of the interrelations between                   | Pressurizer Vapor Space A             | Accident and the                      | following:                            |             |          |
| AK2.02 Sensors and detectors                                   |                                       |                                       |                                       | 2.          | 7* 2.7   |
| Explanation of Constant enthalpy process. Con                  | vert to psia.                         |                                       |                                       |             |          |
| Reference Title                                                | Facility Reference Number             | Section                               | Page Number(s)                        | Revision    | L. O.    |
| Steam Tables                                                   | Steam Tables                          | Mollier                               | 1                                     | 1967        |          |
|                                                                | , , <u>, , ,</u>                      | Diagram                               |                                       | ,           |          |
| Thermodynamics LP                                              | Thermo Chapt. 3                       |                                       | 48, 49                                | 5           | 9        |
|                                                                |                                       |                                       |                                       |             |          |
| Material Required for Examination                              | ables                                 |                                       |                                       |             |          |
| Question Source: Facility Exam Bank                            | Question Modific                      | ation Method:                         | Significantly Modified                | ed          |          |
| Question Source Comments: 14 PZR 092                           |                                       |                                       |                                       |             |          |
| Record Number: 84 RO Number: 68                                | SRO Number: 62                        |                                       |                                       |             |          |

| Question Topic RCP Seal Failure - when reactor trip is required                                                                                                                                                                                                                                                                                                                |                                                                             |                        |                |           |          |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------|----------------|-----------|----------|--|--|
| Given the following plant conditions on Unit 1:                                                                                                                                                                                                                                                                                                                                |                                                                             |                        |                |           |          |  |  |
| - 100% power.<br>- RCP No. 1 SEAL LEAKOFF FLC<br>- No. 2 seal leakoff high flow alarr<br>- RCP No. 1 seal leakoff recorder                                                                                                                                                                                                                                                     | DW HIGH alarm is recein<br>n has been PRINTED<br>indication is offscale hig | ived.<br>gh on the HIG | GH range.      |           |          |  |  |
| Which of the following has occurred an                                                                                                                                                                                                                                                                                                                                         | nd what action is indicat                                                   | ted?                   |                |           |          |  |  |
| The No. 1 and No. 2 seals have fa                                                                                                                                                                                                                                                                                                                                              | ailed and a controlled re                                                   | eactor shutdo          | wn is required | d.        | ]        |  |  |
| 🖳 The No. 2 seal has failed and con                                                                                                                                                                                                                                                                                                                                            | tinued monitoring of RC                                                     | CP conditions          | is required.   |           |          |  |  |
| The No. 1 seal has failed and an i                                                                                                                                                                                                                                                                                                                                             | mmediate reactor trip is                                                    | s required.            |                |           |          |  |  |
| The No. 2 and No. 3 seals have fa                                                                                                                                                                                                                                                                                                                                              | ailed and continued mo                                                      | nitoring of RC         | P conditions   | is requir | ed.      |  |  |
| Answer c Exam Level R Cognitive Leve                                                                                                                                                                                                                                                                                                                                           | Comprehension Facilit                                                       | <b>y:</b> Braidwood    | ExamDate:      |           | 10/20/00 |  |  |
| Tier: Emergency and Abnormal Plant Evoluti                                                                                                                                                                                                                                                                                                                                     | ons RO Group 1 Si                                                           | RO Group 1             |                |           |          |  |  |
| 015 Reactor Coolant Pump Malfuncti                                                                                                                                                                                                                                                                                                                                             | ons                                                                         |                        |                |           |          |  |  |
| 2.1 Conduct Of Operations                                                                                                                                                                                                                                                                                                                                                      |                                                                             |                        |                |           |          |  |  |
| 2.1.20 Ability to execute procedure steps.                                                                                                                                                                                                                                                                                                                                     |                                                                             |                        |                | 4.        | 3 4.2    |  |  |
| Explanation of Answer Indications are that #1 seal has failed. The Operator Action Summary of RCP-1 states to go to step 12 which states to trip the reactor and the RCP. Due to the high seal leakoff flow continued monitoring is not the proper action to take. A controlled RCP shutdown is required if seal leakoff is high but has not alarmed. #3 seal is not affected. |                                                                             |                        |                |           |          |  |  |
| Reference Title                                                                                                                                                                                                                                                                                                                                                                | Facility Reference Number                                                   | Section                | Page Number(s) | Revision  | L. O.    |  |  |
| RCP Seal Failure                                                                                                                                                                                                                                                                                                                                                               | 1BWOA RCP-1                                                                 | OAS                    | 12             | 7[        | ]        |  |  |
| RCS LP                                                                                                                                                                                                                                                                                                                                                                         | AP-XL-01                                                                    |                        |                |           | 8        |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                |                                                                             |                        |                |           |          |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                              |                                                                             |                        |                |           |          |  |  |
| Question Source:         Facility Exam Bank         Question Modification Method:                                                                                                                                                                                                                                                                                              |                                                                             |                        |                |           |          |  |  |
| Question Source Comments: 1999 Braidwood NRC Exam                                                                                                                                                                                                                                                                                                                              |                                                                             |                        |                |           |          |  |  |
| Record Number: 85 RO Number: 69                                                                                                                                                                                                                                                                                                                                                | SRO Number:                                                                 |                        |                |           |          |  |  |

| Question Topic RCS pa                                                 | rameters with ONE RC                                  | P stopped.                                      |                                |                               |                   |                     |
|-----------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------|--------------------------------|-------------------------------|-------------------|---------------------|
| If Unit 1 is operating<br>NOT manually trippe<br>the parameter listed | at 20% power with<br>ed, which of the follo<br>below? | control rods in MANU<br>owing sets of condition | IAL and 1C R<br>ns describes t | CP trips but t<br>he expected | he rea<br>conditi | ctor is<br>ions for |
| Actual<br>Reactor Power                                               | Steam Flow for<br>Affected Loop SG                    | Steam Flow for<br>Other SGs                     |                                |                               |                   |                     |
| a DECREASE,                                                           | DECREASE,                                             | DECREASE                                        |                                |                               |                   |                     |
| <b>D.</b> CONSTANT,                                                   | INCREASE,                                             | INCREASE                                        |                                |                               |                   |                     |
| CONSTANT,                                                             | DECREASE,                                             | INCREASE                                        |                                |                               |                   |                     |
| d. DECREASE,                                                          | INCREASE,                                             | CONSTANT                                        |                                |                               |                   |                     |
| Answer <sub>C</sub> Exam Level                                        | S Cognitive Level                                     | Comprehension Facili                            | y: Braidwood                   | ExamDate:                     |                   | 10/20/00            |
| Tier: Emergency and A                                                 | Abnormal Plant Evolutio                               | ns RO Group 1 S                                 | RO Group 1                     |                               |                   |                     |
| 017 Reactor Co                                                        | olant Pump Malfunction                                | ns (Loss of RC Flow)                            |                                |                               |                   |                     |
| AA2. Ability to determin<br>Flow):                                    | ne and interpret the follo                            | owing as they apply to Rea                      | ctor Coolant Pur               | np Malfunctions               | ; (Loss c         | of RC               |
| AA2.07 Calculation of e                                               | expected values of flow                               | in the loop with RCP secu                       | red                            |                               |                   | 2.1 2.9             |
| Explanation of RCS flow<br>Answer constant.                           | through operating loop                                | s increases. RCS flow thr                       | ough ilde loop de              | ecreases. RX p                | ower rer          | mains               |
| Reference                                                             | e Title                                               | Facility Reference Number                       | Section                        | Page Number(s)                | Revisio           | n L.O.              |
| Reactor Coolant Pump L                                                | P                                                     | 11-AP-XL-01 (13)                                |                                | 26-27, 42                     | 9                 | ]13                 |
|                                                                       |                                                       |                                                 | ]                              |                               |                   |                     |
|                                                                       |                                                       |                                                 | ]                              |                               | ]                 |                     |
| Material Required for Examin                                          | nation                                                |                                                 |                                |                               |                   |                     |
| Question Source: Facility                                             | Exam Bank                                             | Question Modifi                                 | cation Method:                 |                               |                   |                     |
| Uuestion Source Comments: 1997 Braidwood NRC Exam                     |                                                       |                                                 |                                |                               |                   |                     |
| Record Number: 86                                                     | KU NUMBER:                                            | KO NUMBER: 63                                   |                                |                               |                   |                     |

| Determination of time to thip of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | due to a Loss of Both CV pu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | imps                                                                                                                                                         |                                                                                                          |                                                                |                                                            |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------------|--|--|--|
| The following plant conditions exist on                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Unit 1:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
| - PZR Level is 34%<br>- Combined RCP Seal Return flow<br>- 1BwOA PRI-1 has been entered<br>- Letdown Flow is isolated                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | r is 12 gpm<br>due to an Identified R0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CS leakage of                                                                                                                                                | 8 gpm                                                                                                    |                                                                |                                                            |  |  |  |
| Assume:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
| 92 Gailons/% PZR Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
| A loss of all CV pumps is preventing makeup to the RCS. With NO OPERATOR ACTION what is the longest amount of time the crew will have until they are procedurally required to trip?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                | ]                                                          |  |  |  |
| 138 minutes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
| 🖾 195 minutes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                | ]                                                          |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              | ······································                                                                   | •••••                                                          | ······                                                     |  |  |  |
| 🖼 345 minutes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                              |                                                                                                          |                                                                |                                                            |  |  |  |
| Answer b Exam Level S Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Application Facilit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | y: Braidwood                                                                                                                                                 | ExamDate:                                                                                                |                                                                | 10/20/00                                                   |  |  |  |
| Answer b Exam Level S Cognitive Level Tier: Emergency and Abnormal Plant Evolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Application Facilit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | y: Braidwood                                                                                                                                                 | ExamDate:                                                                                                |                                                                | 10/20/00                                                   |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Application Facilit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | y: Braidwood<br>RO Group 2                                                                                                                                   | ExamDate:                                                                                                |                                                                | 10/20/00                                                   |  |  |  |
| Answer b Exam Level S Cognitive Level<br>Tier: Emergency and Abnormal Plant Evolution<br>(022 Loss of Reactor Coolant Makeup<br>AA2. Ability to determine and interpret the foll                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Application Facilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | y: Braidwood<br>RO Group 2<br>s of Reactor Coo                                                                                                               | ExamDate:                                                                                                |                                                                | 10/20/00                                                   |  |  |  |
| Answer b Exam Level S Cognitive Level<br>Tier: Emergency and Abnormal Plant Evolution<br>022 Loss of Reactor Coolant Makeup<br>AA2. Ability to determine and interpret the foll<br>AA2.04 How long PZR level can be maintaine<br>Explored to Trip in OA DDI 4 of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Application Facilition Facilition 2' Si<br>ons RO Group 2' Si<br>owing as they apply to Loss<br>ad within limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | y: Braidwood<br>RO Group 2<br>s of Reactor Coo                                                                                                               | ExamDate:                                                                                                | 2.2.2.1                                                        | 10/20/00<br>9 [_3.8]                                       |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of Answer       Required to Trip in OA PRI-1 at Total Out Leakage is 8 gpm + 12 based on tripping at 17% which leakage.                                                                                                                                                                                                                                                                                                                                              | Application       Facility         ons       RO Group       2'       Si         owing as they apply to Loss       owithin limits         4% level.       Therefore 30% L         2 gpm = 20 gpm.       2760 gall         is Guidance in OA SEC-8 a                                                                                                                                                                                                                                                                                                                                                                                                                      | y: Braidwood<br>C Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co                                                    | ExamDate:<br>lant Makeup:<br>2 gallons/% = 2<br>8 minutes. Dist<br>&D are based o                        | 760 gallor<br>tractor A i<br>n only ide                        | 10/20/00<br>9 [_3.8]<br>ns.<br>s<br>entified               |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of Answer       Required to Trip in OA PRI-1 at Total Out Leakage is 8 gpm + 12 based on tripping at 17% which leakage.         Reference Title       Reference Title                                                                                                                                                                                                                                 | Application       Facility         ons       RO Group       2       Si         owing as they apply to Loss       owithin limits       Si         d within limits       4% level. Therefore 30% L       Si         2 gpm = 20 gpm. 2760 gall       is Guidance in OA SEC-8 a         Facility Reference Number                                                                                                                                                                                                                                                                                                                                                           | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section                                        | ExamDate:<br>lant Makeup:<br>2 gallons/% = 2<br>8 minutes. Dist<br>&D are based o<br>Page Number(s)      | 760 gallor<br>tractor A i<br>n only ide<br>Revision            | 10/20/00<br>9 3.8<br>ns.<br>s<br>entified                  |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of Answer       Required to Trip in OA PRI-1 at Total Out Leakage is 8 gpm + 12 based on tripping at 17% which leakage.         Reference Title         Excessive Primary Plant Leakage                                                                                                                                                                                                               | Application       Facility         ons       RO Group       2       Si         owing as they apply to Loss       owithin limits       3         4% level.       Therefore 30% L       2         2 gpm = 20 gpm.       2760 gall       3         is Guidance in OA SEC-8 a       3         Facility Reference Number         1BwOA PRI-1       1                                                                                                                                                                                                                                                                                                                         | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section<br>4.a.RNO                             | ExamDate:<br>lant Makeup:<br>2 gallons/% = 2<br>8 minutes. Disi<br>&D are based o<br>Page Number(s)<br>7 | 760 gallor<br>tractor A i<br>n only ide<br>Revision<br>55      | 10/20/00<br>9 [ 3.8<br>ns.<br>s.<br>ntified<br>L. 0.       |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of Answer       Required to Trip in OA PRI-1 at Total Out Leakage is 8 gpm + 12 based on tripping at 17% which leakage.         Reference Title       Excessive Primary Plant Leakage         Pressurizer LP       Pressurizer LP                                                                                                                                                                     | Application       Facility         ons       RO Group       2'       Si         owing as they apply to Loss       owind within limits         4% level.       Therefore 30% L         2 gpm = 20 gpm.       2760 gall         is Guidance in OA SEC-8 a         Facility Reference Number         1BwOA PRI-1         11-RY-XL-01       (14)                                                                                                                                                                                                                                                                                                                            | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section<br>4.a.RNO                             | ExamDate:<br>lant Makeup:<br>2 gallons/% = 2<br>8 minutes. Dist<br>&D are based o<br>Page Number(s)<br>7 | 760 gallor<br>tractor A i<br>n only ide<br>Revision<br>55      | 10/20/00<br>9 [ 3.8<br>ns.<br>s<br>entified<br>L. 0.<br>23 |  |  |  |
| Material Required for Examination         Masswer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of       Required to Trip in OA PRI-1 at Total Out Leakage is 8 gpm + 12 based on tripping at 17% which leakage.         Reference Title       Excessive Primary Plant Leakage         Pressurizer LP                                                                                                                                                                                                                     | Application       Facility         ons       RO Group       2'       Si         owing as they apply to Loss       owithin limits         4% level.       Therefore 30% L         2 gpm = 20 gpm.       2760 gallities         is Guidance in OA SEC-8 a         Facility Reference Number         1BwOA PRI-1         11-RY-XL-01       (14)                                                                                                                                                                                                                                                                                                                            | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section<br>4.a.RNO                             | ExamDate:<br>lant Makeup:<br>2 gallons/% = 2<br>8 minutes. Dist<br>&D are based o<br>Page Number(s)<br>7 | 760 gallor<br>tractor A i<br>n only ide<br>Revision<br>55      | 10/20/00<br>9 [_3.8]<br>ns.<br>s<br>ntified<br>L.0.<br>23  |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of       Required to Trip in OA PRI-1 at         Total Out Leakage is 8 gpm + 12       based on tripping at 17% which         leakage.       Reference Title         Excessive Primary Plant Leakage       Pressurizer LP         Material Required for Examination       Question Source:                                                                                                            | Application       Facility         owing as they apply to Loss       2       Si         owing as they apply to Loss       3       3         owing as they apply to Loss       3       3         owing as they apply to Loss       3       3         ad within limits       4       4       4         4% level. Therefore 30% L       2       3         2 gpm = 20 gpm. 2760 gall       3       3         is Guidance in OA SEC-8 a       3         Facility Reference Number       1       1         11-RY-XL-01       (14)       3         Question Modified       3       3                                                                                           | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section<br>4.a.RNO<br>4.a.RNO<br>ation Method: | ExamDate:                                                                                                | 760 gallor<br>tractor A i<br>n only ide<br>Revision<br>55<br>9 | 10/20/00<br>9 [_3.8]<br>ns.<br>s<br>ntified<br>[<br>23<br> |  |  |  |
| Answer       b       Exam Level       S       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         022       Loss of Reactor Coolant Makeup         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       Ability to determine and interpret the foll         AA2.       How long PZR level can be maintaine         Explanation of       Required to Trip in OA PRI-1 at         Total Out Leakage is 8 gpm + 12       based on tripping at 17% which         leakage.       Reference Title         Excessive Primary Plant Leakage       Pressurizer LP         Material Required for Examination       Question Source:         New       Question Source Comments: | Application       Facility         owing as they apply to Loss       2       Si         owing as they apply to Loss       3       3         d within limits       4       4       4         4% level. Therefore 30% L       2       3       3         2 gpm = 20 gpm. 2760 gall       3       3       3         Facility Reference Number       1       1       1         1BwOA PRI-1       1       1       1         Question Modified       3       3 | y: Braidwood<br>RO Group 2<br>s of Reactor Coo<br>evel change x 92<br>ons/20 gpm = 13<br>nd distractors Co<br>Section<br>4.a.RNO<br>                         | ExamDate:                                                                                                | 760 gallor<br>tractor A i<br>n only ide<br>Revision<br>55      | 10/20/00<br>9 3.8<br>5 sontified<br>L. 0.<br>23            |  |  |  |

