



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

May 11, 2016

Mr. Bryan C. Hanson  
Senior Vice President  
Exelon Generation Company, LLC  
President and Chief Nuclear Officer (CNO)  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - REQUEST FOR ADDITIONAL  
INFORMATION RELATED TO INCORPORATION OF REVISED ALTERNATIVE  
SOURCE TERM (CAC NO. MF7336)(RS-16-019)

Dear Mr. Hanson:

By application dated January 29, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML116029A418), Exelon Generation Company, LLC (the licensee) submitted a license amendment request for Clinton Power Station, Unit 1 (CPS). The proposed amendment revises the post- loss-of-coolant-accident (LOCA) drawdown time for secondary containment from 12 to 19 minutes as described in the CPS updated safety analysis report and technical specification bases.

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with your staff on May 6, 2016, it was agreed that you would provide a response 30 days from the date of this letter.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the agreed upon response date the NRC staff may be unable to support your requested schedule.

B. Hanson

- 2 -

Should you have questions, please feel free to contact me at (301) 415-2315.

Sincerely,

*/RA/*

Eva A. Brown, Senior Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:  
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
INCORPORATION OF REVISED ALTERNATIVE SOURCE TERM  
CLINTON POWER STATION (CPS), UNIT 1  
DOCKET NO. 50-461

1. Section 3.2 of the attachment to the January 29, 2016, submittal, states:

In addition, actual SGTS [standby gas treatment system] train performance history during TS [technical specification] 3.6.4.1.4 Secondary Containment drawdown surveillances indicates that the required negative pressure equivalent to ¼ inch of water is achieved in approximately one half of the procedural acceptance criteria of 78 seconds. This acceptance criteria is based on the required drawdown time, without the post-LOCA [loss of coolant accident] heat loads. Although this surveillance is conducted with normal operating conditions (i.e., as opposed to LOCA conditions), the margin from the acceptance criteria of 78 seconds to the analytical drawdown time provides additional assurance that SGTS will achieve the required negative pressure within 19 minutes following a LOCA, assuming a fully loaded design basis cask in the FB [Fuel Building].

- a. Describe the relative contributions to the increased analytical drawdown time from the additional heat load in the railroad bay and the portion attributable to the addition of the railroad bay volume. Describe how the procedure acceptance criterion of 78 seconds was derived. Discuss the relationship between the analytical drawdown time and the procedure acceptance criterion/criteria. Address whether the assumed post-LOCA heat loads account for all the difference between the alternate source term (AST) assumed drawdown times and the surveillance procedure acceptance criteria of 78 seconds.
- b. Address whether the acceptance criteria of 78 seconds will continue to be used for both the test not including the railroad bay volume, and the test including the railroad bay volume.
- c. As stated above, the actual drawdown time is identified as about one-half the 78 second acceptance criteria. Clarify whether a drawdown time test has been performed for the railroad bay volume included configuration. If so, address the amount of additional drawdown time observed as a result of including the railroad bay volume. If no test was performed and the railroad volume is intended to be assumed included for this analyses, address the amount the test conditions drawdown time is expected to change with the additional volume.

Enclosure

2. In Chapter 6.2.3.3.1 of the updated safety analysis report (USAR), the licensee stated that calculations indicate that the standby gas treatment fan has been adequately sized to achieve a 0.25-inch water gauge negative pressure in less than 12 minutes after the LOCA event. The licensee is proposing to increase the drawdown time for secondary containment from the current licensing basis value of 12 minutes to 19 minutes.
  - a. Address whether this change in parameters and operation will impact the emergency diesel generators (EDGs) capability and capacity.
  - b. Address whether any other loads are being added to the EDGs. If so, describe their impact on the capability and capacity of the EDGs. Also, describe changes, if any, being made to the EDG loading sequence to support the licensee amendment request. Explain if any loading change will impact the design margin of the EDG.
  - c. Address whether any nonsafety-related systems and components are credited in the alternative source term (AST) analyses. If so, describe the independence (electrical and physical separation) of these nonsafety-related systems from the safety-related systems. Provide a discussion on why a fault on the non-Class 1E electrical circuit will not propagate to the Class 1E electrical circuit.
3. Address whether there is a change of equipment qualification (EQ) profile, by responding to the following:
  - a. Provide a list and description of components being added to your Section 50.49 to Title 10 to the *Code of Federal Regulations* (10 CFR) program due to this revised AST dose calculation in the license amendment request (LAR). Confirm that these components are qualified for the environmental conditions they are expected to be exposed.
  - b. In Enclosure 5 of the January 29, 2016, submittal, the licensee stated that its evaluation identified temperature increases in various areas within 15 of 20 secondary containment environmental zones. For the 15 environmental zones affected provide, in table form, a list of all the EQ components affected and their respective qualification levels and parameters (i.e., temperature, pressure, and radiation) that shows that the EQ limits remain bounding under the revised AST conditions for normal operation, accident (LOCA), and post-accident. Include the existing EQ limits and show how EQ margins (e.g., temperature, pressure, radiation, etc.) are being maintained.
  - c. Provide pre- and post-AST implementation figures of the worst-case accident EQ temperature and pressure profiles for all the affected EQ zones, which demonstrate that the post AST profile is bounding.
  - d. Provide revised environmental zone map(s) of the secondary containment that show all the affected environmental zones.

- e. In Chapter 3.11.9 of the USAR, the licensee stated that the CPS areas containing Class 1E equipment are divided into two zones based on the environmental conditions that are expected to occur as a result of various plant events. These zone classifications are termed harsh and mild environmental zones. Address whether there are any reclassifications of the EQ equipment due to the revised AST.
4. On page 4 of the Attachment of the January 29, 2016, submittal, Section 3.1, the licensee stated that in the previous AST LAR the licensee used an AST methodology for design basis accidents, in accordance with 10 CFR 50.67, with the exception that Technical Information Document (TID) 14844 "Calculation of Distance Factors for Power and Test Reactor Sites," continued to be used as the radiation dose basis for equipment environmental qualification. On page 2 of the Attachment of the January 29, 2016, submittal, Section 1.0, the licensee stated that evaluations were conducted to validate that the proposed configuration complies with the applicable general design criteria contained in Appendix A to 10 CFR 50, as well as the requirements of 10 CFR 50.49, "Environmental qualification of electric equipment important to safety for nuclear power plants," 10 CFR 50.67, and Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." Address whether the radiation dose basis for EQ of safety-related equipment will continue to be based on TID-14844, assumptions.
5. In a letter dated November 6, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15313A464), the NRC staff issued an integrated inspection report for CPS. The report documents that the inspectors reviewed Engineering Change (EC) 395976, "ISFSI-Extended Secondary Containment Boundary to FB Outer Railroad Bay Doors," Revision 0. This engineering change established the boundary of the secondary containment to include the FB railroad bay airlock. The NRC staff issued a finding for failure to obtain a license amendment prior to making modifications to secondary containment. Address whether the secondary containment has been changed to include the FB railroad bay airlock. If so, describe the impact on the EQ components in the FB railroad bay airlock and whether there is any change in seismic qualification of the affected equipment.

B. Hanson

- 2 -

Should you have questions, please feel free to contact me at (301) 415-2315.

Sincerely,

*/RA/*

Eva A. Brown, Senior Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
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**ADAMS Accession No. ML16130A664**

\*by memo dated April 19, 2016

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