

Exelon Generation Company, LLC www.exeloncorp.com
Byron Station
4450 North German Church Road
Byron, IL 61010-9794

June 30, 2008

LTR: Byron 2008-0064
File: 1.10.0101

Mr. J. L. Caldwell
Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
2443 Warrenville Road
Lisle, IL 60532-4352

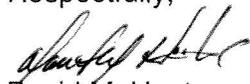
Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Follow-up information to questions raised from Byron June 5, 2008 letter 2008-0055 to Mr. J. L. Caldwell entitled: 'Submittal of 2008 Byron Initial License Examination Post-Examination Comments '

Enclosed please find the information discussed with our Training Department in a June 13, 2008 phone call pertaining to Questions 13 and 54 of the 2008 Byron Initial License Examination.

Should you have any questions concerning this matter, please contact Mr. William Grundmann, Regulatory Assurance Manager at (815) 406-2800 or Mr. Gregg Smith, ILT Lead Instructor at (815) 406-2386.

Respectfully,



David M. Hoots
Site Vice President
Byron Station

DMH/RFP/TLH/vym

cc: NRC Senior Resident Inspector – Byron Station w/o attachments

QUESTION: 013 (1.00)

Previously, 125 VDC Bus 211 was crosstied to Bus 111 due to equipment problems with Bus 111 Battery and Charger. Bus 111 Battery and Charger are Out of Service.

Presently:

- U-1 is in MODE 3.
- U-2 is in MODE 1.

Bus 111 conditions are:

- Crosstie loading due to the loading on Bus 111 is 183 Amps.
- Voltage on Bus 111 is 121 VDC.
- Then, a ground of 50 volts is detected on Bus 111.

Based upon the above conditions, which one of the following actions would be CORRECT?

- a. Parameters on Bus 111 are normal and within limits. No action is necessary.
- b. Enter into BOP, DC-15, DC Ground Isolation, due to an unexpected ground detected on Bus 111.
- c. Shed non-essential loads from Bus 111 to lower Amperage to below 180 Amps to meet cross-tie loading restrictions.
- d. Disconnect Bus 111 from Bus 211 in accordance with BOP DC-7, 125 VDC ESF Bus Crosstie/Restoration to ensure that the ground does not adversely affect loads on the operating unit.

ANSWER: a.

REFERENCE: BOP DC-7, 125 VDC ESF Crosstie/Restoration

Applicants' comment:

- Battery 211 terminal voltage is required to be at least 127.6 VDC per 1BOSR 8.6.1-2, Unit Two 125VDC ESF Battery Bank And Charger 211 Operability Weekly Surveillance, and 2BOL 8.6 (TS 3.8.6 LCOAR), Note 5.
- Operator rounds for DC bus 111 list a minimum value of 127.6 volts, and maximum value of 140 volts.
- Main Control Board alarm responses 1/2-21-E-10 for both Unit 1 and Unit 2 125V DC busses have alarm setpoints of $\leq 123V$ DC.
- The stem of the question states that "Voltage on Bus 111 is 121 VDC".
- This led the applicants to reject choice "a", "Parameters on Bus 111 are normal and within limits. No action is necessary." Bus 111 voltage is NOT normal and within limits; bus voltage is at least 6.6 VDC too low per the operator rounds and BOSR.
- This question has no correct answer and should be deleted from the exam.

References:

- 1BOSR 8.6.1-1/2, Unit One/Two 125VDC ESF Battery Bank And Charger 111/211 Operability Weekly Surveillance
- 1/2BOL 8.6 (TS 3.8.6 LCOAR), Note 5.
- BAR 1/(2)-21-E10, 125V DC PNL 111/113 (211/213) VOLT LOW
- Operator rounds printout

Facility comment:

Byron Station believes that the voltage for DC Bus 111 is outside “normal” values based on criteria stipulated in Operator Rounds. “Normal” to a Byron Operator is 127.6 VDC. A check with Electrical Engineers indicated that Byron does not have any readily available calculations that would predict what DC Bus 111 voltage would be considering the conditions stipulated in the stem of the question. Therefore, while Byron does not consider 121 VDC to be “normal”, we cannot dispute that the voltage may be consistent with the conditions stated.