| Question Topic Identifying uncontrolled boron dilution due to excessive cooling of demineralizers |                             |                    |                  |             |                         |  |  |
|---------------------------------------------------------------------------------------------------|-----------------------------|--------------------|------------------|-------------|-------------------------|--|--|
| The following plant conditions exist:                                                             |                             |                    |                  |             |                         |  |  |
|                                                                                                   |                             |                    |                  |             |                         |  |  |
| - Unit 1 40% reactor power steady state conditions                                                |                             |                    |                  |             |                         |  |  |
| - Rod Control Automatic                                                                           |                             |                    |                  |             |                         |  |  |
| - Leidown 75 gpm through TA L/D HX                                                                |                             |                    |                  |             |                         |  |  |
| Temperature Control Valve (1CC130A),                                                              | CC flow control valve       | , repositions (    | due to a loss    | of IA to    | the                     |  |  |
| valve positioner. Which of the following                                                          | describes the plant re      | esponse to the     | e event?         |             |                         |  |  |
| 1TCV-129 opens bypassing flow ar                                                                  | ound the demineralize       | ers.               |                  |             |                         |  |  |
| Control rods step out due to a redu                                                               | ction in RCS temperat       | ure.               |                  |             |                         |  |  |
| Control rods step in due to rising P                                                              | CS temperature              |                    |                  |             | · ···· ··· ··· ··· ···· |  |  |
|                                                                                                   |                             |                    |                  |             |                         |  |  |
| RCS temperature falls requiring dilu                                                              | ution to restore temper     | ature.             |                  |             |                         |  |  |
| Answer C Exam Level B Cognitive Level                                                             | Comprehension Facilit       | : Braidwood        | ExamDate:        |             | 10/20/00                |  |  |
| Tier: Emergency and Abnormal Plant Evolution                                                      | ns RO Group 1 SF            | O Group 1          |                  |             |                         |  |  |
| 024 Emergency Boration                                                                            |                             |                    |                  |             | ]                       |  |  |
| AA2. Ability to determine and interpret the follo                                                 | wing as they apply to Eme   | rgency Boration    | •                |             |                         |  |  |
| AA2.06 When boron dilution is taking place                                                        |                             |                    |                  | 3           | .6 3.7                  |  |  |
| Explanation of CC130A fails open cooling off lete                                                 | down flow. At low temperat  | ures, mixed bed    | ls have higher a | ffinity for | boron.                  |  |  |
| Less CD of RCS will cause RCS                                                                     | temp to increase. Control F | koas will step in. |                  |             |                         |  |  |
| Reference Title                                                                                   | Facility Reference Number   | Section            | Page Number(s)   | Revision    | L. O.                   |  |  |
|                                                                                                   | 1BwOA PRI-12                | 2.a.RNO            | 3                | 58          |                         |  |  |
|                                                                                                   | 11-CV-XL-01 (15a)           |                    | 9                | 10          | '14                     |  |  |
| ···                                                                                               |                             |                    |                  |             |                         |  |  |
| Material Required for Examination                                                                 |                             |                    |                  |             |                         |  |  |
| Question Source: New                                                                              | Question Modific            | ation Method:      | Concept Used     |             |                         |  |  |
| Zion 1991 NRC Exam                                                                                |                             |                    |                  |             | ]                       |  |  |
| Record Number: 88 RO Number: 70 SRO Number: 65                                                    |                             |                    |                  |             |                         |  |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                             | •                                         |                                       |                                       |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------|---------------------------------------|---------------------------------------|--|--|--|
| Question Topic Valve Combinations and Flows required to meet emergency boration requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                             |                                           |                                       |                                       |  |  |  |
| Which of the following valve combinations and flows for emergency boration are allowed in accordance with 1BwOA PRI-2, "Emergency Boration?"                                                                                                                                                                                                                                                                                                                                                                                         |                                                             |                                           |                                       |                                       |  |  |  |
| ICV112B, VCT Outlet Isolation Valve FULL OPEN and 1CV121, Charging Line Flow Control Valve, FULL OPEN with maximum charging header flow.                                                                                                                                                                                                                                                                                                                                                                                             |                                                             |                                           |                                       |                                       |  |  |  |
| 1CV112C, VCT Outlet Isolation Valve, CLOSED, and 1CV8104, Emergency Boration Valve,<br>FULL OPEN with maximum charging header flow.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |                                           |                                       |                                       |  |  |  |
| ICV112D, RWST to Cent Chg Pump Suction Valve, FULL OPEN, and 1CV8485A, CV Pump<br>Disch Valve THROTTLED to balance high head SI flow and Letdown flow.                                                                                                                                                                                                                                                                                                                                                                               |                                                             |                                           |                                       |                                       |  |  |  |
| ICV8104, Emergency Boration Valve, FULL OPEN, and ICV8485A, CV Pump Disch Valve<br>THROTTLED to balance high head SI flow and Letdown flow.                                                                                                                                                                                                                                                                                                                                                                                          |                                                             |                                           |                                       |                                       |  |  |  |
| Answer C Exam Level B Cognitive Level Memory Facili                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>by:</b> Braidwood                                        | ExamDate:                                 |                                       | 10/20/00                              |  |  |  |
| Tier: Emergency and Abnormal Plant Evolutions RO Group 1 S                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | RO Group 1                                                  |                                           |                                       |                                       |  |  |  |
| 024 Emergency Boration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |                                           |                                       |                                       |  |  |  |
| 024 Emergency Boration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |                                           |                                       |                                       |  |  |  |
| 024 Emergency Boration<br>AK2. Knowledge of the interrelations between Emergency Boration and                                                                                                                                                                                                                                                                                                                                                                                                                                        | the following:                                              |                                           |                                       | · · · · · · · · · · · · · · · · · · · |  |  |  |
| 024 Emergency Boration<br>AK2. Knowledge of the interrelations between Emergency Boration and<br>AK2.01 Valves                                                                                                                                                                                                                                                                                                                                                                                                                       | the following:                                              |                                           | 2                                     | .7 2.7                                |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of Answer       A wrong CV112B should be closed. B wrong because either not used with CV 8485A.                                                                                                                                                                                                                                                                       | the following:<br>er CV112D/E mu                            | st be open. D w                           | /rong CV8                             | .7] 2.7]<br>3104 is                   |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of Answer       A wrong CV112B should be closed. B wrong because either not used with CV 8485A.         Reference Title       Facility Reference Number                                                                                                                                                                                                               | the following:<br>er CV112D/E mu                            | st be open. D w<br>Page Number(s)         | /rong CV8                             | .7] 2.7]<br>3104 is<br>L. O.          |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of Answer       A wrong CV112B should be closed. B wrong because either not used with CV 8485A.         Reference Title       Facility Reference Number         Emergency Boration       1BwOA PRI-2                                                                                                                                                                  | the following:<br>er CV112D/E mu<br>Section                 | st be open. D w<br>Page Number(s)<br>7, 8 | vrong CV8<br>Revision                 | .7] 2.7]<br>3104 is<br>L. 0.          |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of A wrong CV112B should be closed. B wrong because either not used with CV 8485A.         Reference Title         Facility Reference Number         Emergency Boration         1BwOA PRI-2         Reactor Makeup Control System                                                                                                                                     | the following:<br>er CV112D/E mu<br>Section                 | st be open. D w<br>Page Number(s)<br>7, 8 | 2<br>vrong CV8<br>Revision<br>58      | .7] 2.7]<br>3104 is<br>L.0.           |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and AK2.01         Valves       AK2.01         Explanation of Answer       A wrong CV112B should be closed. B wrong because eithent of used with CV 8485A.         Reference Title       Facility Reference Number         Emergency Boration       1BwOA PRI-2         Reactor Makeup Control System       11-CV-XL-02 (15b)                                                                                             | the following:<br>er CV112D/E mu<br>Section                 | st be open. D w<br>Page Number(s)<br>7, 8 | /rong CV8<br>Revision<br>58<br>8      | .7] 2.7]<br>3104 is<br>L. 0.<br>[10   |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of A wrong CV112B should be closed. B wrong because either not used with CV 8485A.         Reference Title         Emergency Boration         IBwOA PRI-2         Reactor Makeup Control System         II-CV-XL-02         Material Required for Examination                                                                                                         | the following:<br>er CV112D/E mu<br>Section                 | st be open. D w<br>Page Number(s)<br>7, 8 | 2<br>/rong CV8<br>Revision<br>58<br>8 | .7] 2.7]<br>3104 is<br>L.O<br>[]      |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of Answer       A wrong CV112B should be closed. B wrong because either not used with CV 8485A.         Reference Title       Facility Reference Number         Emergency Boration       1BwOA PRI-2         Reactor Makeup Control System       11-CV-XL-02 (15b)         Material Required for Examination       Question Modified                                  | the following:<br>er CV112D/E mu<br>Section<br>Attachment A | st be open. D w<br>Page Number(s)<br>7, 8 | 2<br>/rong CV8<br>Revision<br>58      | .7] 2.7]<br>3104 is<br>L.0.<br>[10    |  |  |  |
| 024       Emergency Boration         AK2.       Knowledge of the interrelations between Emergency Boration and         AK2.01       Valves         Explanation of Answer       A wrong CV112B should be closed. B wrong because eithent on used with CV 8485A.         Reference Title       Facility Reference Number         Emergency Boration       1BwOA PRI-2         Reactor Makeup Control System       11-CV-XL-02 (15b)         Material Required for Examination       Question Modifi         Question Source:       New | the following:<br>er CV112D/E mu<br>Section<br>Attachment A | st be open. D w<br>Page Number(s)<br>7, 8 | 2<br>/rong CV8<br>Revision<br>58<br>8 | .7] 2.7]<br>B104 is<br>L. 0.<br>[10   |  |  |  |

| Question Topic Failure of non-controlling channel effect on PORV                                                                    |                  |                  |          |          |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|----------|----------|--|--|--|
| Given the following plant conditions on Unit 1:                                                                                     |                  |                  |          |          |  |  |  |
| - Reactor power 75%<br>- PZR pressure control selected to 455/456<br>- Pressure channel 1PT-457 fails I OW                          |                  |                  |          |          |  |  |  |
| 1BwOA INST-2 "Operation With A Failed Instrument Channel" is entered and the required actions for the failed channel are performed. |                  |                  |          |          |  |  |  |
| How is the PZR PORV operation affected with the failed char                                                                         | nel Out of Se    | ervice?          |          |          |  |  |  |
| ONLY PORV PCV-456 will NOT CLOSE, if OPEN in AU<br>the PORV blocking signal.                                                        | O, when PZ       | R pressure d     | ecrease  | es to    |  |  |  |
| Neither PORV will CLOSE, if OPEN in AUTO, when PZR blocking signal.                                                                 | pressure dec     | creases to the   | e PORV   | r        |  |  |  |
| ONLY PORV PCV-456 will NOT OPEN when PZR press                                                                                      | ure increases    | to its OPEN      | setpoin  | t.       |  |  |  |
| Neither PORV will OPEN when PZR pressure increases                                                                                  | to their OPEN    | I setpoint.      |          |          |  |  |  |
| Answer C Exam Level B Cognitive Level Comprehension Facilit                                                                         | y: Braidwood     | ExamDate:        |          | 10/20/00 |  |  |  |
| Tier: Emergency and Abnormal Plant Evolutions RO Group 1 SI                                                                         | RO Group 2       |                  |          |          |  |  |  |
| 027 Pressurizer Pressure Control Malfunction                                                                                        |                  |                  |          | ]        |  |  |  |
| AA1. Ability to operate and / or monitor the following as they apply to Pre                                                         | ssurizer Pressur | re Control Malfu | nction:  |          |  |  |  |
| AA1.01 PZR heaters, sprays, and PORVs                                                                                               |                  |                  | 4        | .0 3.9   |  |  |  |
| Explanation of PT-457 provides 2185# interlock to PCV-456                                                                           |                  |                  |          |          |  |  |  |
| Facility Reference Title                                                                                                            | Section          | Page Number(s)   | Revision | L. O.    |  |  |  |
| PZR Pressure Control RY-2                                                                                                           | Instrument       | N/A              | 3        |          |  |  |  |
| PWR License System Training - Braidwood I1-RY-XL-01 (14)                                                                            | III.C.2.c        |                  | 9        | 21       |  |  |  |
|                                                                                                                                     |                  |                  |          |          |  |  |  |
| Material Required for Examination                                                                                                   |                  |                  |          | ]        |  |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                   |                  |                  |          |          |  |  |  |
| Question Source Comments: 1997 Braidwood NRC Exam                                                                                   |                  | ·····            |          |          |  |  |  |
| Record Number: 90 RO Number: 72 SRO Number: 67                                                                                      |                  |                  |          |          |  |  |  |

| Question Topic PZR Level setpoints                                                                                                                            |               |  | | | |
|---|---|---|---|---|---|
| Given the following plant conditions on Unit 1:                                                                                                               |               |  |
| - Power level 77%<br>- PZR pressure 2235 psig<br>- RCS Tave 577°F (A) 575°F (B) 579°F (C) 575°F (D)<br>- PZR Level Channel Selector Switch - 459/460 position |               |  |
| The CV121 Flow Controller, FK-121, fails such that charging flow to the RCS is increased                                                                      | ł.            |  |
| What would PZR level read on 1LI-459 when annunciator 1-12-C3, "PZR LEVEL CONT DEV HIGH HTRS ON", actuates?                                                   |               |  |
| a. 52%                                                                                                                                                        |               |  |
| <b>b</b> 56%                                                                                                                                                  |               |  |
| <b>57%</b>                                                                                                                                                    |               |  |
| 61%                                                                                                                                                           |               |  |
| Answer d Exam Level S Cognitive Level Application Eacility: Braidwood Examplete                                                                               | 10/20/00      |  |
| Tier: Emergency and Abnormal Plant Evolutions Ro Group 3 SRO Group 3                                                                                          | 10/20/00      |  |
| 028 Pressurizer Level Control Malfunction                                                                                                                     |               |  |
| AA2. Ability to determine and interpret the following as they apply to Pressurizer Level Control Malfunction:                                                 |               |  |
| AA2.12 Cause for PZR level deviation alarm: controller malfunction or other instrumentation malfunction 3.1 3.5                                               |               |  |
| Explanation of Level uses Hi auct Tave (579) 25°F Delta T 35% Pzr level 22/.25=88% 88 x .34 = 30.8 + 26 + 5 = 61                                              |               |  |
| Reference Title Facility Reference Number Section Page Number(s) R                                                                                            | levision L.O. |  |
| PZR LEVEL CONT DEV HIGH HTRS ON   BwAR 1-12-C3   N/A   1   5                                                                                                  | 1E4           |  |
| PWR License System Training - Braidwood   11-RX-XL-01 (14)   9                                                                                                | 3 & 22        |  |
|                                                                                                                                                               |               |  |
| Outestion Source: Examination                                                                                                                                 |               |  |
| Question Source Comments: 1997 Braidwood NBC Exam                                                                                                             |               |  |
| Record Number: 91 RO Number: 68                                                                                                                               |               |  |
| Question Topic Ability to perform steps in LCO                                                                                                                                                                                              | AR Paperwork                                                                                                                                                                          |                                                                                                     |                                                                                                    |                                                                    |                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------|
| Given the following conditions:                                                                                                                                                                                                             |                                                                                                                                                                                       |                                                                                                     |                                                                                                    |                                                                    |                                  |
| <ul> <li>The unit is at 8% power.</li> <li>Plant startup is in progress</li> <li>Pzr level instrument 1LT-459 has</li> <li>All actions of 1BwOA INST-2 "Op are complete.</li> </ul>                                                         | failed LOW.<br>eration with a Failed I                                                                                                                                                | nstrument Ch                                                                                        | annel'' Attach                                                                                     | iment C                                                            |                                  |
| Which of the following describes the cre<br>of Pzr level instrument 1LT-460 HIGH?                                                                                                                                                           | ews minimum course o                                                                                                                                                                  | of action if the                                                                                    | ere is a subse                                                                                     | quent fa                                                           | ailure                           |
| Verify reactor trip.                                                                                                                                                                                                                        |                                                                                                                                                                                       |                                                                                                     |                                                                                                    |                                                                    |                                  |
| Stop the startup and restore one of prior to increasing power above 10                                                                                                                                                                      | f the failed channels o<br>%.                                                                                                                                                         | f pressurizer l                                                                                     | evel to OPEF                                                                                       | RABLE                                                              | status                           |
| Stop the startup and restore both o prior to increasing power above 10                                                                                                                                                                      | of the failed channels of<br>%.                                                                                                                                                       | of pressurizer                                                                                      | level to OPE                                                                                       | RABLE                                                              | status                           |
| Within one hour initiate ACTION to                                                                                                                                                                                                          | be in at least HOT ST                                                                                                                                                                 | ANDBY withi                                                                                         | n the next 6 l                                                                                     | nours.                                                             |                                  |
| Answer b Exam Level S Cognitive Level                                                                                                                                                                                                       | Application Facili                                                                                                                                                                    | y: Braidwood                                                                                        | ExamDate:                                                                                          |                                                                    | 10/20/00                         |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                                                                                                                                 | ns RO Group 3 S                                                                                                                                                                       | RO Group 3                                                                                          |                                                                                                    |                                                                    |                                  |
| 028 Pressurizer Level Control Malfunc                                                                                                                                                                                                       | tion                                                                                                                                                                                  |                                                                                                     |                                                                                                    |                                                                    | ]                                |
| 2.1 Conduct Of Operations                                                                                                                                                                                                                   |                                                                                                                                                                                       |                                                                                                     |                                                                                                    |                                                                    |                                  |
| 2.1.20 Ability to execute procedure steps.                                                                                                                                                                                                  |                                                                                                                                                                                       |                                                                                                     |                                                                                                    | 4                                                                  | .3 4.2                           |
| Explanation of<br>Answer With all actions of the OA complet<br>in a tripped condition. When the<br>reactor trip is met, however, the trequire 3 channels to be OPERA<br>10%, the bistables must be tripped<br>channels OPERABLE to increase | ete, the bistable associated<br>second channel fails high,<br>trip is blocked less than 10<br>BLE, however, this is requ<br>ed within 6 hours, B correc<br>e above 10%, (C incorrect) | I with the high P2<br>the coincidence<br>%. (A incorrect)<br>ired above P-7 (<br>t, D incorrect. It | zr level Rx trip h<br>for a high press<br>. Technical spe<br>10%), and to ind<br>is not required t | as been p<br>surizer lev<br>cifications<br>crease ab<br>to have be | olaced<br>/el<br>s<br>ove<br>oth |
| Reference Title                                                                                                                                                                                                                             | Facility Reference Number                                                                                                                                                             | Section                                                                                             | Page Number(s)                                                                                     | Revision                                                           | L. O.                            |
| Operation with a Failed Instrument Channel                                                                                                                                                                                                  | BwOA INST-2                                                                                                                                                                           | Step 4                                                                                              | 16                                                                                                 | 57B                                                                |                                  |
| Tech Specs                                                                                                                                                                                                                                  | 3.3.1                                                                                                                                                                                 | Table 3.3.1-1                                                                                       | 3.3.1-15                                                                                           | Amnen                                                              |                                  |
|                                                                                                                                                                                                                                             |                                                                                                                                                                                       | ) (                                                                                                 | (                                                                                                  | dment<br>100                                                       | ······                           |
| Reactor Protection System                                                                                                                                                                                                                   | [1-RP-XL-02 (60b)                                                                                                                                                                     | [[[]                                                                                                | 16, 17                                                                                             | 6                                                                  | 4                                |
|                                                                                                                                                                                                                                             | Question Meelili                                                                                                                                                                      | nation Mothed                                                                                       |                                                                                                    |                                                                    |                                  |
| Question Source Comments:                                                                                                                                                                                                                   |                                                                                                                                                                                       |                                                                                                     | <u>L</u>                                                                                           |                                                                    | l                                |
| Record Number: 92 RO Number: S                                                                                                                                                                                                              | RO Number: 69                                                                                                                                                                         |                                                                                                     |                                                                                                    |                                                                    |                                  |

