UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 12, 2016

MEMORANDUM TO: Douglas A. Broaddus, Chief
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Richard B. Ennis, Senior Project Manager ***/RA/***
Plant Licensing Branch I-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

SUBJECT: PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3, DRAFT REQUEST FOR ADDITIONAL INFORMATION (CAC NOS. MF7143 AND MF7144)

The attached draft request for additional information (RAI) was transmitted on April 20, 2016, to Ms. Stephanie Hanson of Exelon Generation Company, LLC (Exelon, the licensee). This information was transmitted to facilitate a conference call in order to clarify the licensee's amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3, dated December 3, 2015. The proposed amendment would revise the technical specification (TS) surveillance requirements (SRs) associated with the emergency diesel generator (EDG) fuel oil transfer system. Specifically, the amendment would allow for the crediting of manual actions, in lieu of automatic actions, without having to declare the EDGs inoperable.

The draft RAI was sent to Exelon to ensure that the questions are understandable, the regulatory basis for the questions is clear, and to determine if the information was previously docketed. During a telephone call to discuss the draft RAI on May 12, 2016, the licensee agreed to provide a response to the questions by June 10, 2016.

This memorandum and the attachment do not convey or represent an NRC staff position regarding the licensee's request.

Docket Nos. 50-277 and 50-278

Attachment: Draft RAI

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DRAFT REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED LICENSE AMENDMENT

EMERGENCY DIESEL GENERATOR

FUEL OIL TRANSFER SURVEILLANCE REQUIREMENTS

EXELON GENERATION COMPANY, LLC

PEACH BOTTOM ATOMIC POWER STATION - UNITS 2 AND 3

DOCKET NOS. 50-277 AND 50-278

By letter dated December 3, 2015 (ADAMS Accession No. ML15337A413), Exelon Generation Company, LLC (Exelon, the licensee) submitted a license amendment request (LAR) for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The proposed amendment would revise the technical specification (TS) surveillance requirements (SRs) associated with the emergency diesel generator (EDG) fuel oil transfer system. Specifically, the amendment would allow for the crediting of manual actions, in lieu of automatic actions, without having to declare the EDGs inoperable.

The Nuclear Regulatory Commission (NRC) staff has reviewed the information the licensee provided that supports the proposed amendment and would like to discuss the following issues to clarify the submittal.

Human Factor Branch (APHB)
Reviewers: Brian Green/Molly Keefe

APHB-RAI-1

Page 4 of Attachment 1 of the LAR describes the manual action as a series of tasks including entering various rooms, manipulating specific valves, and placing the EDG day tank transfer pump control switch to automatic. It does not include actions such as manually starting a fuel oil transfer pump or other equipment that would effectively refill the EDG day tank if the level were low. Additional information is needed to clarify the intent of these actions and the expected outcome.

a) Under what conditions and how frequently will the switch be turned to “off”?

b) How long is it acceptable to be placed in off?

c) Are there positions on this switch other than “off” and “automatic” (such as “manual”)?

d) Is the switch ever placed in “off” because the automatic function does not work (such as to perform maintenance)? Is it possible that manual action being reviewed here, even if performed correctly, will not produce the desired outcome?

e) What cues are provided to personnel that the proposed action(s) is/are no longer required?

f) What administrative controls exist to assure that, when the action(s) is/are no longer required, the plant configuration is put in the correct configuration for the plant status?

APHB-RAI-2

Has an operating experience review been completed, including plant-specific condition reports, Licensee Event Reports, INPO reports, and other relevant sources? If so, how will you prevent past issues from recurring? If an operating experience review has not been conducted what other analyses have been used to ensure that operator manual actions do not encounter problems?

APHB-RAI-3

Describe any changes to the control room task analysis that was done as a part of your Detailed Control Room Design Review. If no update to the task analysis was necessary, describe how task requirements were developed.

