August 12, 2004

Mr. Jeffrey A. Benjamin, Vice President
Licensing & Regulatory Affairs
Exelon Generation Company, LLC
AmerGen Energy Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: REQUEST FOR REVIEWS OF AGENCY STANDARDIZED PLANT ANALYSIS RISK (SPAR) MODELS

Dear Mr. Benjamin:

I am responding to your April 20, 2004, letter, which requested that the NRC "perform proactive reviews of the NRC SPAR models with Exelon/AmerGen and correct identified deficiencies." You cited recent experience in resolving differences identified between the Peach Bottom probabilistic risk assessment (PRA) and the NRC SPAR model for the September 15, 2003, loss of offsite power (LOOP) event as an example of the need to undertake these reviews. Specifically, you stated that, "The SPAR model issues took two to three months of effort between Exelon, NRC Region I risk staff, and NRC risk modeling contractors to identify and correct." You noted that, "This effort was an unnecessary increased burden to Exelon and NRC Regional staff."

We have a different perspective and do not agree that the review constituted an unnecessary regulatory burden. As to the time required, during our December 9-12, 2002, onsite review of the Peach Bottom SPAR model, we requested, but were not provided, the cut sets from the Peach Bottom PRA for the purposes of performing a more detailed review of the SPAR model against the plant PRA. We believe that, had we been able to obtain the cut sets for the Peach Bottom PRA, it is likely that the lower level sequence which was a primary cause of the difference discussed above would have been modeled more appropriately. Once there was common understanding of the modeling differences, the actual revision to the SPAR model involved less than a week of effort.

Nevertheless, we believe that it would be worthwhile to perform an enhanced onsite review of some of our SPAR models. We propose that this review initially be restricted to two specific Exelon/AmerGen plants - Limerick 1 and 2 and Peach Bottom 2 and 3. The Limerick units had previously served as pilot plants in the Mitigating Systems Performance Index (MSPI) Development Program. As a result, significant changes were made to the Limerick SPAR model to better model the plant's design and operational characteristics. We would then perform the onsite review for the Peach Bottom SPAR model as a follow-up. Based on our experience from the Peach Bottom review, we will evaluate the appropriate course of action regarding additional model reviews.

A description of the proposed approach for the reviews is contained in the Attachment. Please contact Patrick D. O'Reilly of my staff, who is the NRC SPAR Model Development Program Project Manager, to discuss the next steps. Dr. O'Reilly may be reached on 301-415-7570. His e-mail address is pdo@nrc.gov. As part of our response to your organization's separate letter requesting the most recent version of the Revision 3 SPAR model for each Exelon/Amergen plant, we will be transmitting the latest version of the Revision 3 SPAR models for Limerick 1 and 2 and Peach Bottom 2 and 3 to you for your review prior to our meetings.

If you have any questions about this matter, please contact me (301-415-6641) or Patrick O'Reilly, as mentioned above.

Sincerely yours,

/RA/

Carl J. Paperiello, Director
Office of Nuclear Regulatory Research

Attachment: As stated

cc: J. Dyer, NRR
S. Collins, RGN-I
W. Travers, RGN-II
J. Caldwell, RGN-III
B. Mallett, RGN-IV

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***See previous concurrence**

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MEMORANDUM DATED: 8/12/04

SUBJECT: REQUEST FOR REVIEWS OF AGENCY STANDARDIZED PLANT ANALYSIS RISK (SPAR) MODELS

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Attachment

DISCUSSION OF PROPOSED PROACTIVE REVIEW OF SPAR MODEL FOR EXELON/AMERGEN PLANT AGAINST PLANT'S PRA

Limerick 1 and 2

An onsite comparison of the Limerick SPAR model with the plant PRA would give us the opportunity to judge the accuracy and benefit of the approach taken in our Mitigating Systems Performance Index (MSPI) reviews. The lessons learned from the Limerick SPAR model review will be applied to the process to update the Peach Bottom SPAR model.