| Question Topic FR-S.1 RNO and local operator a                                                                                                                                       | actions                                                                       |                                                       |                                               |                                       |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------|---------------------------------------|---------------|
| While performing the immediate actions of<br>Generation/ATWS", the operator was dire<br>operator is again directed to verify a turbi<br>crew is directed to trip the main turbine lo | of BwFR-S.1," Res<br>ected to verify a tur<br>ine trip. If the mai<br>ocally. | ponse to Nucle<br>bine trip. Subs<br>n turbine has no | ar Power<br>equently, in s<br>ot tripped at t | Step 8, <sup>-</sup><br>his poin      | the<br>t, the |
| procedure?                                                                                                                                                                           |                                                                               | any during the                                        |                                               |                                       | uie           |
| Local operators are busy isolating the                                                                                                                                               | e steam dumps.                                                                |                                                       |                                               |                                       |               |
| I The main turbine can still be used to                                                                                                                                              | draw steam for R                                                              | CS temperature                                        | control.                                      |                                       |               |
| The main turbine can still be used to                                                                                                                                                | maintain S/G wate                                                             | er level due to n                                     | o MFW pump                                    | o trip.                               |               |
| Local operator actions are more time                                                                                                                                                 | e consuming to initi                                                          | ate and comple                                        | ete.                                          |                                       |               |
| Answer d Exam Level B Cognitive Level                                                                                                                                                | Memory Fac                                                                    | ility: Braidwood                                      | ExamDate:                                     | · · · · · · · · · · · · · · · · · · · | 10/20/00      |
| Tier: Emergency and Abnormal Plant Evolutions                                                                                                                                        | RO Group 2                                                                    | SRO Group 1                                           |                                               |                                       |               |
| 029 Anticipated Transient Without Scram                                                                                                                                              | <u>1</u>                                                                      |                                                       |                                               |                                       | ]             |
| AK3. Knowledge of the reasons for the following                                                                                                                                      | responses as they ap                                                          | ply to Anticipated                                    | Fransient Withou                              | ut Scram:                             |               |
| AK3.07 Using local turbine trip lever                                                                                                                                                |                                                                               |                                                       |                                               | 3.                                    | 1* 3.4*       |
| Explanation of Local actions are more time consul<br>Answer MSIVs are not shut during the IA as                                                                                      | ming. Local operators<br>s the turbine can be ru                              | do not isolate stea<br>n back.                        | am dumps (done                                | e in MCR)                             | ).            |
| Reference Title                                                                                                                                                                      | Facility Reference Numbe                                                      | Section                                               | Page Number(s)                                | Revision                              | L. O.         |
| Background Document 1BwFR-S.1                                                                                                                                                        | R-S.1                                                                         |                                                       | 83                                            | WOG1                                  | []            |
|                                                                                                                                                                                      |                                                                               |                                                       | r                                             | <u> </u>                              | []            |
|                                                                                                                                                                                      | ·R-XL-01                                                                      |                                                       |                                               |                                       | 3             |
| Material Densitied for Examination                                                                                                                                                   |                                                                               | ][]                                                   |                                               |                                       | ]             |
| Question Source: New                                                                                                                                                                 | Question Mod                                                                  | lification Method:                                    |                                               |                                       |               |
| Question Source Comments:                                                                                                                                                            |                                                                               |                                                       |                                               |                                       | ]             |

Record Number: 93 RO Number: 73 SRO Number: 70

Question Topic Response to a loss of shutdown margin while refueling

Refueling is in progress on Unit 2. RCS boron concentration has been verified to be 1990 ppm (two samples analyzed).

The crew is required to ...

suspend core alterations and establish containment integrity.

suspend core alterations and positive reactivity changes, and initiate boration.

suspend core alterations and remove all personnel from the containment building.

remove all personnel from the containment building, establish containment integrity, and initiate boration.

| Answer b Exam Level R Cognitive Lev                 | vel Comprehension Fa        | cility: Braidwood    | ExamDate:      |           | 10/20/00 |
|-----------------------------------------------------|-----------------------------|----------------------|----------------|-----------|----------|
| Tier: Emergency and Abnormal Plant Evolu            | Itions RO Group 3           | SRO Group 3          |                |           |          |
| 036 Fuel Handling Incidents                         |                             |                      |                |           |          |
| AK1. Knowledge of the operational implicat          | ions of the following conce | pts as they apply to | Fuel Handling  | Incidents | :        |
| AK1.02 SDM                                          |                             |                      |                | 3         | .4 3.8   |
| Explanation of Cb <2000 ppm actions of TS<br>Answer | 3.9.1 Condition A required  |                      |                |           |          |
| Reference Title                                     | Facility Reference Numb     | er Section           | Page Number(s) | Revision  | L. O.    |
| COLR (TRM)                                          | NDIT NFM9900022             | 2.8                  | 14             | Cycle 8   |          |
| Boron Concentration Tech Specs                      | 3.9.1                       | A                    | 3.9.1-1        | Amend     |          |
|                                                     |                             |                      |                | 98        | J        |
| Fuel Handling LP                                    | 11-FC-XL-01 (52)            |                      | 29             | 6         | 7        |
| Material Required for Examination                   |                             |                      |                |           |          |
| Question Source:                                    | Question Mod                | dification Method:   |                |           |          |
| Question Source Comments:                           |                             |                      |                |           |          |
| Record Number: 94 RO Number: 74                     | SRO Number:                 |                      |                |           |          |

| Question Topic Actions to Fuel Handling equip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ment during a fuel handling           | incident.        |                                        |          |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------|----------------------------------------|----------|----------|
| The following plant conditions exist:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                       |                  |                                        |          |          |
| A fuel concertible has just have not                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                       |                  |                                        |          |          |
| - A fuel assembly has just been fer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | noved from the core.                  | fueling covity   |                                        |          |          |
| is reported to be a foot below nor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | mal and dropping at a                 | visible rate     | level                                  |          |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | indiana aropping at a                 | violato raco.    |                                        |          |          |
| Which of the following is the preferred of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | course of action?                     |                  | ······································ |          |          |
| Stop the refuel movement at the cu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | urrent location in transi             | t to the upend   | ler.                                   |          |          |
| Place the fuel assembly back into the fuel back into the fuel assembly back into the fuel assembly back into the fuel back into | the reactor vessel.                   |                  |                                        |          |          |
| Place the fuel assembly in the upe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | nder and lower it to the              | e horizontal p   | osition.                               |          |          |
| a. Position the mast over the deepest                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | t part of the cavity and              | lower the ass    | embly to the                           | bottom   |          |
| Answer b Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Memory                                | y: Braidwood     | ExamDate:                              |          | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ons RO Group 3 SF                     | RO Group 3       |                                        |          |          |
| 036 Fuel Handling Incidents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | · · · · · · · · · · · · · · · · · · · |                  | · · · · · · · · · · · · · · · · · · ·  |          | ]        |
| AK2. Knowledge of the interrelations between                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Fuel Handling Incidents an            | d the following: |                                        |          |          |
| AK2.01 Fuel handling equipment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                       |                  |                                        | 2        | .9 3.5   |
| Explanation of Incorrect because not defined as                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | s "Safe Locations" per step           | 4.               |                                        |          |          |
| Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Facility Reference Number             | Section          | Page Number(s)                         | Revision | L. O.    |
| Refueling Cavity or Spent Fuel Pool Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1BwOA REFUEL-2                        | Step 2,4         | 3,6                                    | 56       |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       | faa              | []                                     |          | []       |
| Refueling Cavity - SFP Low Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | [11-OP-XL-29                          |                  | 4                                      | 8        | 3        |
| Material Penuired for Examination                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ]                                     |                  |                                        |          |          |
| Question Source: New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Question Modific                      | ation Method:    |                                        |          | ]        |
| Question Source Comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                       |                  |                                        |          | ]        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                       |                  |                                        |          |          |

| Question Topic Determine the desired RCS ter                                                                              | mperature for depressuriza                                            | tion (maintain s               | ubcooling)                             |                     |                                       |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------|----------------------------------------|---------------------|---------------------------------------|
| A SGTR has occurred on Unit 1. Curre                                                                                      | ent conditions are:                                                   |                                |                                        |                     |                                       |
| - RCS pressure 1350<br>- RCS temperature (CETCs) 5450                                                                     | psig<br>F                                                             |                                |                                        |                     |                                       |
| - SG 1B has been confirmed as the                                                                                         | SG with the rupture.                                                  | ) 940 psig                     | (C) 940 ps                             | sig (D)             |                                       |
| While performing the steps of 1BwEP-3<br>ALL available copies of the procedure I<br>temperatures for determining RCS cool | 8, "Steam Generator T<br>nad an illegible page.<br>down temperatures. | ube Rupture'<br>This page co   | ', the Unit Sup<br>ontained the re     | pervisor<br>equired | found                                 |
| The US directs you to use the steam ta with an allowance of 50° F for subcoolin                                           | bles to determine the ng.                                             | required RCS                   | S (core exit) te                       | emperat             | ture                                  |
| The required core exit temperature afte                                                                                   | r the RCS cooldown is                                                 | S                              |                                        |                     |                                       |
| ≥ 513°F                                                                                                                   |                                                                       |                                |                                        |                     |                                       |
| ▶ 518°F                                                                                                                   |                                                                       |                                |                                        |                     |                                       |
| 534°F                                                                                                                     |                                                                       |                                |                                        |                     |                                       |
| <b>d</b> 538°F                                                                                                            |                                                                       |                                |                                        |                     |                                       |
| Answer a Exam Level B Cognitive Level                                                                                     | Application Facilit                                                   | y: Braidwood                   | ExamDate:                              |                     | 10/20/00                              |
| Tier: Emergency and Abnormal Plant Evolutio                                                                               | ns RO Group 2 Si                                                      | RO Group 2                     |                                        |                     |                                       |
| 038 Steam Generator Tube Rupture                                                                                          |                                                                       |                                |                                        |                     |                                       |
| EK1. Knowledge of the operational implication                                                                             | s of the following concepts                                           | as they apply t                | o Steam Genera                         | tor Tube            | Rupture:                              |
| EK1.01 Use of steam tables                                                                                                |                                                                       |                                |                                        | 3                   | 3.1 3.4                               |
| Explanation of Answer 01145 psig has a saturation temporal on 25° F subcooling; use of 1350                               | erature of 563° F - 50° F (s<br>) psig; addition of 15 psi as         | ubcooling) = 51<br>correction. | 3° F. Other ans                        | wers are            | based                                 |
| Reference Title                                                                                                           | Facility Reference Number                                             | Section                        | Page Number(s)                         | Revision            | L. O.                                 |
| Steam Generator Tube Rupture                                                                                              | 1BwEP-3                                                               | Step 13                        | 20                                     | WOG1                |                                       |
| ABB Steam Tables                                                                                                          | Steam Tables                                                          | Table 2                        | 12                                     | 1967                |                                       |
| ILT Simulator Phase, Steam Generator Tube                                                                                 | 11-EP-XL-04                                                           | II.B.13                        | 13                                     | 12                  | 1.a                                   |
| Material Required for Examination                                                                                         |                                                                       | ·                              | ······································ |                     | · · · · · · · · · · · · · · · · · · · |
| Question Source: Facility Exam Bank                                                                                       | Question Modifie                                                      | cation Method:                 |                                        |                     |                                       |
| Question Source Comments: 1997 Braidwood NRC                                                                              | Exam                                                                  |                                |                                        |                     |                                       |
| Percent Numbers 06 BO Numbers 76                                                                                          | RO Number 72                                                          |                                |                                        |                     |                                       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | icuum duning low power op                                                                                                                                | perations with roo                                                                                       | ls in manual                                                         |                                                             | j. j                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------|
| The following plant conditions exist:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                          |                                                                                                          |                                                                      |                                                             |                             |
| <ul> <li>An initial plant startup is in progres</li> <li>The reactor is initially at 13% powers</li> <li>The Main Turbine is at 600 rpm.</li> <li>Trips associated with Permissive I</li> <li>Fouling of the circ water traveling</li> <li>Condenser vacuum decreases to</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                            | ss, per 1BwGP 100-3,<br>er.<br>P-10 have been block<br>screens has caused a<br>indicate 7.0 inches Hg                                                    | , from a refuel<br>ed.<br>a reduction in<br>g absolute.                                                  | ing outage.<br>condenser C\                                          | N flow.                                                     | opt                         |
| The reactor will trip due to a turbin                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | o trip                                                                                                                                                   |                                                                                                          |                                                                      |                                                             |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | e unp.                                                                                                                                                   |                                                                                                          |                                                                      |                                                             | J                           |
| The reactor will trip on NIS IR FLU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | JX HI Setpoint.                                                                                                                                          |                                                                                                          | *                                                                    |                                                             |                             |
| RCS temperature will increase unti                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | il steam dumps actuat                                                                                                                                    | e.                                                                                                       |                                                                      |                                                             |                             |
| RCS temperature will increase unti                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | il Steam Generator P(                                                                                                                                    | ORVs actuate                                                                                             | • ,                                                                  |                                                             |                             |
| Answer d Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Application Facili                                                                                                                                       | ity: Braidwood                                                                                           | ExamDate:                                                            |                                                             | 10/20/00                    |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ons RO Group 1 S                                                                                                                                         | RO Group 1                                                                                               |                                                                      |                                                             |                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                          |                                                                                                          |                                                                      |                                                             |                             |
| 051 Loss of Condenser Vacuum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                          |                                                                                                          |                                                                      |                                                             |                             |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | lowing as they apply to Lo                                                                                                                               | ss of Condenser                                                                                          | Vacuum:                                                              |                                                             |                             |
| 051Loss of Condenser VacuumAA1.Ability to operate and / or monitor the folAA1.04Rod position                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | lowing as they apply to Lo                                                                                                                               | ss of Condenser                                                                                          | Vacuum:                                                              | 2.                                                          | 5* 2.5*                     |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.04       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute                                                                                                                                                                                                                                                                                                                                                                                                                                                 | lowing as they apply to Lo<br>IR Hi Flux trip is block                                                                                                   | ss of Condenser<br>ked. Stean                                                                            | Vacuum:<br>n dumps will not                                          | 2.<br>actuate v                                             | 5*] [2.5*]<br>vhen          |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.04       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title                                                                                                                                                                                                                                                                                                                                                                                                                         | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number                                                                      | ss of Condenser<br>ked. Stean                                                                            | Vacuum:<br>n dumps will not<br>Page Number(s)                        | actuate v<br>Revision                                       | 5* 2.5*<br>vhen             |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.       Ability to operate and / or monitor the fol         AA1.       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title         Loss of Condenser Vacuum                                                                                                                                                                                                                                                                                                                           | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number                                                                      | ss of Condenser<br>ked. Stean<br>Section                                                                 | Vacuum:<br>n dumps will not<br>Page Number(s)                        | 2.1<br>actuate v<br>Revision<br>54                          | 5* [2.5*]<br>vhen           |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.04       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title         Loss of Condenser Vacuum                                                                                                                                                                                                                                                                                                                                                                                        | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number<br>1BwOA SEC-3                                                       | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1                                      | Vacuum:<br>n dumps will not<br>Page Number(s)                        | Cactuate v<br>Revision                                      | 5* 2.5*<br>vhen<br>100      |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title         Loss of Condenser Vacuum         CNDSR VACUUM LOW TURB TRIP                                                                                                                                                                                                                                                                                                                                                       | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number<br>1BwOA SEC-3<br>BwAR 1-18-D4                                       | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1<br>Setpoint                          | Vacuum:<br>n dumps will not<br>Page Number(s)                        | 2.1       actuate v       Revision       54       8         | 5* [2.5*]<br>vhen           |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.04       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title         Loss of Condenser Vacuum         CNDSR VACUUM LOW TURB TRIP         Reactor Protection LP                                                                                                                                                                                                                                                                                                                       | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number<br>1BwOA SEC-3<br>BwAR 1-18-D4<br>I1-RP-XL-02 (61)                   | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1<br>Setpoint                          | Vacuum:<br>n dumps will not<br>Page Number(s)                        | 2.4       actuate v       Revision       54       8       6 | 5* 2.5*<br>vhen<br>LO       |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute         Reference Title         Loss of Condenser Vacuum         CNDSR VACUUM LOW TURB TRIP         Reactor Protection LP         Material Required for Examination                                                                                                                                                                                                                                                                                | lowing as they apply to Loc<br>IR Hi Flux trip is block<br>Facility Reference Number<br>1BwOA SEC-3<br>BwAR 1-18-D4<br>I1-RP-XL-02 (61)                  | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1<br>Setpoint                          | Vacuum:<br>n dumps will not<br>Page Number(s)<br>2<br>1<br>9, 18, 47 | 2.1<br>actuate v<br>Revision<br>54<br>8<br>6                | 5* 2.5*<br>vhen<br>1.0<br>8 |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1       Ability to operate and / or monitor the fol         AA1       Ability to operate and / or monitor the fol         AA1       Ability to operate and / or monitor the fol         AA104       Rod position         Explanation of Answer       Turbine trip is 10"Hg absolute.         >6"Hg absolute       >6"Hg absolute         Loss of Condenser Vacuum       Reference Title         Loss of Condenser Vacuum       CNDSR VACUUM LOW TURB TRIP         Reactor Protection LP       Material Required for Examination         Question Source:       New | lowing as they apply to Lo<br>IR Hi Flux trip is block<br>Facility Reference Number<br>1BwOA SEC-3<br>BwAR 1-18-D4<br>I1-RP-XL-02 (61)<br>Question Modif | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1<br>Setpoint<br>II<br>Ication Method: | Vacuum:<br>n dumps will not<br>Page Number(s)<br>2<br>1<br>9, 18, 47 | 2.1       actuate v       Revision       54       8       6 | 5* 2.5*<br>vhen<br>L.O.     |
| 051       Loss of Condenser Vacuum         AA1.       Ability to operate and / or monitor the fol         AA1.04       Rod position         Explanation of       Turbine trip is 10"Hg absolute.         Answer       >6"Hg absolute         Reference Title         Loss of Condenser Vacuum         CNDSR VACUUM LOW TURB TRIP         Reactor Protection LP         Material Required for Examination         Question Source:         New         Question Source Comments:                                                                                                                                                                                                | IR Hi Flux trip is block<br>Facility Reference Number<br>BwOA SEC-3<br>BwAR 1-18-D4<br>I1-RP-XL-02 (61)<br>Question Modif                                | ss of Condenser<br>ked. Stean<br>Section<br>Note prior to<br>step 1<br>Setpoint<br>II<br>Ication Method: | Vacuum:<br>n dumps will not<br>Page Number(s)<br>2<br>1<br>9, 18, 47 | 2.1<br>actuate v<br>Revision<br>54                          | 5* 2.5*<br>vhen<br>1.0<br>8 |