Also, please include information about the following considerations:

a) Are potentially harsh or inhospitable environmental conditions expected? For instance, the LAR indicates that some of the actions necessary to complete this task take place in the EDG Cardox Room. Are there credible conditions under which the Cardox system may be initiated that would prevent operators from successfully completing the tasks described in this LAR? Are other environmental concerns (such as steam, temperature, etc.) likely that could affect task performance? If so, please describe how the effect of these environmental factors will be mitigated.

b) Is it possible that conditions that make it desirable to use the manual actions in lieu of the automatic actions, currently described in the TSs, will also disable the low level alarm associated with the day tank float switch? In this case, how will operators know that the tank level is low and that the switch needs to be put back into auto?

c) NRC Information Notice 97-78 indicates that licensees should consider ingress/egress paths when crediting operator actions. The LAR describes the path taken by Equipment Operators and some potential obstacles that may impede their progress. Please provide additional information regarding the grates that must be removed, locks on valves, and any special equipment that is necessary to complete these actions.

d) The LAR indicates that operators must remove grates (presumably floor grates). Are these grates bolted down so that tools are necessary to remove them? Are protections in place to ensure that grates that are not normally bolted do not accidentally get bolted? Are the grates light enough that they can be removed by a single operator without special equipment?

e) The LAR also indicates that the E-4 EDG day tank transfer valve and E-4 day tank transfer pump discharge valve are normally locked according to the LAR. What type(s) of lock(s) are

used on these valves? Are keys necessary to open them? If so, what assurances are in place that they keys are available when needed?

APHB-RAI-4

Please describe any changes to staffing or qualification needed to support the proposed license amendment. In addition, describe any increase in operator workload that will occur with the proposed license amendment.

APHB-RAI-5

What is the risk associated with this action? Specifically:

a) The marked up TS Bases uses the phrase "brief periods of time" however the proposed new TS SR 3.8.1.6 note does not specify the allowable duration. What is the acceptable duration of time to use manual operation for this task with regards to risk?

b) What are the credible errors and the potential consequences? What are the potential consequences if the manual action is implemented for more than "brief periods of time"? How will operators know if the acceptable duration has been exceeded?

APHB-RAI-6

Please describe any changes to training and the simulator needed to support the proposed license amendment.

APHB-RAI-7

Describe the process used to monitor manual actions to ensure that they remain feasible and reliable over the long term, and are not degraded because of design changes, inadequate training, or other mechanisms.

Electrical Engineering Branch (EEEB)
Reviewer: Shavon Edmonds

EEEB-RAI-1

The LAR stated that subsequent to PBAPS implementation of the Improved Technical Specifications in January 1996, a revision was made to the TS Bases for SR 3.6.1.8, under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59, that allowed for manual operator action to be used for "limited cases" for the purpose of maintaining operability of the EDG fuel oil transfer system. This TS Bases change added a paragraph which allowed use of manual operator actions during the surveillances in lieu of automatic action to maintain the EDG operable. However, as a result of questions raised by the NRC Resident Inspectors in March 2013, the wording regarding manual operator actions was removed from the TS bases. During this time period (i.e., 1996-2013), credit was taken for manual operator action for very short periods of time for various operational conditions such as: (1) transferring fuel oil between the EDG underground fuel oil storage tanks; (2) filling of the EDG day tanks

with the associated EDG fuel oil transfer pump out-of-service; (3) filling the day tank from another EDG fuel oil storage tank; (4) performing Inservice Testing (IST) for the fuel oil transfer pump and the associated suction check valve; and (5) performing chemistry sampling activities.

Please provide the operator steps required and the approximate total time required to perform each of the above activities (including the time used entering and exiting areas). Also, confirm which activity/operator steps would have required declaring the associated EDG inoperable and how long, if no credit was taken for manual operator action.

EEEB-RAI-2

The LAR stated that the actions that will be procedurally in place to ensure manual actions will maintain the EDG operable will include:

- Constant communication with the Main Control Room (MCR).

