FACILITY POST-EXAMINATION COMMENTS

FOR THE BRAIDWOOD INITIAL EXAMINATION - JULY 2004

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July 20, 2004
BW040071

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Braidwood Station, Units 1 and 2
Facility Operation License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Subject: Submittal of Post 2004 Braidwood Initial License Examination Comments

Enclosed are the post examination comments for the 2004 Braidwood Initial License Examination.

This submittal includes comments to five questions. It is Braidwood Management's contention that none of these comments require the questions to be removed from the exam or require the acceptance of more than one answer.

Should you have any questions concerning this letter, please contact Mr. Scott Butler, Acting Regulatory Assurance Manager, at (815) 417-2815. For questions concerning examination outlines, please contact Robert Cameron at (815) 458-7694.

Respectfully,

Carl B Dunn Acting SVP
20 July 2004

FOR Thomas P. Joyce
Site Vice President
Braidwood Station

JUL 20 2004

Enclosures: (Hand Delivered to Dell McNeil, Chief Examiner, NRC Region III)

Comments to five exam questions with proposed changes highlighted

cc: (without attachments)
Chief, NRC Operator Licensing Branch
NRC Senior Resident Inspector – Braidwood Station

bcc: NRC Project Manager, NRR – Braidwood
Illinois Emergency Management Agency – Division of Nuclear Safety
Manager of Energy Practice – Winston & Strawn
Site Vice President – Braidwood Station
Regulatory Assurance Manager – Braidwood Station
Vice President – Licensing and Regulatory Affairs
Director - Licensing and Regulatory Affairs
Manager, Licensing – Braidwood, Byron and LaSalle County Stations
Braidwood Nuclear Licensing Administrator
Exelon Document Control Desk Licensing (Hard Copy)
Human Resources – Braidwood Station
Training Manager – Braidwood Station

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
14	RO	1	1	000058	000058AK1.01	2.8	3.1	High

System/Evolution Name:
Loss of DC Power
Loss of DC Power:

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

KA Statement:
Battery charger equipment and instrumentation

UserID: BW04NRC-014 Topic Line:
Question Stem:

Given the following:
- Unit 2 at 100% power, normal alignment.
- 211 Battery Charger voltage: 131 Vdc
- 211 Battery Charger amps: 35A

If the 211 BATTERY BREAKER, AF-2 is OPENED inadvertently, DC bus 211 will:

A remain energized. Locally, 211 Battery Charger amps and voltage will remain approximately the same.

B DE-energize. Locally, 211 Battery Charger amps will DROP and Charger voltage will remain approximately the same.

C remain energized. Locally, 211 Battery Charger amps will RISE and voltage will remain approximately the same.

D DE-energize. Locally, 211 Battery Charger amps and Charger voltage will DROP.

Answer:	Task No:	R-DC-003	Question Source:	Question Difficulty
B	Obj No:	S.DC1-05-D	New. NRC Rev 0, fixed grammar. NRC REV 1 Complete rewrite.	4
Time: 4	Cross Ref:	None		

Reference:
BwOP DC-7-211 Rev 3
Big Note DC-1 Rev 5.
2BwOA ELEC-1 Rev 100

Explanation:
Due to the arrangement of having the charger tie directly to the battery (battery side) of the battery breaker opening the battery breaker will cause a loss of the bus. Charger amps will drop to the value necessary to maintain battery trickle charge, voltage will remain approximately the same (may rise slightly).
A: Bus will de-energize.
B: Correct
C: Bus will de-energize.
D: Voltage will remain the same or rise slightly.

Date Written: 6/24/2004 Author: R. Cameron App. Ref: None

POST Exam comments: Capitalize "battery breaker" since this is the noun name of the component.

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
30	RO	2	1	005000	005000A1.03	2.5	2.6	High

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

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

KA Statement:
Closed cooling water flow rate and temperature

UserID: BW04NRC-030 Topic Line:

Question Stem:

Given:

- Unit 1 RCS temp stable at 260°F.
- Unit 0 CC HX is aligned to Unit 1.
- 1A RH pump is running in shutdown cooling mode.
- 1B RH pump aligned for ECCS injection.
- ALL Unit 1 Steam Dumps and S/G PORVs are closed.
- HX 1A FLOW CONT VLV (1RH606) Controller on 1PM06J output is indicating 50%.
- 1TI-674 HX 1 OUTLT TEMP (Unit 1 CC HX CC Outlet) on 1PM06J is 80°F and stable.