| Question Topic Autostart signals to AF LO pur                                                                                                           | ps on a loss of main                                               | feedwater                                                       |                                                                   |                                     | ]                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------|----------------------------|
| While at 35% power, a main feed water<br>exceed the hi-hi level setpoint. The read<br>setpoint. Assuming NO operator action<br>1 minute after the trip? | regulating valve<br>ctor trips; howeve<br>is taken, how ma         | fails open caus<br>r, NO SG level<br>ny AF pump Lu              | ing the affected<br>drops below the<br>ibe Oil Pumps w            | SG leve<br>e LO-LC<br>/ill be ru    | el to<br>Ievel<br>nning    |
| a. None.                                                                                                                                                |                                                                    |                                                                 |                                                                   |                                     |                            |
| One.                                                                                                                                                    |                                                                    |                                                                 |                                                                   |                                     |                            |
| c. Two.                                                                                                                                                 |                                                                    | ······································                          |                                                                   |                                     |                            |
| a. Three.                                                                                                                                               |                                                                    |                                                                 |                                                                   |                                     |                            |
| Answer a Exam Level B Cognitive Level                                                                                                                   | Comprehension                                                      | Facility: Braidwood                                             | ExamDate:                                                         |                                     | 10/20/00                   |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                                             | ns RO Group                                                        | 2 SRO Group                                                     | 2                                                                 |                                     |                            |
| 054 Loss of Main Feedwater                                                                                                                              |                                                                    |                                                                 |                                                                   |                                     | ]                          |
| AA1. Ability to operate and / or monitor the foll                                                                                                       | owing as they apply I                                              | o Loss of Main Fe                                               | edwater:                                                          |                                     |                            |
| AA1.03 AFW auxiliaries, including oil cooling w                                                                                                         | ater supply                                                        |                                                                 |                                                                   | 3                                   | .5 3.7                     |
| Explanation of<br>Answer<br>No auto start signals are present<br>would be correct if there was a n<br>be correct if there was a UV on E<br>the B pump.  | to the AF pumps the<br>ormal autostart signa<br>SF Bus 141. "C" wo | refor there are no<br>I (Both Aux LO an<br>uld be correct if th | auto starts for the L<br>d 1Gear Box LO Pu<br>ere was just an aut | -O pumps<br>ump). "B"<br>ostart sig | s. "D"<br>'would<br>nal to |
|                                                                                                                                                         | Facility Reference Nu                                              | mber Section                                                    | Page Number(s)                                                    | Revision                            | L. O.                      |
| Securing the Auxiliary Feedwater Sys after                                                                                                              | 1BwOP AF-2                                                         | E.2                                                             | 1                                                                 | 4E2                                 |                            |
| AFW System                                                                                                                                              | 11-AF-XL-01 (2                                                     | 26) II.A                                                        | 4-6, 12, 13                                                       | 9                                   | 5, 6                       |
|                                                                                                                                                         |                                                                    |                                                                 |                                                                   |                                     |                            |
| Material Required for Examination                                                                                                                       |                                                                    |                                                                 |                                                                   |                                     |                            |
| Question Source: New                                                                                                                                    | Question                                                           | Modification Method:                                            |                                                                   |                                     |                            |
| Question Source Comments:                                                                                                                               |                                                                    |                                                                 |                                                                   |                                     |                            |
| Record Number: 98 RO Number: 78 S                                                                                                                       | RO Number: 74                                                      |                                                                 |                                                                   |                                     |                            |

| Question Topic Identify indications of a feedline                                                                                                    | break inside cor                           | ntainment.                                    |                                                                         |                                        |           |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------|----------------------------------------|-----------|----------|
| Given the following plant conditions on                                                                                                              | Unit 1:                                    |                                               |                                                                         |                                        |           |          |
| - Reactor power is 90%.<br>- RCS Tave is stable at 579°F on all 4 I<br>- RCS pressure is stable at 2235 psig.<br>- Containment Pressure is INCREASIN | - 1C SG<br>oops 1C SG<br>- 1C SG<br>G 1C S | G Feed F<br>G Main F<br>G pressu<br>G level i | low is pegged<br><sup>-</sup> W Reg Valve<br>re is STABLE<br>is DECREAS | d HIGH.<br>e is full OPEN<br>ING.      | 1.        |          |
| Which of the following events is in prog                                                                                                             | ress?                                      |                                               |                                                                         |                                        |           |          |
| Main FW Reg Valve failed OPEN.                                                                                                                       |                                            |                                               |                                                                         |                                        |           |          |
| E Feed Flow Indicator failed HIGH.                                                                                                                   |                                            |                                               |                                                                         |                                        |           |          |
| Feed Line Break INSIDE Containm                                                                                                                      | ent.                                       |                                               |                                                                         | ······································ |           |          |
| Main Feed Pump trip.                                                                                                                                 |                                            |                                               |                                                                         |                                        |           |          |
| Answer C Exam Level B Cognitive Level                                                                                                                | Comprehensior                              | n Facility                                    | : Braidwood                                                             | ExamDate:                              |           | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                         | ns RO Group                                | 2 SF                                          | C Group 2                                                               |                                        |           |          |
| 054 Loss of Main Feedwater                                                                                                                           |                                            |                                               |                                                                         |                                        |           |          |
| AK1. Knowledge of the operational implication                                                                                                        | s of the following                         | concepts                                      | as they apply to                                                        | Loss of Main F                         | eedwatei  | :        |
| AK1.01 MFW line break depressurizes the S/G                                                                                                          | (similar to a ste                          | am line bre                                   | eak)                                                                    |                                        | 4         | .1 4.3   |
| Answer A is wrong because 1C SG level because feed flow would not be p                                                                               | is decreasing. B<br>begged.                | is wrong b                                    | because FRV wo                                                          | ould not be full c                     | pen. D is | wrong    |
| Reference Title und                                                                                                                                  | Facility Reference                         | e Number                                      | Section                                                                 | Page Number(s)                         | Revision  | L. O.    |
| Condensate & Feedwater LP                                                                                                                            | 11-CD-XL-01                                | (25)                                          | All                                                                     | All                                    | 12        | 6,11     |
| E-2 LP                                                                                                                                               | I1-EP-XL-03                                |                                               | 1                                                                       | 1-4                                    | 10        | 4        |
|                                                                                                                                                      |                                            |                                               |                                                                         |                                        |           |          |
| Material Required for Examination                                                                                                                    |                                            |                                               |                                                                         |                                        |           |          |
| Question Source: Facility Exam Bank                                                                                                                  | Ques                                       | tion Modific                                  | ation Method:                                                           |                                        |           |          |
| Question Source Comments: 1996 Braidwood NRC E                                                                                                       | Exam RO Question #                         | 79 SRO Que                                    | estion #83                                                              |                                        |           |          |
| Record Number: 99 RO Number: 79 S                                                                                                                    | RO Number: 75                              | 5                                             |                                                                         |                                        |           |          |

-

| Question Topic Determination of what alterna                           | te power will be supplied to l                                                           | busses following     | a loss of DC Bu  | us 113.    |          |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------|------------------|------------|----------|
| Given the following plant conditions or                                | n Unit 1:                                                                                |                      |                  | ·          | ]        |
| 1000/                                                                  |                                                                                          |                      |                  |            |          |
| - 100% reactor power.                                                  | C Due 112 europhy fueer                                                                  | to blow              |                  |            |          |
| - The reactor was manually tripped                                     | l due to adverse secon                                                                   | dary transient       | te               |            |          |
| - One minute after performing the                                      | immediate action steps                                                                   | of 1BwEP-0           | "Reactor Trip    | or         |          |
| Safety Injection", an operator was                                     | s dispatched to open th                                                                  | e PMG outpu          | t Breaker.       |            |          |
|                                                                        |                                                                                          |                      |                  |            |          |
| After the PMG output breaker is opene                                  | ed, Bus 143 will be                                                                      | and Bus              | 144 will be      | •          |          |
| a energized                                                            | energized                                                                                | ,,,,,,,,             | ·                |            |          |
| <b>b</b> energized                                                     | de-energized                                                                             |                      |                  |            |          |
| de-energized                                                           | energized                                                                                |                      |                  |            |          |
| de-energized                                                           | de-energized                                                                             |                      |                  |            |          |
| Answer C Exam Level S Cognitive Leve                                   | Memory Facilit                                                                           | <b>y:</b> Braidwood  | ExamDate:        |            | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evoluti                             | ons RO Group 2 SI                                                                        | RO Group 2           |                  |            |          |
| 058 Loss of DC Power                                                   |                                                                                          |                      |                  |            | ]        |
| AA2. Ability to determine and interpret the fol                        | lowing as they apply to Loss                                                             | s of DC Power:       |                  |            |          |
| AA2.01 That a loss of dc power has occurred                            | ; verification that substitute                                                           | power sources ł      | nave come on lir | ie 3       | .7 4.1   |
| Answer Control Power to Bus 143 is DC swap. Question verifies expected | Bus 113 Control Power to Bus 113 Control Power to Bus 113 Control Power supplies online. | Bus 144 is DC        | Bus 114. There   | e is no AL | ITO DC   |
| Reference Title                                                        | Facility Reference Number                                                                | Section              | Page Number(s)   | Revision   | L. O.    |
| Loss of DC Bus                                                         | 1BwOA ELEC-1                                                                             | Attachment B         | 26,39            | 55B        |          |
| r                                                                      |                                                                                          | & C                  |                  | ,          | ,,       |
| 125v DC Power Systems                                                  | 11-DC-XL-01 (8a)                                                                         | Att. 1               | 39, 43           | 6          | 3        |
|                                                                        |                                                                                          |                      |                  |            |          |
| Material Required for Examination                                      |                                                                                          | and a set of the set | [                |            |          |
| Question Source Comments:                                              | Question Modifie                                                                         | auon wethod:         | L                |            |          |
| Record Number: 100 RO Number:                                          | SRO Number: 76                                                                           | ······               |                  |            |          |

| Question Topic             | Automatic isolation of Liq                            | uid Release                              |                                       |                 |                |           |          |
|----------------------------|-------------------------------------------------------|------------------------------------------|---------------------------------------|-----------------|----------------|-----------|----------|
| Which of the               | following signals will o                              | cause the Radwast                        | e Relea                               | se Tank Pum     | o (0WX53P)     | to trip?  |          |
| <sup>a.</sup> High rad     | iation condition on OF                                | PR01J "Liquid Radv                       | vaste."                               |                 |                |           |          |
| b. Low flow                | r from the Circ Water                                 | system.                                  | · · · · · · · · · · · · · · · · · · · |                 |                |           |          |
| c. Low leve                | el of 16% in the Radwa                                | aste Release Tank.                       | · · · · · · · · · · · · · · · · · · · |                 |                |           |          |
| d. High lev                | el of 90% in the Rege                                 | neration Waste Dra                       | iin Tank                              | •               |                |           |          |
| Answer <sub>C</sub> E      | xam Level B Cognitive                                 | Level Memory                             | Facilit                               | y: Braidwood    | ExamDate:      |           | 10/20/00 |
| Tier: Emerger              | ncy and Abnormal Plant Ev                             | olutions RO Group                        | 2 SF                                  | RO Group 1      |                |           |          |
| 059 Ad                     | ccidental Liquid Radwaste                             | Release                                  |                                       |                 |                |           | ]        |
| AK3. Knowled               | ge of the reasons for the f                           | ollowing responses as f                  | they apply                            | to Accidental L | quid Radwaste  | Release:  | ;        |
| AK3.01 Termin              | nation of a release of radio                          | active liquid                            |                                       |                 |                | 3         | .5 3.9   |
| Explanation of (<br>Answer | 0PR01J closes 0WX353 ar<br>Naste Drain Tank gives hig | nd 0WX896. Low Circ V<br>gh level alarm. | Vater flow                            | does not affect | the pump. 90%  | in the Re | gen      |
| The share we will be       | Reference Title                                       | Facility Reference                       | e Number                              | Section         | Page Number(s) | Revision  | L. O.    |
| Radwaste Relea             | ase Tank Transfer to the                              | BwOP WX-173                              |                                       | E               | 1              | 2E1       |          |
| Regeneration W             | laste Drain Tank                                      |                                          |                                       |                 |                |           |          |
| Liquid Radwast             | e                                                     | BwAR 1-0PR01                             | J                                     | В               | 1              | 0         |          |
| Liquid Radwast             | 8                                                     | 11-CM-XL-01                              | (48a)                                 | []              | 9              | 0         | 4        |
| Material Required          | for Examination                                       |                                          |                                       |                 |                |           |          |
| Question Source:           | New                                                   | Quest                                    | tion Modific                          | ation Method:   |                |           |          |
| Question Source (          | Comments:                                             |                                          |                                       |                 |                |           |          |
| Record Number:             | 101 RO Number: 8                                      | 0 SRO Number: 77                         |                                       |                 |                |           |          |

| Question Topic Waste Gas Decay Tank Releas                                            | ie                                                        |                                   |                                |                    | ]        |
|---------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------|--------------------------------|--------------------|----------|
| A waste gas decay tank release is in pro<br>the release could result in a release out | ogress. Which of the fo<br>side of permitted limits       | ollowing malfus assuming no       | unctions occu<br>o operator ac | urring du<br>tion? | uring    |
| Loss of instrument air to OGWRCV                                                      | 014 "Gas DecayTank                                        | Vent Stack E                      | ffluent Isolati                | ion Valv           | e."      |
| 🖾 Gas Decay Tank Cover Gas Press                                                      | ure reaches .7 psig.                                      |                                   |                                |                    |          |
| COPR02J "Waste Gas Processing R                                                       | ad Monitor" fails low.                                    |                                   |                                |                    |          |
| In service Gas Decay Tank pressur                                                     | re reaches 95 psig.                                       |                                   |                                |                    | ]        |
| Answer C Exam Level B Cognitive Level                                                 | Comprehension Facility                                    | Braidwood                         | ExamDate:                      |                    | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolution                                          | ns RO Group 2 SF                                          | C Group 2                         |                                |                    |          |
| 060 Accidental Gaseous Radwaste Re                                                    | lease                                                     |                                   |                                |                    |          |
| AA1. Ability to operate and / or monitor the follo                                    | owing as they apply to Acc                                | idental Gaseous                   | Radwaste Rele                  | ease:              |          |
| AA1.01 Area radiation monitors                                                        |                                                           |                                   |                                | 2                  | .8 3.0   |
| A is wrong. Valve fails closed. B                                                     | is wrong7 psig setpoint fo<br>ong. Do not release from in | or N2 regulator to service Gas De | o open. C is cor<br>cay Tank.  | rect. Valv         | 'e       |
| educates (1998) Reference Title                                                       | Facility Reference Number                                 | Section                           | Page Number(s)                 | Revision           | L. O.    |
| Annunciator Response                                                                  | 1BwAR 3-OPR02J                                            |                                   | 1                              | 2                  |          |
| Gaseous Radwaste                                                                      | II-PS-XL-01                                               | 11                                | 13                             | 0                  | 10.d     |
| ·                                                                                     |                                                           |                                   |                                |                    |          |
| Material Required for Examination                                                     | · · · · · · · · · · · · · · · · · · ·                     |                                   |                                |                    |          |
| Question Source: New                                                                  | Question Modific                                          | ation Method:                     |                                |                    |          |
| Question Source Comments: Vogtle 1999 NRC Exam                                        | n                                                         |                                   |                                |                    |          |
| Record Number: 102 RO Number: 81 S                                                    | RO Number: 78                                             |                                   |                                |                    |          |