- No other collateral duties by the qualified individual in charge of placing the EDG fuel oil transfer pump switch from the 'off' to the 'auto' position and restoring manual valve positions.

- Briefing of the qualified individual that their actions are credited for maintaining the transfer of fuel oil from the underground storage tank to the day tank to ensure TS operability.

- Clear procedural direction and control that the EDG fuel oil transfer valves and pump control switch will be restored to the 'auto' position if there is:
  - An automatic start of an EDG
  - Notification by licensed MCR personnel that the EDG is required to operate
  - A receipt of the associated day tank low level alarm

Please describe how this procedure will ensure the operability of the EDG, and the fuel oil storage and transfer system while performing various manual action actions.

EEEB-RAI-3

Please confirm whether the low fuel level in the EDG day tank is alarmed in the MCR. Please provide details of how much time is expected to take for the fuel oil to drop from the alarm level to the level that will affect EDG operability when the EDG is supplying a load of 3000 kW during the period 10-60 minutes.

Technical Specification Branch (STSB)
Reviewer: Peter Snyder

STSB-RAI-1

The PBAPS TS definition for “OPERABLE – OPERABILLITY” states:

> A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or

> emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

It is not clear in the LAR exactly how the PBAPS EDGs would remain operable per the definition above and LCO 3.8.1. Explain the impact of the completion of manual fuel oil transfer (MFOT) on the operability of each EDG while the manual transfer is being completed. Address each item below in your answer:

a) Discuss fully filling (topping-off) all EDG day tanks from their associated fuel oil storage tanks (FOSTs) each time before any MFOT begins.

b) Total time: The licensee provides a worst case simulation time of 4 minutes 29 seconds for an operator to realign the fuel oil transfer system to automatic makeup. No time can be found for initial alignment of the fuel oil transfer system or completion of the transfer. Does the licensee expect that the total time would be less than 56 minutes to: (1) align the fuel oil transfer system for transfer; (2) transfer the designated amount of fuel oil; and (3) re-align the fuel oil transfer system and restore it for automatic make-up from the FOSTs to designated day tanks?

   If yes, further describe the manual actions and any time simulations conducted for aligning the system for transfer; and how the impact of the quantity of oil transferred on the total time would be controlled, such that the 56 minute time is not challenged.

   If no, then what would a limiting time be for conducting MFOT considering the various proposed configurations (see “c” below)?

c) Transfer configuration: The LAR describes 5 operational conditions during the time that credit was being taken for MFOT to maintain the operability of the EDGs:

   1. Transfer between FOSTs;

   2. Filling one day tank with another day tank’s pump;

   3. Filling a day tank from another FOST;

   4. Performing ISTs for fuel oil transfer pumps and associated suction check valves; and

   5. Performing chemistry sample activities.

   Provide confirmation that these are the only activities where MFOT will be credited.

STSB-RAI-2

The LAR proposes to add a note for SR 3.8.1.6. Per 10 CFR 50.36(c)(3), SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting

conditions for operation will be met.

Propose new succinct wording for the SR note such that it:

- includes the specific equipment the manual actions are performed on;
- limits the time during which the manual actions can occur; and
- specifies what manual actions accomplish the goal of supporting the necessary quality of the EDG.

While the NRC does not approve TS Bases changes, please consider a modification to the Bases listing a summary statement or reasons for every equipment configuration where MFOT is expected to be used.

STSB-RAI-3

The PBAPS definition of OPERABLE/OPERABILITY states that a support system needs to be capable of providing its support function. Also per 10 CFR Part 50, Appendix A, General Design Criteria 17, the onsite electric power supplies shall have sufficient independence and redundancy to perform their safety functions assuming a single failure.

Describe if the proposed manual actions could result in a single failure that could impact more than one EDG. If so, describe what precautions will be taken to ensure the EDGs can perform their intended functions.