If the output on the 1RH606 Controller on 1PM06J is RAISED to 60%, (assume NO other operator actions occur at this time) Unit 1 CC HX CC side outlet temperature will __(1)__.

Following 1RH606 adjustment, a constant U1 RCS heatup/cooldown rate can be maintained over the next hour if _____(2)_____

	__(1)__	_____(2)_____
A	RISE	SX flow to the U1 CC HX is RAISED
B	LOWER	CC flow to the 1A RH HX is RAISED
C	LOWER	SX flow to the U1 CC HX is LOWERED
D	RISE	CC flow to the 1A RH HX is LOWERED

Answer:	Task No:	R-CC-003	Question Source:	Question Difficulty
A	Obj No:	S.CC1-018	New, REV 0 rewrote to better meet K/A.	3.6
Time:	Cross Ref:	None		
2				

Reference:
P&ID M-62 Rev BN

Explanation:
Increasing controller output will raise RH flow through the 1A RH HX. With the increased heat load on CC, Unit 1 CC HX outlet temperature will rise. To maintain a constant cooldown rate 1RH606 must continue to be opened or CC flow must be increased to the 1A RH hx or SX flow must be increased to the U1 CC HX.
A: Correct
B: Lowering the output will cause 1RH606 to close, lowering the heat load on CC. Second part will work.
C: Lowering the output will cause 1RH606 to close, lowering the heat load on CC. Lowering CC flow will cause a constant heatup rate.
D: 1st part is correct. Lower SX flow will raise CC temperature and lower the cooldown rate. Lowering SX flow will cause a constant heatup rate.

Date Written: 3/28/2004 Author: R. Cameron App. Ref: None

POST EXAM COMMENTS: Specify CC side for temperature indications in stem.

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
43	RO	2	1	056000	056000A2.04	2.6	2.8	Low

System/Evolution Name:
Condensate System

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

KA Statement:
Loss of condensate pumps

UserID: BW04NRC-043 Topic Line:

Question Stem:

Given conditions:
- Unit 2 at 95% power.
- 2D Cond/Cond Booster pump is tagged out.

If the 2B Cond/Cond Booster pump TRIPS and annunciator 2-16-E1 FW PUMP NPSH LOW illuminates "RED" as a result, the _____(1)_____, will automatically OPEN (when NPSH falls below the actuation setpoint), and the crew should immediately (Per 2BwOA SEC-1, SECONDARY PUMP TRIP) _____(2)_____.

A 1) 2CB025, LOW PRESS HTR STRING BYP VLV
2) Initiate a U2 Reactor Trip

B 1) 2CD157A/B, COND GS COND 2A/B BYP VLVs
2) Initiate a U2 Reactor Trip

C 1) 2CD157A/B, COND GS COND 2A/B BYP VLVs
2) Press the U2 Turbine Runback Pushbutton

D 1) 2CB025, LOW PRESS HTR STRING BYP VLV
2) Press the U2 Turbine Runback Pushbutton

Answer:	Task No:	Question Source:	Question Difficulty
C	Obj No: T.OA36-03	New. NRC REV 0, added LP byp valve opening.	3
Time: 2	Cross Ref: None		

Reference:
2BwOA SEC-1 REV 102
Big Note FW-1 Rev 8

Explanation:
Low NPSH will open 2CD157A/B. Per 2BwOA SEC-1, the crew must initiate a runback when turbine load is greater then 700Mw.
A: 2CB025 opens on High heater string level, a reactor trip is not required.
B: A Reactor Trip is not required.
C: Correct
D: 2CB025 opens on High heater string level not low NPSH

Date Written: 3/13/2004 Author: R. Cameron App. Ref: None.

POST EXAM COMMENTS: add when pressure falls below the appropriate setpoint. Getting NPSH alarm alone may not be enough to cause the valves to stroke.

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
72	RO	3	3	194001	1940012.3.9	2.5	3.4	Low

System/Evolution Name: Generic

Category Statement: Radiological Controls

KA Statement:
Knowledge of the process for performing a containment purge.

UserID: BW04NRC-072 Topic Line:

Question Stem:

Due to lowering Oxygen levels in Unit 1 Containment, RP has requested Mini Purge Supply and Exhaust be placed in service.

Before placing U1 Mini Purge Exhaust in service, a ____(1)____ Exhaust Fan must be running.

When starting the U1 Mini Purge Supply Fan, the fan C/S must be held in "start" until the _____(2)_____ fully OPEN or the fan will NOT start.