| The following plant conditions exist:         0B Gas Decay Tank is now in service.         0E Gas Decay Tank is in Standby.         0A Gas Decay Tank was in service and is currently isolated.         Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig. 0BwOA RAD-3 was entered and the 0A Gas Decay Tank was taken off-line and isolated.         Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         47 psig.         58 psig.         62 psig.         73 psig.         Answer:       b         Exambles:       10/20/00         Inf:       Emergency and Abnormal Plant Evolutions         RO Group       2         060       'Accidental Gaseous Radwaste Release         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6 (2.9*         Explanation of 88 psig + 15 psig = 103. 103 x (5x10e4)/(7x10e4) = 73.57. 73.57 - 15 = 58.57       Reterence Title                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0B Gas Decay Tank is now in service.         0E Gas Decay Tank is in Standby.         0A Gas Decay Tank was in service and is currently isolated.         Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig.         0B Gas Decay Tank was in service and is currently isolated.         Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig.         0B Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         47 psig.         58 psig.         62 psig.         73 psig.         Answer b Exam Level B Cognitive Level Comprehension Facility Braidwood Exambate 10/20/00         Item Tempency and Abnormal Plant Evolutions RO Group 2         0C0       Accidental Gaseous Radwaste Release         AK2_ Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01 ARM system, including the normal radiation-level indications and the operability status       2.6 (2.9*         Explanation of Respire 105 sig = 103. 103 x (5x10e4)/(7x10e4) = 73.57. 73.57 - 15 = 58.57         Reference Title       Facility Reference Number                                                  |
| Previously while the 0A Gas Decay Tank was in service, Chemistry reported that the curie content was 7x10E4 curies with a pressure of 88 psig. 0BwOA RAD-3 was entered and the 0A Gas Decay Tank was taken off-line and isolated.         Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         Image: Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         Image: Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         Image: Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         Image: Tank pressure is </td |
| Transferring the 0A Gas Decay Tank to another Gas Decay Tank is required until 0A Gas Decay Tank pressure is         a. 47 psig.         b. 58 psig.         c. 62 psig.         d. 73 psig.         Answer       b. Exam Level B. Cognitive Level Comprehension Facility: Braidwood ExamDate: 10/20/00         Tier:       Emergency and Abnormal Plant Evolutions RO Group 2         060       'Accidental Gaseous Radwaste Release         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6 (2.9*)         Explanation of Reference Title       Facility Reference Number       Section       Page Number(s) Kevision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| a.       47 psig.         b.       58 psig.         c.       62 psig.         d.       73 psig.         Answer       b       Exam Level         b.       Exam Level       B         Cognitive Level       Comprehension       Facility:         Braidwood       ExamDate:       10/20/00         Tier:       Emergency and Abnormal Plant Evolutions       RO Group       2         060       Accidental Gaseous Radwaste Release       2         060       Accidental Gaseous Radwaste Release       2         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of<br>Answer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                |
| b.       58 psig.         c.       62 psig.         d.       73 psig.         Answer       b       Exam Level         B       Cognitive Level       Comprehension         Facility:       Braidwood       ExamDate:         10/20/00       Tier:       Emergency and Abnormal Plant Evolutions       RO Group       2         060       Accidental Gaseous Radwaste Release       2         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6         Explanation of Answer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Construction       Construction       Facility:       Braidwood       ExamDate:       10/20/00         Answer       b       Exam Level       B       Cognitive Level       Comprehension       Facility:       Braidwood       ExamDate:       10/20/00         Tier:       Emergency and Abnormal Plant Evolutions       RO Group       2       SRO Group       2         060       Accidental Gaseous Radwaste Release       2       060       Accidental Gaseous Radwaste Release         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:       2.6       2.9*         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Misser       Eaclify Reference Number       Section       Page Number(s)       Revision       L. O.                                                                                                                                                                                                                                                                                                                                                                                 |
| d.       73 psig.         Answer       b       Exam Level       B       Cognitive Level       Comprehension       Facility:       Braidwood       ExamDate:       10/20/00         Tier:       Emergency and Abnormal Plant Evolutions       RO Group       2       SRO Group       2         060       Accidental Gaseous Radwaste Release       2       SRO Group       2         060       Accidental Gaseous Radwaste Release       2         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of Ariswer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Ariswer       Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Answer       b       Exam Level       B       Cognitive Level       Comprehension       Facility:       Braidwood       ExamDate:       10/20/00         Tier:       Emergency and Abnormal Plant Evolutions       RO Group       2       SRO Group       2         060       Accidental Gaseous Radwaste Release       2       SRO Group       2         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:       2.6       2.9*         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of Answer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Masser       Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Intergency and Abhormal Plant Evolutions       Ro Group       2         060       Accidental Gaseous Radwaste Release         AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6         Explanation of Answer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| AK2.       Knowledge of the interrelations between Accidental Gaseous Radwaste Release and the following:         AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of Answer       88 psig + 15 psig = 103.       103 x (5x10e4)/(7x10e4) = 73.57.       73.57 - 15 = 58.57         Image: Comparison of Answer       Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L. O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| AK2.01       ARM system, including the normal radiation-level indications and the operability status       2.6       2.9*         Explanation of Answer       88 psig + 15 psig = 103. 103 x (5x10e4)/(7x10e4) = 73.57. 73.57 - 15 = 58.57       73.57 - 15 = 58.57         Image: Comparison of Answer       Reference Title       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Explanation of Answer       88 psig + 15 psig = 103. 103 x (5x10e4)/(7x10e4) = 73.57. 73.57 - 15 = 58.57         Answer       Facility Reference Number       Section       Page Number(s)       Revision       L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Facility Reference Number Section Page Number(s) Revision L.O.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Decay Tank High Activity 0BwOA RAD-3 Attachment A 4 51A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| OA RAD [1-OA-XL-26 [.C. ]3,5 7 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Material Required for Examination 0BwOA RAD-3, Attachment A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Question Source: New Question Modification Method:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Question Topic                                            | Location of emergency shutdow                                                                                   | vn positions on fire in the co                           | ontrol room whic | h requires evac   | uation    |                                               |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------|-------------------|-----------|-----------------------------------------------|
| - You are tl<br>- A fire has<br>- Smoke in<br>- The order | he Unit 1 Unit Supervisor.<br>occurred in the Main Cont<br>the Main Control Room is<br>has been given to evacua | rol Room.<br>growing very heavy.<br>te the control room. |                  |                   | -         |                                               |
| You should c                                              | lirect a reactor trip and go t                                                                                  | to the                                                   |                  |                   |           |                                               |
| <sup>a.</sup> Remote                                      | Shutdown Panel to obtain                                                                                        | plant control.                                           |                  |                   |           |                                               |
| <sup>b.</sup> Reactor                                     | trip breakers to verify Read                                                                                    | ctor Trip.                                               |                  |                   |           |                                               |
| C Eiro Hoz                                                | varda Danal ta obtain plant                                                                                     | oontrol                                                  |                  |                   |           | <b>ا</b> ــــــــــــــــــــــــــــــــــــ |
|                                                           |                                                                                                                 |                                                          |                  |                   |           |                                               |
| d. Auxiliary                                              | Electric Room to align nee                                                                                      | eded instrumentation.                                    |                  |                   |           |                                               |
| Answer a E                                                | xam Level S Cognitive Level                                                                                     | Memory Facility                                          | : Braidwood      | ExamDate:         |           | 10/20/00                                      |
| Tier: Emerger                                             | ncy and Abnormal Plant Evolutio                                                                                 | ns RO Group 1 SR                                         | O Group 1        |                   |           |                                               |
| 067 PI                                                    | ant Fire on Site                                                                                                |                                                          |                  |                   |           |                                               |
| AA2. Ability to                                           | determine and interpret the follo                                                                               | owing as they apply to Plan                              | t Fire on Site:  |                   |           |                                               |
| AA2.13 Need                                               | for emergency plant shutdown                                                                                    |                                                          |                  |                   | 3         | .3 4.4                                        |
| Explanation of Answer                                     | NSO & US go to the RSP. All oth<br>S/D of the reactor.                                                          | er actions performed by ot                               | her operators.   | Plant S/D include | es more t | han the                                       |
|                                                           | Reference Title                                                                                                 | Facility Reference Number                                | Section          | Page Number(s)    | Revision  | L. O.                                         |
| Control Room I                                            | naccessability                                                                                                  | 1BwOA PRI-5                                              | Steps 6,7        | 6                 | 57c       |                                               |
| Control Room I                                            | naccessability LP                                                                                               | 11-OA-XL-16                                              | 11               | 5                 | 5         | 4                                             |
|                                                           |                                                                                                                 |                                                          |                  |                   |           |                                               |
| Material Required                                         | for Examination                                                                                                 |                                                          |                  |                   |           |                                               |
| Question Source:                                          | New                                                                                                             | Question Modific                                         | ation Method:    |                   |           |                                               |
| Question Source (                                         | Comments:                                                                                                       |                                                          |                  |                   |           |                                               |
| Record Number:                                            | 104 RO Number:                                                                                                  | RO Number: 80                                            |                  |                   |           |                                               |

| Question Topic Design peak containment press                                                                           | sure rise                                                                                                                                             |                                                   |                                   |                                       |            |  |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------|---------------------------------------|------------|--|
| Per Tech Spec Basis regarding high co<br>to the highest pressure/leakage out of c                                      | Per Tech Spec Basis regarding high containment pressure, which of the following events could lead to the highest pressure/leakage out of containment? |                                                   |                                   |                                       |            |  |
| 🙇 Design Basis LOCA.                                                                                                   |                                                                                                                                                       |                                                   |                                   |                                       |            |  |
| <b>Design Basis Steam Line Break ins</b>                                                                               | side Containment.                                                                                                                                     |                                                   |                                   |                                       |            |  |
| Inadvertant Containment Spray Init                                                                                     | liation.                                                                                                                                              |                                                   |                                   |                                       |            |  |
| Pressurizer vapor space LOCA.                                                                                          |                                                                                                                                                       |                                                   |                                   |                                       |            |  |
| Answer a Exam Level B Cognitive Level                                                                                  | Memory Facilit                                                                                                                                        | y: Braidwood                                      | ExamDate:                         |                                       | 10/20/00   |  |
| Tier: Emergency and Abnormal Plant Evolutio                                                                            | ns RO Group 1 SF                                                                                                                                      | RO Group 1                                        |                                   |                                       |            |  |
| 069 Loss of Containment Integrity                                                                                      |                                                                                                                                                       |                                                   |                                   |                                       | ]          |  |
| AK1. Knowledge of the operational implication                                                                          | s of the following concepts                                                                                                                           | as they apply to                                  | Loss of Contai                    | nment Int                             | egrity:    |  |
| AK1.01 Effect of pressure on leak rate                                                                                 |                                                                                                                                                       |                                                   |                                   | 2                                     | .6 3.1     |  |
| Explanation of Answer worst case LOCA generates larg initiation would cause pressure to energy release to containment. | er mass and enegy release<br>o decrease, even if all RCF                                                                                              | e than the worst<br><sup>2</sup> seals failed a [ | case SLB. Inac<br>DB LOCA is a la | lvertent C<br>rger mas                | S<br>s and |  |
| Reference Title                                                                                                        | Facility Reference Number                                                                                                                             | Section                                           | Page Number(s)                    | Revision                              | L. O.      |  |
| FR-Z Containment                                                                                                       | 11-FR-XL-05                                                                                                                                           | 11                                                | 2                                 | 1                                     | 3          |  |
| FR-Z.1, Response to High CTMT Pressure                                                                                 | Background Document                                                                                                                                   | 2                                                 | 3                                 | WOGI                                  |            |  |
|                                                                                                                        |                                                                                                                                                       | · • • • • • • • • • • • • • • • • • • •           | L                                 | С                                     |            |  |
| Technical Specifications                                                                                               | 3.6.4                                                                                                                                                 | Basis                                             | B.3.6.4-1                         | 0                                     |            |  |
| Material Required for Examination                                                                                      |                                                                                                                                                       |                                                   | ······                            | · · · · · · · · · · · · · · · · · · · |            |  |
| Question Source: II New                                                                                                | Question Modifie                                                                                                                                      | cation Method:                                    |                                   |                                       |            |  |
| Question Source Comments:                                                                                              |                                                                                                                                                       |                                                   |                                   |                                       |            |  |
| Record Number: 105 RO Number: 83                                                                                       | SRO Number: 81                                                                                                                                        |                                                   |                                   |                                       | J          |  |

| Question Topic High level action steps in FR-Z.        | 1                                  | · · · · · · · · · · · · · · · · · · · |                      |           |          |
|--------------------------------------------------------|------------------------------------|---------------------------------------|----------------------|-----------|----------|
| Which of the following is NOT a high lev<br>Pressure?" | el action of 1BwFR-Z               | 1, "Response                          | e to Containm        | nent Hig  | h        |
| a. Verify containment isolation.                       |                                    |                                       |                      |           |          |
| <b>b</b> Verify containment heat removal.              |                                    |                                       |                      |           | ]        |
| Reduce heat input to containment.                      |                                    |                                       |                      |           |          |
| d. Check for and isolate faulted steam                 | n generator.                       |                                       |                      |           |          |
| Answer C Exam Level B Cognitive Level                  | Memory Facilit                     | y: Braidwood                          | ExamDate:            |           | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolutio            | ns RO Group 1 SF                   | RO Group 1                            |                      |           |          |
| 069 Loss of Containment Integrity                      |                                    |                                       |                      |           | ]        |
| AK3. Knowledge of the reasons for the following        | ng responses as they apply         | to Loss of Cont                       | tainment Integrit    | ty:       |          |
| AK3.01 Guidance contained in EOP for loss of           | containment integrity              |                                       |                      | 3.8       | 3* 4.2   |
| Explanation of Major action categories are Verif       | y Cnmt Isolation and Heat          | Removal; Check                        | for and Isolate      | Faulted S | SG.      |
| Reference Title                                        | Facility Reference Number          | Section                               | Page Number(s)       | Revision  | L. O.    |
| ERG                                                    | Background Documents               | FR-Z.1                                | 5                    | WOG1      | []       |
|                                                        |                                    |                                       |                      | C         |          |
| FR-Z Containment LP                                    | I1-FR-XL-05                        | 11                                    | 2                    | <u>'1</u> | 2        |
|                                                        |                                    |                                       |                      |           |          |
| Material Required for Examination                      |                                    |                                       |                      |           |          |
| Question Source: Facility Exam Bank                    | Question Modific                   | ation Method:                         | Editorially Modified |           | ]        |
| Question Source Comments: Question # FR-Z 001 E        | Distractors modified due to Rev 10 | <b>C</b> .                            |                      |           |          |
| Record Number: 106 RO Number: 84 S                     | RO Number: 82                      |                                       |                      |           |          |

| Question Topic Entry conditions for FR-C.1         |                             |                 |                |          |          |
|----------------------------------------------------|-----------------------------|-----------------|----------------|----------|----------|
| 2BwFR-C.1, "Inadequate Core Cooling"               | must be entered if CI       | ETCs are grea   | ater than or e | qual to. | ••       |
| 200°F ONLY.                                        |                             |                 |                |          |          |
| 1200°F ONLY.                                       |                             |                 |                |          |          |
| 700°F AND RCS Subcooling Unacc                     | ceptable.                   |                 |                |          |          |
| 1200°F AND RCS Subcooling Unac                     | cceptable.                  |                 |                |          |          |
| Answer b Exam Level B Cognitive Level              | Memory Facilit              | y: Braidwood    | ExamDate:      |          | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolution       | ns RO Group 1 SF            | RO Group 1      |                |          |          |
| 074 Inadequate Core Cooling                        |                             |                 |                |          | ]        |
| EA1. Ability to operate and / or monitor the follo | owing as they apply to Inac | dequate Core Co | ooling:        |          | ]        |
| EA1.13 Subcooling margin indicators                |                             |                 |                | 4        | .3 4.6   |
| Explanation of Only when CETCs >1200°F do y        | ou enter FR-C.1             |                 |                |          |          |
| Reference Title                                    | Facility Reference Number   | Section         | Page Number(s) | Revision | L. O.    |
| Core Cooling                                       | 1BwST-2                     | N/A             | 1              | WOG1     | ·]       |
| ,                                                  |                             |                 | ,. <u></u>     | C 1C     |          |
|                                                    |                             |                 |                |          |          |
|                                                    |                             |                 |                |          |          |
| Material Required for Examination                  |                             |                 |                |          |          |
| Question Source: New                               | Question Modific            | ation Method:   |                |          |          |
| Question Source Comments:                          |                             |                 |                |          |          |
| Record Number: 107 RO Number: 85 S                 | RO Number: 83               |                 |                |          |          |

| Question Topic                                                                       | calculation of RCS Su                                                                                                                | bcooling                                                              |                           |                                 | ·····                          |           |          |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------|---------------------------------|--------------------------------|-----------|----------|
| The following                                                                        | g plant conditions e                                                                                                                 | xist:                                                                 |                           |                                 |                                |           |          |
| A reactor<br>Reactor<br>Tavg is 5<br>Tcold is a<br>Thot is a<br>Average<br>Pressuria | r trip and loss of off<br>power was initially a<br>531°F.<br>at 527°F.<br>t 534°F.<br>of the ten (10) hotte<br>zer pressure is at 27 | site power occurred.<br>at 100%.<br>est CETC's is 538°F.<br>185 psig. |                           |                                 |                                |           |          |
| Which of the                                                                         | following is the sub                                                                                                                 | cooling that currently exist                                          | sts?                      |                                 |                                |           |          |
| а. 92°F                                                                              |                                                                                                                                      |                                                                       |                           |                                 |                                |           |          |
| <b>b.</b> 102°F                                                                      |                                                                                                                                      |                                                                       | <u></u>                   |                                 | ·····                          |           |          |
| ℃ 111°F                                                                              |                                                                                                                                      |                                                                       |                           |                                 |                                |           |          |
| <sup>d.</sup> 121°F                                                                  |                                                                                                                                      |                                                                       |                           |                                 |                                |           |          |
| Answer c E<br>Tier: Emerger<br>074 In<br>EK1. Knowled                                | xam Level B Cogni<br>ncy and Abnormal Plant<br>adequate Core Cooling<br>dge of the operational in                                    | tive Level Application                                                | Facility<br>1 SR<br>cepts | Braidwood                       | ExamDate:                      | re Coolir | 10/20/00 |
| EK1.01 Metho                                                                         | ods of calculating subco                                                                                                             | oling margin                                                          |                           |                                 |                                | 4         | .3 4.7   |
| Explanation of<br>Answer                                                             | Determine RCS pressur<br>obtain RCS subcooling.                                                                                      | re and obtain temperature from<br>2185 + 15 = 2200  Tsat is 649       | ı grapl<br>9.45°F         | h. Subtract avg<br>649.45 - 538 | of 10 hottest CE<br>= 111.45°F | ETs from  | graph to |
|                                                                                      | Reference Title                                                                                                                      | Facility Reference Nun                                                | nber                      | Section                         | Page Number(s)                 | Revision  | L. O.    |
| Rx trip or SI                                                                        |                                                                                                                                      | 1BwEP-0                                                               |                           | Fig BwEP 0-1                    | 35                             | WOG1      |          |
| EP-0 EP ES-0 I                                                                       | Rx Trip or SI                                                                                                                        | 11-EP-CL-01                                                           |                           | [I].D                           | 21                             | <u> </u>  | 3        |
| Steam Tables                                                                         |                                                                                                                                      |                                                                       | ]                         | · .                             | 12                             |           |          |
| Material Required                                                                    | for Examination                                                                                                                      | Steam Tables                                                          |                           | -                               |                                |           |          |
| Question Source:                                                                     | Facility Exam Bank                                                                                                                   |                                                                       |                           | ation Method:                   |                                |           |          |
| Decend Number                                                                        |                                                                                                                                      |                                                                       |                           |                                 |                                |           | ]        |
| Record Number:                                                                       | 108 KO Number:                                                                                                                       | 80 SKU Number: 84                                                     |                           |                                 |                                |           |          |

| Question Topic                                                                                                      | Rediagnosis                                                                                                                                                                           |                                                                                                                                                                       |                                                                           |                                          |            | ······   |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------|------------|----------|
| A Small Bre<br>While perfor<br>successfully<br>From 2BwE<br>At step 6 of<br>rapidly.<br>The crew no<br>The crew tra | ak LOCA occurred on U<br>ming the Immediate Act<br>performed ALL actions<br>P-0 the crew transitioned<br>2BwEP-1, "Check if ECO<br>otes steam flows on ALL<br>ansitions to 2BwEP ES-0 | nit 2 resulting in a rea-<br>ions of 2BwEP-0, the N<br>of the RNO for verifyin<br>d to 2BwEP-1.<br>CS flow should be redu<br>4 Steam Generators.<br>0.0 "Rediagnosis" | ctor trip/SI.<br>Main Turbine dio<br>Ig a Turbine Trip<br>Iced'' RCS pres | l not trip and t<br>b.<br>sure starts de | the crev   | g        |
| From 2BwE                                                                                                           | P ES-0.0, the crew shou                                                                                                                                                               | Ild transition to                                                                                                                                                     |                                                                           |                                          |            |          |
| a. 2BwEP                                                                                                            | -2, "Faulted Steam Gene                                                                                                                                                               | erator Isolation."                                                                                                                                                    |                                                                           |                                          |            |          |
| <sup>b.</sup> 2BwCA                                                                                                 | -2.1, "Uncontrolled Depr                                                                                                                                                              | ressurization of All SGs                                                                                                                                              | s."                                                                       |                                          |            |          |
| c. 2BwEP                                                                                                            | ES-1.1, "SI Termination                                                                                                                                                               | ."                                                                                                                                                                    |                                                                           |                                          |            |          |
| d 2BwEP                                                                                                             | -0, "Reactor Trip or Safe                                                                                                                                                             | ety Injection."                                                                                                                                                       |                                                                           |                                          |            |          |
| Answer b l<br>Tier: Emerge                                                                                          | Exam Level B Cognitive Level Cognitive Level Cognitive Level Concy and Abnormal Plant Evo<br>Rediagnosis                                                                              | evel Comprehension Fa                                                                                                                                                 | cility: Braidwood SRO Group 1                                             | ExamDate:                                |            | 10/20/00 |
| EA1. Ability to                                                                                                     | o operate and / or monitor the                                                                                                                                                        | e following as they apply to                                                                                                                                          | Rediagnosis:                                                              |                                          |            |          |
| EA1.2 Oper                                                                                                          | ating behavior characteristics                                                                                                                                                        | of the facility.                                                                                                                                                      |                                                                           |                                          | 3          | .3 3.6   |
| Explanation of<br>Answer                                                                                            | Due to the MT not tripping, th<br>ES-0.0 is to ECA-2.1.                                                                                                                               | ne MSIVs were all closed. V                                                                                                                                           | Vith MSIVs closed,                                                        | the proper trans                         | ition from | 1BwEP    |
|                                                                                                                     | Reference Title                                                                                                                                                                       | Facility Reference Numb                                                                                                                                               | er Section                                                                | Page Number(s)                           | Revision   | L. O.    |
| Rediagnosis                                                                                                         |                                                                                                                                                                                       | 1BwEP ES-0.0                                                                                                                                                          | Step 1 RNO                                                                | 2                                        | WOG1       |          |
| Reactor Trip or                                                                                                     | r Safety Injection                                                                                                                                                                    | [11-EP-XL-01                                                                                                                                                          |                                                                           | 26                                       | 13         | 3        |
|                                                                                                                     |                                                                                                                                                                                       |                                                                                                                                                                       |                                                                           |                                          | A          |          |
| Material Required for Examination Copy of EP 0.0 without the entry conditions or notes prior to Step 1.             |                                                                                                                                                                                       |                                                                                                                                                                       |                                                                           |                                          |            |          |
| Question Source                                                                                                     | Question Source: New Question Modification Method:                                                                                                                                    |                                                                                                                                                                       |                                                                           |                                          |            |          |
| Record Number                                                                                                       | 109 <b>RO Number:</b> 87                                                                                                                                                              | SRO Number: 85                                                                                                                                                        |                                                                           |                                          |            | ]        |
| Record Number:                                                                                                      | 109 RO Number: 87                                                                                                                                                                     | SKU Number: 85                                                                                                                                                        |                                                                           |                                          |            |          |