However, based on conditions stated in the stem of the question, Byron believes that there are required actions that must be taken. Those actions include:

- 1) Unit One is in a two (2) hour Technical Specification clock to restore the DC electrical power subsystem to operable status or be in Mode Five (5) in an additional thirty six (36) hours (per TS 3.8.4, Action D and E). Bus 111 Charger and Battery are Out-of-Service.
- 2) Due to being cross-tied from DC Bus 211 to 111 (with no battery), U-2 also must either restore the DC 111 System within 2 hours or un-crosstie. If that does not happen, U-2 must be in MODE 3 within the next 6 hours and must be in MODE 5 in thirty-six (36) hours (per TS 3.8.4, Actions D and E as applied to Unit 2).
- 3) As indicated in the stem of the question, DC Bus 111 is well below what Byron considers the “normal and expected voltage” of 127.6 VDC. Based on actual work practices at Byron Station, Charger output is adjusted in accordance with procedure BOP DC-7, “125VDC ESF Bus Crosstie/Restoration” (Precaution #8) to raise and maintain DC Bus voltage above the limit of 127.6 VDC. Therefore, Byron would expect that charger output would be adjusted to raise DC Bus 111 voltage.

As indicated above, there are required actions that must be taken; therefore Answer A is not correct because it states, “No action is necessary.” Byron Station agrees with the NRC that Answers B, C, and D are incorrect. Therefore, Question 13 has NO correct answer, and Byron believes the question should be deleted.

Additional References:

- Technical Specification 3.8.4.
- BOP DC-7, 125 VDC ESF Bus Crosstie/Restoration

QUESTION: 054 (1.00)

The following conditions exist in Unit 1:

- The Reactor is shut down in Mode 3.
- Containment pressure is 0.7 psig.
- You have made an emergency containment entry to investigate a steam leak, and are presently attempting to exit the containment through the personnel airlock doors.

While attempting to exit, you discover that the interior personnel airlock door will NOT open. Five minutes after mechanically opening the interior equalizing valve, it is discovered that pressure has still NOT equalized across the interior door.

Which of the following could be the reason(s) for this condition? (Consider each condition separately.)

1. The exterior equalizing valve is closed.
 2. The exterior equalizing valve is open.
 3. Containment pressure is too high to allow the inner airlock door to open.
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- a. 1 AND 3 ONLY.
 - b. 2 AND 3 ONLY.
 - c. 1 ONLY.
 - d. 2 ONLY.

ANSWER: d.

REFERENCE: BAP 1450-8, Primary Containment Equipment/Emergency Hatch Personnel Airlock Doors Operation

Applicants' comments:

- The question states there is a steam leak in containment, and that containment pressure is (currently) 0.7 psig. A steam leak inside containment will cause containment pressure to rise. Given the information, it is impossible to determine if pressure is rising faster than the interior equalizing valve can allow airlock pressure to equalize with containment pressure.
- The interior airlock door opens inward to containment, and the airlock door is approximately 5' wide by 7' tall. This results in a surface area of 5040 square inches. For the door to be held closed with a force of 100 ft-lbf, a DP of only 0.02 psid is required.
- Since it is impossible to determine from the information provided whether the interior equalizing valve can equalize faster than an unstated size steam leak can pressurize containment, and that a very small DP is all that is required to hold the door closed, containment pressure COULD (as asked) be too high to allow the inner airlock door to be opened.
- This results in choice "b" also being correct.
- This question has 2 correct answers, "b" and "d".

References:

- BAP 1450-8, Primary Containment Equipment/Emergency Hatch
- Personnel Airlock Doors Operation

Facility comments:

- This question was discussed with 2 System Engineers. No calculation exists to show how quickly the equalizing valve will allow pressure across the hatch to equalize, but their experience with the system is that with normal containment pressure slightly higher than atmospheric pressure, it will equalize very quickly, certainly in much less than one minute.
- An estimation of the airlock volume combined with the 2" diameter of the equalizing line shows that any "steam leak" would equalize well within the 5 minutes stated. For containment pressure to rise faster than the valve can equalize would take a large steam break, well beyond any size that would allow a containment entry to search for it.

Engineers consulted: Lisa Zurawski and Barry Quigley