	____(1)_____	_____(2)_____
A	Lab HVAC	Purge Supply containment isolation valves
B	Aux Bldg (for U1 Vent Stack)	fan suction damper locally indicates
C	Rad Waste Bldg	fan suction damper lights in the MCR indicate
D	Rad Waste Bldg	Purge Supply containment isolation valves

Answer: B

Task No: R-VQ-006

Obj No: S.VP1-09-B

Time: 2

Cross Ref: None

Reference:
BwOP VQ-6 Rev 15

Question Source:

New DJ with 61. Rev 0 changed from indicates to is. NRC REV 1, Modified to get rid of 1of 2

Question Difficulty: 3.2

Explanation:
A Unit exhaust fan, a Lab HVAC, or Two VA charcoal Booster Fans must be operation during purge. C/S must be held until the suction damper indicates open. The cont isol valves are opened prior to the fan being started.

A: Containment isolations are manually individually opened prior to the fan start and would not open if the fan C/S was placed in start.

B: Correct

C: A Radwaste building fan goes to the Unit 2 exhaust. There are no MCR fan indications for suction damper position.

D: A Radwaste building fan goes to the Unit 2 exhaust. Containment isolations are manually individually opened prior to the fan start and would not open if the fan C/S was placed in start.

Date Written: 3/30/2004 Author: R. Cameron App. Ref: None.

POST EXAM COMMENTS: Add "U1 Vent Stack" to correct answer. Answer was verbatim from procedure, however fans have common (Unit 0) designators.

Quest No:	RO SRO:	TIER:	GROUP:	Topic No:	KA No:	RO:	SRO:	Cog Level:
76	SRO	1	1	000008	000008AA2.03	3.9	3.9	High

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

Category Statement:
Ability to determine and interpret the following as they apply to the Pressurizer Vapor Space Accident:

KA Statement:
PORV position indicators and acoustic monitors

UserID: BW04NRC-076 Topic Line: 43b (5)

Question Stem:

Given the following sequence of events on Unit 1:
- 100% power, normal alignment.
- An SI occurs due to Low PZR pressure.
- 1BwEP-0, REACTOR TRIP OR SAFETY INJECTION has been entered.

2 minutes later, the following U1 conditions are noted:
- PZR pressure is continuing to LOWER.
- PZR Level is RISING.
- RCS Tavg is 560°F.
- Containment pressure is stable.

Based on the above conditions, the US should direct an NSO to check _____(1)_____.

The NEXT procedure required to be entered in response to this event is _____(2)_____.

	_____(1)_____	_____(2)_____
A	Aux Building Rad levels on RM-11	1BwCA-1.2, LOCA OUTSIDE OF CONTAINMENT
B	Aux Building Rad levels on RM-11	1BwCA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION
C	PZR PORV position indicators on 1PM05J	1BwFR-I.1, RESPONSE TO HIGH PZR LEVEL
D	PZR PORV position indicators on 1PM05J	1BwEP-1, LOSS OF REACTOR OR SECONDARY COOLANT

Answer:	Task No:	S-EP-031	Question Source:	Question Difficulty
D	Obj No:	T.EP02-09-A	New. NRC REV 0 changed choice C to 1BwFR-1.1.	2.33
Time: 2	Cross Ref:	None		

Reference:
BWD ILT lesson plan II-MI-XL-04 Rev 3.
1BwEP-0 Rev 102
1BwEP ES-0.1 Rev 103

Explanation:
Braidwood does not have acoustic monitors for the PZR PORVs or Safeties (Valve position indicators only). PZR PORVs are air operated and have valve position indicators powered from ESF DC bus. With PZR level rising and containment pressure stable a Vapor Space LOCA is occurring. Note: It is NOT possible to have vapor space loca outside of containment large enough to cause an SI (PZR vapor space sample line is the only path). All other choices in this question would lead to lowering PZR level except for RC drain valve position which requires an additional valve manipulation and would be isolated following the SI initiation due to loss of IA.
A: With PZR level would be lowering if an outside containment LOCA was occurring.
B: With PZR level would be lowering if an outside containment LOCA was occurring. 1BwCA 1.1 would not be entered (direct entry into 1.2 would be directed by 1BwEP-0 step 37, or 1BwEP-1 Step 11.
C: High PZR level is only a yellow path is not required to be entered next
D: Correct.

Date Written: 4/1/2004 Author: R. Cameron App. Ref: None

POST EXAM COMMENTS: Instead of "conditions on " say "sequence of events".