| Question Topic Entry conditions of ES-0.0                                                                   |                             |                |                                       |          | ]        |  |
|-------------------------------------------------------------------------------------------------------------|-----------------------------|----------------|---------------------------------------|----------|----------|--|
| Which of the following is NOT a condition in which a transition to 1BwEP ES-0.0, "Rediagnosis", is allowed? |                             |                |                                       |          |          |  |
| Large Break LOCA, RCS Temperature 563°F, RCS Pressure 1000 psig, PZR Level Off-Scale<br>Low.                |                             |                |                                       |          |          |  |
| Main Steam Line Break inside co                                                                             | ntainment, Containment      | Pressure 23    | psig.                                 |          | ]        |  |
| Main Steam Line Break outside co<br>570 psig, 1D - 590 psig.                                                | ontainment, SG Pressu       | res - 1A - 560 | psig, 1B - 57                         | 70 psig, | 1C -     |  |
| Reactor Trip due to P-14, RCS Te                                                                            | emperature 557°F, RCS       | Pressure 21    | 00 psig, PZR                          | Level 2  | 0%.      |  |
| Answer d Exam Level S Cognitive Leve                                                                        | Comprehension Facilit       | y: Braidwood   | ExamDate:                             |          | 10/20/00 |  |
| Tier: Emergency and Abnormal Plant Evolut                                                                   | ions RO Group 2 SF          | RO Group 1     |                                       |          |          |  |
| E01 Rediagnosis                                                                                             |                             |                |                                       |          |          |  |
| 2.4 Emergency Procedures / Plan                                                                             |                             |                |                                       |          |          |  |
| 2.4.1 Knowledge of EOP entry conditions a                                                                   | and immediate action steps. |                |                                       | 4        | .3 4.6   |  |
| Explanation of SI is required for ES-0.0 Entry                                                              |                             |                | · · · · · · · · · · · · · · · · · · · |          |          |  |
| Reference Title                                                                                             | Facility Reference Number   | Section        | Page Number(s)                        | Revision | L. O.    |  |
| Rediagnosis                                                                                                 | 1BwEP ES-0.0                | В              | 1                                     | Wog      |          |  |
|                                                                                                             |                             |                |                                       | 1C       |          |  |
| EP-0 EP ES-0 Rx Trip or SI                                                                                  | I1-EP-CL-01                 | V              | 26                                    | 13       | 6        |  |
|                                                                                                             |                             |                |                                       |          |          |  |
| Material Required for Examination                                                                           |                             |                |                                       |          | ]        |  |
| Question Source: New                                                                                        | Question Modific            | ation Method:  |                                       |          |          |  |
| Question Source Comments:                                                                                   |                             |                |                                       |          |          |  |
| Record Number: 110 RO Number:                                                                               | SRO Number: 86              |                |                                       |          |          |  |

| Question Topic                                                                     | Parameters used to determine                                                              | RCS Subcooling                        |                 |                | ••• • • • • • • | ······                                |  |  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------|-----------------|----------------|-----------------|---------------------------------------|--|--|
| A small brea                                                                       | A small break LOCA has occurred on Unit 1. The crew has transitioned to 1BwEP-1, "Loss of |                                       |                 |                |                 |                                       |  |  |
| Reactor or Secondary Coolant" and is evaluating SI termination criteria in step 6. |                                                                                           |                                       |                 |                |                 |                                       |  |  |
| Which of the                                                                       | Which of the following is used to determine if adequate core cooling exists?              |                                       |                 |                |                 |                                       |  |  |
| RCS wide range temperature.                                                        |                                                                                           |                                       |                 |                |                 |                                       |  |  |
| ECCS ir                                                                            | njection flow rate.                                                                       | · · · · · · · · · · · · · · · · · · · |                 |                |                 | ]                                     |  |  |
| 💁 RVLIS ii                                                                         | ndication.                                                                                |                                       |                 |                |                 |                                       |  |  |
| d. Subcool                                                                         | ling margin.                                                                              |                                       |                 |                |                 |                                       |  |  |
| Answer d E                                                                         | xam Level S Cognitive Level                                                               | Memory Facility                       | /: Braidwood    | ExamDate:      |                 | 10/20/00                              |  |  |
| Tier: Emerge                                                                       | ncy and Abnormal Plant Evolutio                                                           | ns RO Group 2 SR                      | O Group 1       |                |                 |                                       |  |  |
| E02 S                                                                              | I Termination                                                                             |                                       |                 |                |                 | · · · · · · · · · · · · · · · · · · · |  |  |
| EA2. Ability to                                                                    | determine and interpret the follo                                                         | wing as they apply to SI Te           | ermination:     |                |                 |                                       |  |  |
| EA2.1 Facilit                                                                      | y conditions and selection of app<br>tions.                                               | propriate procedures during           | abnormal and e  | emergency      | 3               | .3 4.2                                |  |  |
| Explanation of Answer                                                              | SI termination requires the verific                                                       | ation of subcooling margin            | per Step 6 of B | wEP 1.         |                 |                                       |  |  |
|                                                                                    | Reference Title                                                                           | Facility Reference Number             | Section         | Page Number(s) | Revision        | L. O.                                 |  |  |
| Loss of Reacto                                                                     | r or Secondary Coolant                                                                    | 1BwEP-1                               | Attachment A    | 26             | WOG1<br>C       |                                       |  |  |
| EP-1 Series LP                                                                     | ,                                                                                         | I1-EP-XL-02                           |                 | 8              | 13              | 1                                     |  |  |
|                                                                                    |                                                                                           |                                       |                 |                |                 |                                       |  |  |
| Material Required                                                                  | for Examination                                                                           |                                       |                 |                |                 |                                       |  |  |
| Question Source:                                                                   | Facility Exam Bank                                                                        | Question Modific                      | ation Method:   |                |                 |                                       |  |  |
| Question Source                                                                    | Comments: 1996 Braidwood NRC I                                                            | Exam RO Question #71 SRO Que          | estion #74      |                |                 |                                       |  |  |
| Record Number:                                                                     | 111 RO Number:                                                                            | RO Number: 87                         |                 |                |                 |                                       |  |  |

| Question Topic Depressurization methods for F                                                                                                                                                          | RCS, Post LOCA                           |                   |                                       |                    | ]         |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------|---------------------------------------|--------------------|-----------|--|--|
| Which of the following describes the methods in order of preference used in 1BwEP ES-1.2, "Post LOCA Cooldown and Depressurization" during the performance of step 10, Depressurize RCS to Refill PZR? |                                          |                   |                                       |                    |           |  |  |
| 🚉 One Pzr PORV, Normal Spray. Au                                                                                                                                                                       | Cone Pzr PORV, Normal Spray. Aux. Spray. |                   |                                       |                    |           |  |  |
| 🚨 One Pzr PORV, Aux. Spray, Norm                                                                                                                                                                       | al Spray.                                |                   |                                       |                    |           |  |  |
| 🖾 Normal Spray, Aux. Spray, One Pz                                                                                                                                                                     | r PORV.                                  |                   |                                       |                    |           |  |  |
| 💁 Normal Spray, One Pzr PORV, Au                                                                                                                                                                       | x. Spray.                                |                   |                                       |                    |           |  |  |
| Answer d Exam Level B Cognitive Level                                                                                                                                                                  | Memory                                   | y: Braidwood      | ExamDate:                             |                    | 10/20/00  |  |  |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                                                           | ons RO Group 2 SF                        | RO Group 2        |                                       |                    |           |  |  |
| E03 LOCA Cooldown and Depressuriz                                                                                                                                                                      | ation                                    |                   |                                       |                    | · · · · ] |  |  |
| 2.1 Conduct Of Operations                                                                                                                                                                              |                                          |                   |                                       |                    |           |  |  |
| 2.1.20 Ability to execute procedure steps.                                                                                                                                                             |                                          |                   |                                       | 4                  | .3 4.2    |  |  |
| Explanation of Procedure specifies Normal spra                                                                                                                                                         | ay then One PZR PORV, ar                 | nd last is Aux. S | pry.                                  |                    |           |  |  |
| Reference Title                                                                                                                                                                                        | Facility Reference Number                | Section           | Page Number(s)                        | Revision           | L. O.     |  |  |
| Post LOCA Cooldown and Depressurization                                                                                                                                                                | 1BwEP ES-1.2                             | Step 10           | 12                                    | WOG1               |           |  |  |
| FP-1 Series I P                                                                                                                                                                                        | 11-FP-XI -02                             | IV                | 28                                    | C                  | 1         |  |  |
|                                                                                                                                                                                                        |                                          |                   |                                       |                    |           |  |  |
| Material Required for Examination                                                                                                                                                                      |                                          |                   | · · · · · · · · · · · · · · · · · · · | ۱ <u>ـــــــ</u> ۱ | L         |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                                                                                      |                                          |                   |                                       |                    |           |  |  |
| Question Source Comments: 1999 Braidwood NRC                                                                                                                                                           | Exam                                     |                   |                                       |                    |           |  |  |
| Record Number: 112 RO Number: 88                                                                                                                                                                       | SRO Number: 88                           |                   |                                       | ······             |           |  |  |

| Question Topic Operation of components before transitioning                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           |          |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------|---------------------------|----------|--|
| A Large Break LOCA has occurred on L<br>Secondary Coolant," has been made. S<br>Recirculation," was implemented. Curre<br>Leg Recirculation per Step 5. The STA | Unit 1 and a transition<br>Subsequently, 1BwEP<br>ently, the operators are<br>reports a RED path in<br>rator is to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | to 1BwEP-1,<br>ES-1.3, "Trar<br>aligning the<br>Heat Sink. | "Loss of Rea<br>nsfer to Cold<br>SI and CV pi | ctor or<br>Leg<br>umps fo | r Cold   |  |
|                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>D 1</b> (                                               | •                                             |                           |          |  |
| 1BwFR H.1, "Loss of Secondary He                                                                                                                                | at Sink."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | eg Recirculat                                              | ion," and imp                                 |                           |          |  |
| only complete aligning ECCS for Co<br>Cold Leg Recirculation," and then ir                                                                                      | old Leg Recirculation some of the second sec | steps of 1BwE<br>, "Loss of Sec                            | EP ES-1.3, "T<br>condary Heat                 | ransfer<br>Sink."         | to       |  |
| complete all steps of1Bw EP ES-1.3<br>1BwFR H.1, "Loss of Secondary He                                                                                          | 3, "Transfer to Cold Le<br>eat Sink."                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | eg Recirculati                                             | on," and then                                 | implen                    | nent     |  |
| immediately implement 1BwFR H.1<br>ECCS for Cold Leg Recirculation per                                                                                          | , "Loss of Secondary I<br>er 1BwEP ES-1.3, "Tra                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Heat Sink," w<br>ansfer to Colc                            | hile concurre<br>I Leg Recircu                | ntly alig<br>lation."     | ning     |  |
| Answer b Exam Level B Cognitive Level                                                                                                                           | Comprehension Facility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | : Braidwood                                                | ExamDate:                                     |                           | 10/20/00 |  |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                    | RO Group 2 SF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | O Group 2                                                  |                                               |                           | d        |  |
| E03 I OCA Cooldown and Depressurize                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           | ]        |  |
| EK3 Knowledge of the reasons for the followin                                                                                                                   | ig responses as they apply                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | to I OCA Coold                                             | own and Depre                                 | ssurizatio                | n:       |  |
| EK3.3 Manipulation of controls required to obt                                                                                                                  | ain desired operating resu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Its during abnor                                           | mai and                                       | 3                         | 9 39     |  |
| emergency situations.                                                                                                                                           | an accied operating reca                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                               |                           |          |  |
| Explanation of Do not implement FRs prior to co                                                                                                                 | mpletion of steps 1-6 beca                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | use these steps                                            | are related to the                            | ne mainte                 | enance   |  |
| Reference Title                                                                                                                                                 | Facility Reference Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Section                                                    | Page Number(s)                                | Revision                  | L. O.    |  |
| EP-1 Series LP                                                                                                                                                  | I1-EP-XL-02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | V                                                          | 36                                            | 13                        | 1        |  |
| Transfer to Cold Le Recirculation                                                                                                                               | 1BwEP ES-1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Note                                                       | 2                                             | WOG                       |          |  |
|                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            | LJ                                            | 1C                        |          |  |
|                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           |          |  |
| Material Required for Examination                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           |          |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           |          |  |
| Question Source Comments: Question Number "EP-1                                                                                                                 | 1 - 113"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                               |                           | ]        |  |
| Record Number: 113 RO Number: 89 SRO Number: 89                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |                                               |                           |          |  |

| Question Topic Determine the      | desired RCS temp                               | perature for depressu                 | irization (r | naintain su | bcooling)      |                                        |
|-----------------------------------|------------------------------------------------|---------------------------------------|--------------|-------------|----------------|----------------------------------------|
| Unit 1 is in MODE 4 on R          | H cooldown wit                                 | h the following pl                    | ant cond     | itions:     |                |                                        |
|                                   | 1.<br>1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1 |                                       |              |             |                |                                        |
| RCS Temperature                   | 340°F s                                        | lowly lowering                        |              |             |                |                                        |
| RCS pressure                      | 300 psig                                       | g lowering                            |              |             |                |                                        |
| PZR level                         | 42% lov                                        | wering                                |              |             |                |                                        |
| CNMT pressure                     | 0.2 psig                                       | ]                                     |              |             |                |                                        |
| Alarm received for EC             | CS cubicle rad                                 | iation (GRID 2)                       |              |             |                |                                        |
| SG levels                         | 42% (A)                                        | 40% (B)                               | 43%          | (C)         | 40% (D)        |                                        |
| SG pressures                      | 115 psig (A)                                   | 115 psig (B)                          | 115 psi      | g (C)       | 115 psig (D)   |                                        |
| What event is taking place        | e?                                             |                                       |              |             |                |                                        |
| A steam leak has occ              | curred inside Cl                               | NMT.                                  |              |             |                |                                        |
| The Cold Overpress                | ire system has                                 | actuated                              |              |             |                | ]                                      |
|                                   |                                                |                                       |              |             |                |                                        |
| Letdown line pressur              | e control valve,                               | 1PCV-131, has 1                       | failed op    | en.         |                |                                        |
| d. A LOCA has occurre             | d on the suctior                               | n of the RH pump                      | ۱.           |             | ,,,,,,,,       |                                        |
| Answer d Exam Level B             | Cognitive Level                                | Comprehension                         | acility: Bra | idwood      | ExamDate:      | 10/20/00                               |
| Tier: Emergency and Abnorm        | nal Plant Evolution                            | s RO Group                            | 2 SRO Gro    | oup 1       |                |                                        |
| E04 LOCA Outside C                | ontainment                                     |                                       |              |             |                |                                        |
| EA1. Ability to operate and / o   | or monitor the follo                           | wing as they apply to                 | LOCA O       | utside Con  | tainment:      |                                        |
| EA1.2 Operating behavior cl       | haracteristics of the                          | e facility.                           |              |             |                | 3.6 3.8                                |
| Explanation of indications rule   | out containment m                              | alfunction. Radiation                 | alarm rule   | es out COF  | PP and 1PCV-13 | 31 failures.                           |
| Reference Title                   | oluji - U                                      | Facility Reference Num                | iber         | Section     | Page Number(s) | Revision L. O.                         |
| Shutdown LOCA                     | [                                              | 1BwOA S/D-2                           | Step         | 15          | 1, 16          | 51A                                    |
| ILT Emergency Operations Los      | ss of RX or                                    | 1-EP-XL-02                            |              |             |                | 11 10.a                                |
|                                   | ][                                             | · · · · · · · · · · · · · · · · · · · |              |             |                |                                        |
| Material Required for Examination |                                                |                                       |              |             |                |                                        |
| Question Source: Facility Exam B  | Jank                                           | Question M                            | lodification | Method:     |                |                                        |
| Question Source Comments:         | 997 Braidwood NRC Ex                           | kam                                   |              |             |                |                                        |
| Record Number: 114 RO Nu          | mber: 90 SF                                    | RO Number: 90                         |              |             |                | ······································ |

| Question Topic Control room ventilation respon                                                                                 | se to an SI Signal                                                                 |                                      |                                       |                          | · · · · · · ]     |  |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------|--------------------------|-------------------|--|
| An SI Signal has been initiated due to a LOCA outside Containment.                                                             |                                                                                    |                                      |                                       |                          |                   |  |
| Which of the following describes the line                                                                                      | eup of the Control Roc                                                             | om Ventilation                       | System?                               |                          |                   |  |
| Makeup Air Fan autostarts and Red                                                                                              | circ Charcoal Absorbe                                                              | runisolates                          |                                       |                          |                   |  |
|                                                                                                                                |                                                                                    |                                      | · · · · · · · · · · · · · · · · · · · |                          | ]                 |  |
| Makeup Air Fan autostarts and Sup                                                                                              | oply Fan trips.                                                                    |                                      |                                       |                          |                   |  |
| 🖾 Makeup Air Fan trips and Normal ir                                                                                           | ntake from outside isol                                                            | ates.                                |                                       |                          |                   |  |
| Makeup Air Fan trips and Purge Ex                                                                                              | haust Damper opens.                                                                |                                      |                                       |                          |                   |  |
| Answer a Exam Level R Cognitive Level Memory Facility: Braidwood ExamDate: 10/20/00                                            |                                                                                    |                                      |                                       |                          |                   |  |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                    | ns RO Group 2 SF                                                                   | RO Group 1                           |                                       |                          |                   |  |
| E04 LOCA Outside Containment                                                                                                   |                                                                                    |                                      |                                       |                          |                   |  |
| EK1. Knowledge of the operational implication                                                                                  | s of the following concepts                                                        | as they apply to                     | LOCA Outside                          | Containn                 | nent:             |  |
| EK1.1 Components, capacity, and function of                                                                                    | emergency systems.                                                                 |                                      |                                       | 3                        | .5 3.9            |  |
| Explanation of On SI signal makeup air fan auto<br>Answer isolates. B is wrong because sup<br>trip. Purge exhaust damper recei | starts, recirc charcoal abs<br>ply fan does not trip. C and<br>ves a close signal. | orber unisolates<br>d D are wrong be | and normal inta<br>ecause makeup      | ake from o<br>air fans o | outside<br>lo not |  |
| Reference Titlense                                                                                                             | Facility Reference Number                                                          | Section                              | Page Number(s)                        | Revision                 | L, O.             |  |
| Rx Trip or Safety Injection                                                                                                    | 1BwEP-0                                                                            | Step 21                              | 13-15                                 | WOG1                     | ]                 |  |
| [                                                                                                                              |                                                                                    |                                      | ······                                | С                        | ·                 |  |
| Big Notes "Control Room Ventilation"                                                                                           | VC-1                                                                               |                                      |                                       | 4                        |                   |  |
| Control Room HVAC                                                                                                              | 11-VC-XL-01 (43b)                                                                  | lll.D                                | 34                                    | 1                        | 8                 |  |
| Material Required for Examination                                                                                              |                                                                                    |                                      |                                       |                          |                   |  |
| Question Source: New                                                                                                           | Question Modific                                                                   | ation Method:                        |                                       |                          |                   |  |
| Question Source Comments:                                                                                                      |                                                                                    |                                      |                                       |                          |                   |  |
| Record Number: 115 RO Number: 91 SRO Number:                                                                                   |                                                                                    |                                      |                                       |                          |                   |  |