In order to complete the type of review envisioned for the Limerick SPAR model, we will require an estimated two days of discussions with members of your PRA staff who are familiar with the Limerick PRA. We would propose that this review be conducted sometime during the fourth quarter of Calendar 2004. The information that we would need prior to the review is identified below. All other PRA-related information which we need to conduct the proposed review was obtained previously during the MSPI Pilot Program comparison exercise.

Information about Limerick 1 and 2 Needed Prior to Proactive Review Of Revision 3 SPAR Model Against Exelon/AmerGen's PRA for Plant

In order for the NRC staff to properly prepare for the proactive review of the Revision 3 SPAR model for Limerick 1 and 2 against Exelon/AmerGen's PRA for that plant, the following information about the Limerick PRA is needed before the review takes place:

- Table/Summary of Latest PRA Results [Including Initiating Event (IE) Frequencies and Initiator-Specific Contributions to Overall Core Damage Frequency (CDF)].
- Dependency Table/Matrix.
- Success Criteria Table.
- Disallowed Maintenance Combinations.
- Key Operator Actions and Associated Failure Probability Values.
- System Descriptions.
- Cut Sets in Electronic Form (e.g., spreadsheet, text file, *.EOP file).
- Basic Event Descriptions, Probability Values, and Importance Measures [In Electronic Form (e.g., Spreadsheet)].
- Event Trees.

NOTE: We currently have a copy of the Limerick cut sets and basic event information dated April 24, 2003, with a calculated CDF of 4.5×10^{-6}/yr. We also have a hard copy of the event trees from the same period. We do not have current versions of the first six items identified above. If any of the information in the last three items identified above has been updated since April 2003, we need the most recent update.

Peach Bottom 2 and 3

For the case of the Peach Bottom SPAR model review, we will require 2½-3 days of discussions with members of your PRA staff who are familiar with the Peach Bottom PRA. The information that we would need prior to the review is identified below. Our preparation for the Peach Bottom SPAR model review will require more information and the onsite discussion with your PRA staff will require more time than for Limerick because Peach Bottom was not an MSPI Pilot Program plant.

Information about Peach Bottom 2 and 3 Needed Prior to Enhanced Review of Revision 3 SPAR Model Against Exelon/AmerGen's PRA for Plant

In order for the NRC staff to properly prepare for the proactive review of the Revision 3 SPAR model for Peach Bottom 2 and 3 against Exelon/AmerGen's PRA for that plant, the following information about the Peach Bottom PRA is needed before the review takes place:

- Table/Summary of Latest PRA Results [Including Initiating Event (IE) Frequencies and Initiator-Specific Contributions to Overall Core Damage Frequency (CDF)].
- Dependency Table/Matrix.
- Success Criteria Table.
- Disallowed Maintenance Combinations.
- Key Operator Actions and Associated Failure Probability Values.
- System Descriptions.
- Cut Sets in Electronic Form (e.g., spreadsheet, text file, *.EOP file).
- Basic Event Descriptions, Probability Values, and Importance Measures [In Electronic Form (e.g., Spreadsheet)].
- Event Trees.

NOTE: We currently have a copy of the Peach Bottom dependency matrix, the zero maintenance cut set and basic event data files (dated March 2003), Chapters 3 & 4 of the PRA documentation (including success criteria, event trees, system descriptions), and a summary of the PRA results. However, the PRA summary information is inconsistent with the cut set files that we have, especially for Unit 2 (PRA summary indicates Unit 2 CDF is 4.6×10^{-6}/yr and Unit 3 CDF is 4.2×10^{-6}/yr; cut set files indicate Unit 2 CDF is 9.9×10^{-6}/yr and Unit 3 CDF is 4.2×10^{-6}/yr). Therefore, a new set of cut sets and accompanying basic event data are needed. If any of the other information identified above has been updated since March 2003, we need the most recent update.