| Question Topic Interlocks affecting reestablishment of feed                                                                                                                                                                                                                                         |                                                           |                                    |                                     |                           |                     |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------|-------------------------------------|---------------------------|---------------------|--|--|
| The following conditions exist on Unit 2:                                                                                                                                                                                                                                                           |                                                           |                                    |                                     |                           |                     |  |  |
| <ul> <li>Reactor power was 8% prior to the event below.</li> <li>A failure in the feedwater control system caused ONE S/G level to rise to 83%.</li> <li>The main turbine tripped.</li> <li>S/G levels have returned to their normal level range</li> <li>The Startup FW Pump is running</li> </ul> |                                                           |                                    |                                     |                           |                     |  |  |
| What are the minimum set of conditions<br>2FW034s Feedwater Tempering Flow 0                                                                                                                                                                                                                        | s that would have to be<br>Control valves?                | e met to feed                      | the S/Gs usir                       | ng the                    |                     |  |  |
| The FW Isolation Aux Relays would valves opened.                                                                                                                                                                                                                                                    | d have to be reset and                                    | I 2FW035 Fee                       | edwater Temp                        | pering l                  | sol                 |  |  |
| The reactor trip breakers would have reset and 2FW035 Feedwater Tem                                                                                                                                                                                                                                 | ve to be cycled, the F\<br>pering Isol valves ope         | N Isolation Au<br>ened.            | ıx Relays wo                        | uld have                  | e to be             |  |  |
| The FW Isolation Main Relays and Tempering Isol valves opened.                                                                                                                                                                                                                                      | Aux Relays would hav                                      | ve to be reset                     | and 2 FW03                          | 5 Feed                    | water               |  |  |
| The reactor trip breakers would have reset and 2FW035 Feedwater Tem                                                                                                                                                                                                                                 | ve to be cycled and F\<br>pering Isol valves ope          | W Isolation Ma<br>ened.            | ain Relays an                       | id Aux F                  | Relays              |  |  |
| Answer       a       Exam Level       B       Cognitive Level         Tier:       Emergency and Abnormal Plant Evolution         E05       Loss of Secondary Heat Sink                                                                                                                              | Application Facilit<br>ns RO Group 2 Si                   | y: Braidwood<br>RO Group 2         | ExamDate:                           | ·····                     | 10/20/00            |  |  |
| EK2. Knowledge of the interrelations between                                                                                                                                                                                                                                                        | Loss of Secondary Heat S                                  | ink and the follo                  | wing:                               |                           | ]                   |  |  |
| EK2.1 Components, and functions of control a<br>interlocks, failure modes, and automati                                                                                                                                                                                                             | and safety systems, includ<br>ic and manual features.     | ing instrumentat                   | ion, signals,                       | 3                         | .7 3.9              |  |  |
| Explanation of<br>Answer The P-14 signal, once clear, only<br>present. So reseting the FW Isol<br>and throttling of FW034s                                                                                                                                                                          | nainaitns FWI signal via t<br>lation Aux relay allows ope | the FW Isol Aux<br>ing of FW035s ( | relays if NO rea<br>normal feed pat | ctor trip s<br>h at low p | signal is<br>power) |  |  |
| Reference Title                                                                                                                                                                                                                                                                                     | Facility Reference Number                                 | Section                            | Page Number(s)                      | Revision                  | L. O.               |  |  |
| Plant heatup                                                                                                                                                                                                                                                                                        | 1BwGP 100-1                                               | F.12                               | 15                                  | 13E2                      |                     |  |  |
| Big Notes- Feedwater                                                                                                                                                                                                                                                                                | FW-1                                                      | N/A                                | 1                                   | 3                         |                     |  |  |
| ESF lesson plan                                                                                                                                                                                                                                                                                     | I1-KF-XL-01 (61)                                          | ] [I.C                             | 16-17                               | 1                         | 7.c                 |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                   |                                                           |                                    |                                     |                           |                     |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                                                                                                                                                                                   |                                                           |                                    |                                     |                           |                     |  |  |
| Result Number 440 Route Comments:                                                                                                                                                                                                                                                                   | Question Source Comments: 1998 Braidwood NRC Exam         |                                    |                                     |                           |                     |  |  |
| STREET COLUMN STREET CONTRACTOR COLUMN STREET COLUMN STREET COLUMN STREET COLUMN STREET COLUMN STREET COLUMN ST                                                                                                                                                                                     | skuntingers 91                                            |                                    |                                     |                           |                     |  |  |

| Question Topic Reason why transfer to FR-C.2 is required                                 |                          |                       |                    |                                   |             |  |  |  |
|------------------------------------------------------------------------------------------|--------------------------|-----------------------|--------------------|-----------------------------------|-------------|--|--|--|
| All reactor core heat removal systems have failed and the RCS temperature is increasing. |                          |                       |                    |                                   |             |  |  |  |
| When ears suit thermosecuple temperatures are greater then 700°F                         |                          |                       |                    |                                   |             |  |  |  |
| when core exit thermocouple temperati                                                    |                          |                       |                    |                                   |             |  |  |  |
|                                                                                          | 1.3.                     |                       |                    |                                   |             |  |  |  |
| b. the core is superheated.                                                              |                          |                       |                    |                                   |             |  |  |  |
| RCP damage is prevalent.                                                                 |                          |                       |                    | · · · · · · · · · · · · · · · · · | ]           |  |  |  |
| Juel cladding failure is prevalent.                                                      |                          |                       |                    |                                   |             |  |  |  |
| Answer b Exam Level B Cognitive Level                                                    | Memory Fa                | acility: Braidwood    | ExamDate:          |                                   | 10/20/00    |  |  |  |
| Tier: Emergency and Abnormal Plant Evolutio                                              | ns RO Group 1            | SRO Group 1           |                    |                                   |             |  |  |  |
| E06 Degraded Core Cooling                                                                | · · ·                    |                       |                    |                                   | · · · · · · |  |  |  |
| EK2. Knowledge of the interrelations between                                             | Degraded Core Coolin     | g and the following:  |                    |                                   |             |  |  |  |
| EK2.2 Facility's heat removal systems, includ                                            | ling primary coolant, en | nergency coolant, th  | e decay heat       | 3                                 | .8 4.1      |  |  |  |
| the facility.                                                                            | en the proper operation  | f of these systems to | o the operation of | זנ                                |             |  |  |  |
| Explanation of Degraded core cooling-superhea                                            | ited steam exiting the c | ore >700°F            |                    |                                   |             |  |  |  |
| Reference Title                                                                          | Facility Reference Numb  | Section               | Page Number(s)     | Revision                          | L.O.        |  |  |  |
| Inadequate Core Cooling                                                                  | I1-IT-XL-01 (34b)        |                       | 13                 | 7                                 | 2           |  |  |  |
| Response to Degraded Core Cooling                                                        | 1BwFR-C.2                | Step 6                | 12                 | WOG                               |             |  |  |  |
|                                                                                          | (                        | ·····                 | ·····              | 1C                                | r           |  |  |  |
| Material Descriptor Exemination                                                          |                          |                       |                    |                                   |             |  |  |  |
| Material Required for Examination                                                        |                          |                       |                    |                                   |             |  |  |  |
| Question Source Comments: Question # "FR-C - 020"                                        |                          |                       |                    |                                   |             |  |  |  |
| Record Number: 117 RO Number: 93 S                                                       | SRO Number: 92           |                       |                    |                                   | ]           |  |  |  |

| Question Topic Use of procedures for saturated core cooling.                                                                     |                                               |                            |                              |                     |              |  |
|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------|------------------------------|---------------------|--------------|--|
| A steam void has been detected in the Unit 2 reactor vessel head during natural circulation cooldown.<br>RVLIS is NOT available. |                                               |                            |                              |                     |              |  |
|                                                                                                                                  |                                               |                            |                              |                     |              |  |
| void per 2BwEP ES-0.4, "Natural Circul                                                                                           | lized by the operators lation Cooldown with S | to estimate t team Void in | ne growth of<br>Vessel (With | the stea<br>out RVI | am<br>LIS)"? |  |
| Pressurizer pressure indication cha                                                                                              | anges.                                        |                            |                              |                     |              |  |
| E Pressurizer level indication change                                                                                            |                                               |                            |                              |                     |              |  |
| RCS Hot Leg temperature indicatio                                                                                                | ons.                                          |                            |                              |                     |              |  |
| Core Exit Thermocouple indication                                                                                                | S.                                            |                            |                              |                     |              |  |
| Answer b Exam Level S Cognitive Level                                                                                            | Memory                                        | /: Braidwood               | ExamDate:                    |                     | 10/20/00     |  |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                      | ns RO Group 1 SF                              | O Group 1                  |                              |                     |              |  |
| E07 Saturated Core Cooling                                                                                                       |                                               |                            |                              |                     | ]            |  |
| EA2. Ability to determine and interpret the follo                                                                                | owing as they apply to Satu                   | rated Core Coo             | ling:                        |                     |              |  |
| EA2.2 Adherence to appropriate procedures amendments.                                                                            | and operation within the lim                  | itations in the fa         | acility's license a          | and 3               | .3 3.9       |  |
| Explanation of<br>Answer                                                                                                         |                                               |                            |                              |                     | ]            |  |
| Reference Title                                                                                                                  | Facility Reference Number                     | Section                    | Page Number(s)               | Revision            | L. O.        |  |
| E-0 Lesson Plan                                                                                                                  | 11-EP-CL-01                                   |                            |                              | 13                  | 3            |  |
| ES-0.4 Background Document                                                                                                       |                                               | Step<br>Description        | 19                           | 1C                  |              |  |
|                                                                                                                                  |                                               |                            |                              |                     |              |  |
| Material Required for Examination                                                                                                |                                               |                            |                              |                     |              |  |
| Question Source:         Facility Exam Bank         Question Modification Method:                                                |                                               |                            |                              |                     |              |  |
| Question Source Comments: Question # "EP-0 002"                                                                                  |                                               |                            |                              |                     |              |  |
| Record Number: 118 RO Number: 5                                                                                                  | SRO Number: 93                                |                            |                              |                     |              |  |

Question Topic Saturated Core Cooling

Step 1 of 1BwFR-C.3, "Response to Saturated Core Cooling," checks if the RH system has been placed in shutdown cooling mode.

Which of the following describes the basis for this step?

- To ensure a ORANGE or RED condition in Core Cooling will not arise while performing this procedure.
- To verify RH is aligned for long term cooling if the appropriate conditions are met.
- If RH is in shutdown cooling mode, the saturated core cooling condition is a problem with RH and this procedure will not address this condition.
- If RH is in shutdown cooling mode, the saturated core cooling condition is a problem with RH and this procedure will identify and isolate the affected train.

| Answer: C Exam Level S Cognitive Level                                                                  | Memory       | Facility         | r: Braidwood  | ExamDate:       |          |        |  |
|---------------------------------------------------------------------------------------------------------|--------------|------------------|---------------|-----------------|----------|--------|--|
| Tier: Emergency and Abnormal Plant Evolution                                                            | ns RO (      | Group 1 SR       | O Group 1     |                 |          |        |  |
| E07 Saturated Core Cooling                                                                              |              |                  |               | · · · · · · · · | · · ·    | ]      |  |
| 2.1 Conduct Of Operations                                                                               |              |                  |               |                 |          |        |  |
| 2.1.20 Ability to execute procedure steps.                                                              |              |                  |               |                 | 4        | .3 4.2 |  |
| Explanation of Procedure does not address a loss of S/D cooling. Other procedures cover this condition. |              |                  |               |                 |          |        |  |
| Reference Title                                                                                         | Facility Ref | arence Number    | Section       | Page Number(s)  | Revision | L. O.  |  |
| Saturated Core Cooling                                                                                  | 1BwFR-C.3    |                  | Step 1        | 2               | WOG1     | []     |  |
|                                                                                                         | <u></u>      |                  |               |                 | С        | ()     |  |
| FR-C Series LP                                                                                          | 11-FR-XL-0   | 2                |               |                 | 7        | 3      |  |
|                                                                                                         |              |                  |               |                 |          |        |  |
| Material Required for Examination                                                                       |              |                  |               |                 |          |        |  |
| Question Source: Facility Exam Bank                                                                     |              | Question Modific | ation Method: |                 |          |        |  |
| Question Source Comments: FR-C 028                                                                      |              |                  |               |                 |          |        |  |
| Record Number: 119 RO Number: S                                                                         | RO Number:   | 94               |               |                 |          |        |  |

| Question Topic Natural Circ conditions and limits                                                                                                                                                                                                                                                                                                                     |                                       |                                 |                   |            |          |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------|-------------------|------------|----------|--|--|
| The following conditions exist on Unit 1                                                                                                                                                                                                                                                                                                                              | •                                     |                                 |                   |            |          |  |  |
| <ul> <li>A natural circulation cooldown is in progress per 1BwEP ES-0.2 "Natural Circulation Cooldown."</li> <li>Pressurizer pressure is being controlled using Aux. Spray and Pzr heaters.</li> <li>As pressure is being lowered through 1300 psig, a rapid increase is noted in Pzr level.</li> <li>Charging and letdown are in manual and are balanced.</li> </ul> |                                       |                                 |                   |            |          |  |  |
| What action is required to be taken by t                                                                                                                                                                                                                                                                                                                              | he operators?                         |                                 |                   |            |          |  |  |
| Repressurize the RCS.                                                                                                                                                                                                                                                                                                                                                 |                                       |                                 |                   |            |          |  |  |
| b. Isolate the SI Accumulators.                                                                                                                                                                                                                                                                                                                                       |                                       |                                 |                   |            |          |  |  |
| Increase the RCS cooldown rate.                                                                                                                                                                                                                                                                                                                                       |                                       |                                 |                   |            |          |  |  |
| Place excess letdown in service.                                                                                                                                                                                                                                                                                                                                      |                                       |                                 |                   |            | ]        |  |  |
| Answer a Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                                                                 | Memory Facilit                        | y: Braidwood                    | ExamDate:         |            | 10/20/00 |  |  |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                                                                                                                                                                                                                                                           | ns RO Group 1 SF                      | RO Group 1                      |                   |            | I        |  |  |
| E09 Natural Circulation Operations                                                                                                                                                                                                                                                                                                                                    | · · · · · · · · · · · · · · · · · · · |                                 |                   |            |          |  |  |
| EK1. Knowledge of the operational implication                                                                                                                                                                                                                                                                                                                         | s of the following concepts           | as they apply to                | Natural Circula   | tion Ope   | rations: |  |  |
| EK1.2 Normal, abnormal and emergency ope<br>Operations).                                                                                                                                                                                                                                                                                                              | rating procedures associat            | ed with (Natural                | Circulation       | 3          | .3 3.7   |  |  |
| Explanation of If unexpected large variations in Answer and continue cooldown.                                                                                                                                                                                                                                                                                        | Pzr level occur, repressuriz          | the RCS to co                   | ollapse potential | voids in : | system   |  |  |
| Reference Title                                                                                                                                                                                                                                                                                                                                                       | Facility Reference Number             | Section                         | Page Number(s)    | Revision   | L. O.    |  |  |
| EP-0 Series LP                                                                                                                                                                                                                                                                                                                                                        | 11-EP-XL-01                           | VII                             | 38                | 13         | 3        |  |  |
| Natural Circulation Cooldown                                                                                                                                                                                                                                                                                                                                          | 1BwEP ES-0.2                          | Step 14 RNO                     | 11                | WOG1       |          |  |  |
|                                                                                                                                                                                                                                                                                                                                                                       |                                       | ·                               | []                | С          | r        |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                                                                     |                                       |                                 |                   | L]         | <u> </u> |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                                                                                                                                                                                                                                                     |                                       |                                 |                   |            |          |  |  |
| Question Source Comments: 1998 Braidwood NRC Exam                                                                                                                                                                                                                                                                                                                     |                                       |                                 |                   |            |          |  |  |
| Record Number: 120 RO Number: 94 S                                                                                                                                                                                                                                                                                                                                    | RO Number: 95                         | ecord Number: 94 SRO Number: 95 |                   |            |          |  |  |

| Question Topic CRDM fans on Nat Circ                                                                                  |                                                            |                                       |                                 |           |          |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------|---------------------------------|-----------|----------|--|--|--|
| Which of the following describes why it is important to run CRDM fans when performing a natural circulation cooldown? |                                                            |                                       |                                 |           |          |  |  |  |
| Provides the heat removal mechanism for the vessel head area.                                                         |                                                            |                                       |                                 |           |          |  |  |  |
| Aids in natural circulation flow through the RCS vessel head region.                                                  |                                                            |                                       |                                 |           |          |  |  |  |
| Prevents erratic indication of SR in                                                                                  | strumentation.                                             |                                       |                                 |           |          |  |  |  |
| Aids in natural circulation flow throu                                                                                | ugh the RCS.                                               |                                       |                                 |           |          |  |  |  |
| Answer a Exam Level B Cognitive Level                                                                                 | Memory Facilit                                             | y: Braidwood                          | ExamDate:                       |           | 10/20/00 |  |  |  |
| Tier: Emergency and Abnormal Plant Evolution                                                                          | ns RO Group 1 SI                                           | RO Group 1                            |                                 |           |          |  |  |  |
| E09 Natural Circulation Operations                                                                                    |                                                            |                                       |                                 |           | ]        |  |  |  |
| EK2. Knowledge of the interrelations between                                                                          | Natural Circulation Operat                                 | ions and the follo                    | owing:                          |           |          |  |  |  |
| EK2.2 Facility's heat removal systems, includ removal systems, and relations betwee the facility.                     | ing primary coolant, emerg<br>on the proper operation of t | ency coolant, th<br>hese systems to   | e decay heat<br>the operation c | of 3      | .6 3.9   |  |  |  |
| Explanation of CRDM fans cool the upper head cooling to the SR NIs.                                                   | region that may not be coc                                 | led by NC flow.                       | Rx Cavity vent                  | fans prov | /ide     |  |  |  |
| Reference Title                                                                                                       | Facility Reference Number                                  | Section                               | Page Number(s)                  | Revision  | L. O.    |  |  |  |
| EO Series LP                                                                                                          | 11-EP-XL-01                                                | VII                                   | 38                              | 13        | 3        |  |  |  |
| Natural Circulation Cooldown                                                                                          | 1BwEP ES-0.2                                               | Step 22 RNO                           | 14                              | WOG1      |          |  |  |  |
|                                                                                                                       | L                                                          | · · · · · · · · · · · · · · · · · · · |                                 | c         |          |  |  |  |
|                                                                                                                       |                                                            |                                       |                                 |           |          |  |  |  |
| Material Required for Examination                                                                                     |                                                            |                                       |                                 |           |          |  |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                     |                                                            |                                       |                                 |           |          |  |  |  |
| Question Source Comments: 1999 Braidwood NRC B                                                                        | Exam                                                       |                                       |                                 |           |          |  |  |  |
|                                                                                                                       |                                                            |                                       |                                 |           |          |  |  |  |

Record Number: 121 RO Number: 95 SRO Number: 96

| Question                                                                                                                                      | Topic Effect                               | s of RVLIS u                    | navailability o                  | on High Level Action                    | าร                 |                                 |                                |                     | ······            |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------|----------------------------------|-----------------------------------------|--------------------|---------------------------------|--------------------------------|---------------------|-------------------|
| What a<br>for the<br>ONE h                                                                                                                    | are the MAX<br>RCS to 500<br>nour period.) | IMUM coo<br>PF in the fo        | ldown rate:<br>ollowing ind      | s that apply for a<br>dicated procedur  | res?(              | lown from no<br>NOTE: all ch    | rmal operatin<br>oices are app | g tempo<br>blicable | erature<br>in any |
| 1BwEF<br>1BwEF                                                                                                                                | P ES-0.3 "Na<br>P ES-0.4 "Na               | atural Circu<br>atural Circu    | ulation Coo<br>ulation Coo       | ldown With Void<br>Idown With Void      | l In Ve<br>I In Ve | essel (With R<br>essel (Without | /LIS)"<br>t RVLIS)"            |                     |                   |
| 1BwE<br>va                                                                                                                                    | EP ES-0.3<br>alue                          | 1BwEP Es<br>value               | S-0.4                            |                                         |                    |                                 |                                |                     |                   |
| a. 50                                                                                                                                         | )°F                                        | 50°F                            |                                  |                                         |                    |                                 |                                |                     |                   |
| <b>b</b> . 50                                                                                                                                 | )°F                                        | 100°F                           |                                  |                                         |                    |                                 |                                |                     |                   |
| ¢. 10                                                                                                                                         | )0°F                                       | 50°F                            |                                  |                                         |                    |                                 |                                |                     |                   |
| d. 10                                                                                                                                         | D0°F                                       | 100°F                           |                                  |                                         |                    |                                 |                                |                     |                   |
| Answer                                                                                                                                        | C Exam Lev                                 | vel B Co                        | ognitive Level                   | Comprehension                           | Facility           | : Braidwood                     | ExamDate:                      |                     | 10/20/00          |
| Tier: E                                                                                                                                       | Emergency and                              | l Abnormal P                    | lant Evolutio                    | RO Group                                | 1 SF               | O Group 1                       |                                |                     |                   |
| E10                                                                                                                                           | Natural (                                  | Circulation wi                  | th Steam Voi                     | d in Vessel with/with                   | nout R∖            | /LIS                            |                                |                     |                   |
| EK1. K                                                                                                                                        | Knowledge of t<br>Void in Vessel           | he operationa<br>with/without F | al implication:<br>RVLIS:        | s of the following co                   | ncepts             | as they apply to                | Natural Circula                | tion with           | Steam             |
| EK1.3                                                                                                                                         | Annunciators<br>Circulation w              | and conditio<br>ith Steam Vo    | ons indicating<br>id in Vessel v | signals, and remed vith/without RVLIS). | ial actio          | ons associated v                | with the (Natural              | 3                   | .3 3.6            |
| Explanati<br>Answer                                                                                                                           | ion of In ES-0                             | .4 100°F/hr is                  | s applicable v                   | vhen cooling down t                     | from 50            | 00°F to 450°F                   |                                |                     |                   |
| 7                                                                                                                                             | Refere                                     | ence Title                      |                                  | Facility Reference N                    | umber              | Section                         | Page Number(s)                 | Revision            | L. O.             |
| Natural                                                                                                                                       | Circulation Co                             | oldown With                     | Steam Void                       | 1BwEP ES-0.3                            | ]                  | Step 4                          | 5                              | WOG1                |                   |
| Natural                                                                                                                                       | Circulation Co                             | oldown With                     | Steam Void                       | 1BwEP ES-0.4                            |                    | Step 3-5                        | 4-6                            | WOG1<br>C           | <br> ]            |
| EP-0 Se                                                                                                                                       | eries LP                                   |                                 |                                  | l1-EP-XL-01                             |                    | IX                              | 51,61                          | 13                  | 3                 |
| Material F                                                                                                                                    | Required for Exa                           | mination                        |                                  |                                         |                    |                                 |                                |                     |                   |
| Question Source:         Facility Exam Bank         Question Modification Method:           Question Source:         1007 Braidward NBC Event |                                            |                                 |                                  |                                         |                    |                                 |                                |                     |                   |
| Record N                                                                                                                                      | lumber: 122                                | RO Number                       | 96                               | RO Number: 97                           |                    |                                 |                                |                     | ]                 |
|                                                                                                                                               |                                            |                                 |                                  |                                         |                    |                                 |                                |                     |                   |

| Question Topic Knowledge of High Level Action Step to reduce PZR LevI in 1BwEP ES-0.3                                                                                                                                                                |                                       |                   |                                        |            |          |  |  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------|----------------------------------------|------------|----------|--|--|--|
| Unit 1 reactor tripped approximately 1 hour ago due to a large steam break inside containment. The crew is currently in 1BwEP ES-0.3, "Natural Circulation Cooldown with Steam Voids in Vessel (with RVLIS)". Pressurizer level is currently at 95%. |                                       |                   |                                        |            |          |  |  |  |
| Per 1BwEP ES-0.3, PZR Level should b                                                                                                                                                                                                                 | pe reduced to less that               | n 90% by          | ······································ |            |          |  |  |  |
| a cycling PZR heaters and securing t                                                                                                                                                                                                                 | he RCS cooldown.                      |                   |                                        |            |          |  |  |  |
| b. controlling charging and letdown.                                                                                                                                                                                                                 |                                       |                   |                                        |            | ]        |  |  |  |
| closing PZR sprays and energizing                                                                                                                                                                                                                    | PZR heaters.                          |                   |                                        |            | ]        |  |  |  |
| d. ONLY establish maximum letdown.                                                                                                                                                                                                                   | · · · · · · · · · · · · · · · · · · · |                   |                                        |            |          |  |  |  |
| Answer b Exam Level B Cognitive Level                                                                                                                                                                                                                | Comprehension Facilit                 | y: Braidwood      | ExamDate:                              |            | 10/20/00 |  |  |  |
| Tier: Emergency and Abnormal Plant Evolutio                                                                                                                                                                                                          | ns RO Group 1 SF                      | RO Group 1        |                                        |            |          |  |  |  |
| E10 Natural Circulation with Steam Voi                                                                                                                                                                                                               | d in Vessel with/without R            | /LIS              |                                        |            |          |  |  |  |
| EK3. Knowledge of the reasons for the followin with/without RVLIS:                                                                                                                                                                                   | ng responses as they apply            | to Natural Circ   | ulation with Stea                      | ım Void ir | ı Vessel |  |  |  |
| EK3.3 Manipulation of controls required to ob<br>emergency situations.                                                                                                                                                                               | tain desired operating resu           | Ilts during abnor | mal, and                               | 3          | .4 3.6   |  |  |  |
| Explanation of Reduce level to less than 90% by                                                                                                                                                                                                      | y controlling charging and I          | etdown as nece    | ssary.                                 |            |          |  |  |  |
| Reference Title                                                                                                                                                                                                                                      | Facility Reference Number             | Section           | Page Number(s)                         | Revision   | L. O.    |  |  |  |
| Natural Circulation Cooldown with Steam                                                                                                                                                                                                              | 1BwEP ES-0.3                          | Step 5            | 6                                      | WOG        |          |  |  |  |
| EP-0 EP ES-0 Rx Trip or Safety Injection                                                                                                                                                                                                             | 11-EP-CL-01                           | VIII              | 54-57                                  | 13         | 3        |  |  |  |
|                                                                                                                                                                                                                                                      |                                       |                   |                                        |            |          |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                    |                                       |                   |                                        |            |          |  |  |  |
| Question Source: New Question Modification Method:                                                                                                                                                                                                   |                                       |                   |                                        |            |          |  |  |  |
| Question Source Comments:                                                                                                                                                                                                                            |                                       |                   |                                        |            |          |  |  |  |
| Record Number: 123 RO Number: 97 \$                                                                                                                                                                                                                  | RO Number: 98                         |                   |                                        |            |          |  |  |  |

| Question Topic Reason for rapid S/G depress                                                                             | surization                                        |                                            |                                          |                         |                |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------|------------------------------------------|-------------------------|----------------|--|--|--|
| Why are the S/Gs depressurized to less than 670 psig according to 1BwCA-1.1, "Loss of Emergency Coolant Recirculation"? |                                                   |                                            |                                          |                         |                |  |  |  |
| To allow maximum AF flow to the                                                                                         | S/Gs.                                             |                                            |                                          |                         |                |  |  |  |
| <b>b.</b> To ensure adequate subcooling for                                                                             | or restart of the RC                              | Ps.                                        |                                          |                         | ·              |  |  |  |
| To set up conditions for controlled                                                                                     | l injection to the R                              | CS from the acc                            | umulators.                               |                         | ]              |  |  |  |
| a To decrease RCS temperature ar                                                                                        | nd pressure which                                 | reduces break f                            | low in a LOCA o                          | conditio                | n.             |  |  |  |
| Answer C Exam Level B Cognitive Leve                                                                                    | Memory                                            | Facility: Braidwood                        | ExamDate:                                |                         | 10/20/00       |  |  |  |
| Tier: Emergency and Abnormal Plant Evolut                                                                               | ions RO Group                                     | 2 SRO Group                                | 2                                        |                         |                |  |  |  |
| E11 Loss of Emergency Coolant Rec                                                                                       | irculation                                        |                                            |                                          |                         | ]              |  |  |  |
| EK3. Knowledge of the reasons for the follow                                                                            | ving responses as the                             | apply to Loss of E                         | mergency Coolant                         | Recircula               | ation:         |  |  |  |
| EK3.2 Normal, abnormal and emergency of Coolant Recirculation).                                                         | perating procedures as                            | ssociated with (Los                        | s of Emergency                           | 3                       | .5 4.0         |  |  |  |
| Explanation of Answer RCS can be initiated (while ma volumes into the RCS.                                              | ling volumes that supp<br>intaining subcooling) t | bly water to RCS. E<br>the point where the | By cooling RCS, de<br>le SI accumulators | pressuriz<br>inject the | ation of<br>ir |  |  |  |
| Reference Title                                                                                                         | Facility Reference Nu                             | mber Section                               | Page Number(s)                           | Revision                | L. O.          |  |  |  |
| Loss of Emergency Coolant Recirc                                                                                        | 1BwCA-1.1                                         | Step 29                                    | 26,27                                    | WOG                     |                |  |  |  |
| Westinghouse Owners Guide                                                                                               | Background Docum                                  | ent ECA-1.1                                | 69                                       | WOG1                    |                |  |  |  |
| CQA Contingency Action 1.1                                                                                              | [11-CA-XL-02                                      |                                            |                                          | 9                       | 3              |  |  |  |
| Material Required for Examination                                                                                       |                                                   |                                            |                                          |                         |                |  |  |  |
| Question Source: Facility Exam Bank                                                                                     | Question                                          | <b>Modification Method:</b>                |                                          |                         | ]              |  |  |  |
| Question Source Comments: 1998 Braidwood NR                                                                             | C Exam                                            |                                            |                                          |                         |                |  |  |  |
| Descard Numbers 124 BO Numbers 09                                                                                       | CDO Numbers 00                                    |                                            |                                          | . —                     |                |  |  |  |

Record Number: 124 RO Number: 98 SRO Number: 99

| Question Topic Actions taken after required NaOH Addition                                                                                                                                                                                                                                                                |                                                               |                                     |                                      |                       |              |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|-------------------------------------|--------------------------------------|-----------------------|--------------|--|--|--|
| The NSO reports that the Spray Additive Tank low-2 level light has just been received as a result of a Containment spray system actuation during a steam line break. Containment Pressure is currently 24 psig. Which of the following is correct concerning this situation? (Assume CS Actuation signal has been RESET) |                                                               |                                     |                                      |                       |              |  |  |  |
| Allow the Containment spray syste                                                                                                                                                                                                                                                                                        | m to operate AS-IS un                                         | til containme                       | nt pressure is                       | < 15 p                | sig.         |  |  |  |
| Manually shift the Containment spr                                                                                                                                                                                                                                                                                       | ay system lineup to th                                        | e post accide                       | nt recirculatio                      | n lineu               | p.           |  |  |  |
| Manually close the motor operated tank (1CS019A/B).                                                                                                                                                                                                                                                                      | isolation valve betwee                                        | en the educto                       | r and the spra                       | ay addit              | ive          |  |  |  |
| Stop all containment spray pumps 3.                                                                                                                                                                                                                                                                                      | until the spray additive                                      | e tank is filled                    | and vented p                         | er BwC                | PCS-         |  |  |  |
| Answer C Exam Level B Cognitive Level                                                                                                                                                                                                                                                                                    | Comprehension Facilit                                         | y: Braidwood                        | ExamDate:                            |                       | 10/20/00     |  |  |  |
| Tier: Emergency and Abnormal Plant Evolution                                                                                                                                                                                                                                                                             | ns RO Group 1 SF                                              | RO Group 1                          |                                      |                       |              |  |  |  |
| E14 High Containment Pressure                                                                                                                                                                                                                                                                                            |                                                               |                                     |                                      |                       | ······       |  |  |  |
| EA2. Ability to determine and interpret the follo                                                                                                                                                                                                                                                                        | owing as they apply to High                                   | Containment P                       | ressure:                             |                       |              |  |  |  |
| EA2.2 Adherence to appropriate procedures amendments.                                                                                                                                                                                                                                                                    | and operation within the lin                                  | nitations in the fa                 | icility's license a                  | nd 3                  | .3 3.8       |  |  |  |
| Explanation of Close eductor spray add valves pressure <15# (A wrong). B wron add only used once per design.                                                                                                                                                                                                             | if spray add tank Lo-2 lights<br>ng because cold leg recirc l | s lit. Stop CS pur<br>based on RWST | nps if criteria sa<br>level. D wrong | tisfied Cr<br>because | nmt<br>spray |  |  |  |
| Reference Title and                                                                                                                                                                                                                                                                                                      | Facility Reference Number                                     | Section                             | Page Number(s)                       | Revision              | L. O.        |  |  |  |
| Loss of Reactor or Secondary Coolant                                                                                                                                                                                                                                                                                     | 1BwEP-1                                                       | CAS                                 | Fold Out Page                        | WOG1<br>C             |              |  |  |  |
| EP-1 Series LP                                                                                                                                                                                                                                                                                                           | 11-EP-XL-02                                                   | II.G                                | 14                                   | 13                    | 1            |  |  |  |
|                                                                                                                                                                                                                                                                                                                          |                                                               |                                     |                                      |                       |              |  |  |  |
| Material Required for Examination                                                                                                                                                                                                                                                                                        |                                                               |                                     |                                      |                       |              |  |  |  |
| Question Source: Facility Exam Bank Question Modification Method:                                                                                                                                                                                                                                                        |                                                               |                                     |                                      |                       |              |  |  |  |
| Question Source Comments: 1996 Braidwood NRC                                                                                                                                                                                                                                                                             | Exam RO Question #95                                          |                                     |                                      |                       |              |  |  |  |
| Record Number: 125 RO Number: 99                                                                                                                                                                                                                                                                                         | SRO Number: 100                                               |                                     |                                      |                       |              |  |  |  |

| Question Topic Containment Flooding Sources                                       |                                                  |                                    |                        |          |          |
|-----------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------|------------------------|----------|----------|
| Per 1BwFR-Z.2, "Respond to Containm following a major accident is based upo       | ent Flooding," the<br>on the entire conter       | MAXIMUM level<br>nts of the RCS, R | of water in co<br>WST, | ontainm  | ent      |
| CST and SI accumulators.                                                          |                                                  |                                    |                        |          |          |
| SX and CC water.                                                                  |                                                  |                                    |                        |          |          |
| SX and FP.                                                                        |                                                  |                                    |                        |          |          |
| CC water and PW.                                                                  |                                                  |                                    |                        |          |          |
| Answer a Exam Level R Cognitive Level                                             | Memory                                           | acility: Braidwood                 | ExamDate:              |          | 10/20/00 |
| Tier: Emergency and Abnormal Plant Evolutio                                       | ns RO Group                                      | 3 SRO Group 3                      |                        |          |          |
| E15 Containment Flooding                                                          |                                                  |                                    |                        |          |          |
| EA1. Ability to operate and / or monitor the foll                                 | owing as they apply to                           | Containment Floodi                 | ng:                    |          |          |
| EA1.1 Components, and functions of control interlocks, failure modes, and automat | and safety systems, in<br>ic and manual features | cluding instrumentat<br>s.         | ion, signals,          | 2        | .9 3.0   |
| Explanation of Based on the total contents of Ro                                  | CS, RWST, CST and S                              | SI accumulators.                   |                        |          |          |
| Reference Title                                                                   | Facility Reference Num                           | ber Section                        | Page Number(s)         | Revision | L. O.    |
| FR-Z LP                                                                           | 11-FR-XL-05                                      | В                                  | 8                      | 6        | 3        |
| Respond to Containment Flooding                                                   | 1BwFR-Z.2                                        | Step 1                             | 1                      | WOG1     |          |
|                                                                                   | <b>6</b>                                         |                                    |                        | С        |          |
|                                                                                   |                                                  |                                    |                        |          |          |
| Material Required for Examination                                                 |                                                  | 100 - 11 - 11 - 1                  |                        |          |          |
| Question Source: Facility Exam Bank                                               |                                                  | odification method:                | Significantly Modifi   | ea       | ]        |
|                                                                                   |                                                  | ·······                            |                        |          |          |
| Record Number: 126 RO Number: 100 S                                               | SRO Number:                                      |                                    |                        |          |          |

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