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United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

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

Three Mile Island Nuclear Station, Unit 1
Facility Operating License No. DPR-50
NRC Docket No. 50-289

Subject: Response to Request for Additional Information Regarding NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors"

- References:
- (1) Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004
 - (2) Letter from K. R. Jury (Exelon Generation Company, LLC and AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission "Exelon/AmerGen Response to NRC Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors,'" dated March 7, 2005
 - (3) Letter from J. B. Hopkins (U. S. Nuclear Regulatory Commission) to C. M. Crane (Exelon Generation Company, LLC) "Byron Station, Units 1 and 2 and Braidwood Station, Units 1 and 2 – Request for Additional Information (RAI) Related to Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors,'" dated June 3, 2005

AKB

- (4) Letter from T. G. Colburn (U. S. Nuclear Regulatory Commission) to C. M. Crane (Exelon Generation Company, LLC) "Three Mile Island Nuclear Station, Unit 1 – Request for Additional Information (RAI) Related to Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors,'" dated June 3, 2005

The U.S. Nuclear Regulatory Commission (NRC) issued Reference 1, a Generic Letter (GL) to request that addressees perform an evaluation of the emergency core cooling system and containment spray system recirculation functions in light of the information provided in the GL and, if appropriate, take additional actions to ensure system function. Additionally, the GL requested addressees to provide the NRC with a written response.

Reference 2 provided the Exelon Generation Company, LLC (Exelon) and AmerGen Energy Company, LLC (AmerGen) response to the requested information, which included the responses for Braidwood Station, Byron Station, and Three Mile Island Station. References 3 and 4 requested additional information regarding the Braidwood Station, Byron Station and Three Mile Island Station responses to the GL. The attachment to this letter provides the requested information.

If you have any questions or require additional information, please contact Doug Walker at (610) 765-5726.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

7/27/05
Executed on



Pamela B. Cowan
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC
AmerGen Energy Company, LLC

Attachment: Response to Request for Additional Information Regarding NRC Generic Letter 2004-02 – Braidwood, Byron, and Three Mile Island Stations

cc: Regional Administrator – NRC Region I
Regional Administrator - NRC Region III
NRC Project Manager, NRR – Braidwood and Byron Stations
NRC Project Manager, NRR – Three Mile Island Station
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
NRC Senior Resident Inspector – Three Mile Island Station
Illinois Emergency Management Agency – Division of Nuclear Safety
R. R. Janati, Commonwealth of Pennsylvania

Attachment

**Response to Request for Additional Information
Regarding NRC Generic Letter 2004-02
Braidwood, Byron, and Three Mile Island Stations**

Attachment
Response to Request for Additional Information
Regarding NRC Generic Letter 2004-02
Braidwood, Byron, and Three Mile Island Stations

NRC Requested Information

In your 90-day response to GL 2004-02, you indicated that evaluations for coating failures, chemical precipitation effects of debris accumulation, and the downstream effects of debris laden fluid may be completed after the September 1, 2005, response due date, depending on the schedule for testing and the availability of industry guidance. This is contrary to the information request in GL 2004-02, which requests that these subjects be addressed in the September 1, 2005, response. This delay is also contrary to the staff's position that there are sufficient bases to address sump vulnerability to chemical effects and that the September response will be incomplete if the evaluation is incomplete, the design is not complete, or there is no schedule for upgrades. In particular, the cooperative NRC-Electric Power Research Institute tests in progress at the University of New Mexico are designed to determine if chemical effects occur, but are not designed to measure head loss associated with any chemical effects. The staff notes that some chemical effects have been observed in the initial three tests. In this light, please discuss your plans and schedule for evaluating these subjects. In addition, please discuss any plans for performing testing to support your evaluation of these subjects.

Exelon and AmerGen Response:

By letter dated March 7, 2005, Exelon provided a 90-day response to Generic Letter 2004-02 for Byron Station, Units 1 and 2, Braidwood Station, Units 1 and 2 and Three Mile Island Station, Unit 1 based on information available at that time. Subsequent to submitting the 90-day response, additional test data and industry guidance have become available pertaining to chemical effects, evaluation of downstream effects, and coatings failure.

Chemical Effects:

Recent cooperative NRC-Electric Power Research Institute (EPRI) chemical testing indicates that precipitants could be formed during the long-term post-Loss Of Cooling Accident (LOCA) recirculation operation of the Emergency Core Cooling System (ECCS). The effects of these precipitants on screen head loss have not yet been quantified (analytically or by testing). However, Exelon and AmerGen have initiated an evaluation to address the impact of chemical effects on the sump screen head loss during post-LOCA recirculation. The evaluation will determine if the parameters (for example, quantities and types of materials that will be submerged post-LOCA, sump water temperature and pH) from the NRC-EPRI tests for chemical effects bound site-specific post-LOCA parameters (as instructed in the NEI 04-07 Guidance Document SER Section 7.4). Exelon and AmerGen plan to disposition the impact of chemical effects by documenting available margins in the sump screen head loss analyses and Net Positive Suction Head (NPSH) Available analyses for the affected pumps. Margins available in these analyses can be utilized for dispositioning the impact from issues such as chemical effects. This chemical effects evaluation will be summarized in our September 1, 2005, response to Generic Letter 2004-02 and justification based on available information will be provided to explain the margin taken to address chemical effects.

As pointed out in the RAI, the recent NRC-EPRI testing was not designed to quantify the impact of chemical effects on sump screen head loss. NEI is coordinating a testing effort to be performed by the sump screen manufacturers, which is expected to provide head loss correlations due to chemical effects. Our plan is to require chemical effects testing, by the sump strainer manufacturer, in the procurement specification for new sump strainers. The results of this testing will be used to confirm that adequate margin in head loss has been reserved to accommodate chemical effects. We plan to establish a schedule for this activity as part of the new sump strainer procurement process (currently ongoing). We intend to provide the schedule for this testing with the September 1, 2005 Generic Letter response.

Downstream Effects:

The final version of the guidance document for the evaluation of downstream effects, WCAP-16406-P, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191," was published on June 30, 2005. Exelon and AmerGen are currently performing the evaluation for downstream effects in response to Generic Letter 2004-02 utilizing the referenced WCAP methodology.

We are aggressively pursuing completion of this evaluation and we intend to provide a summary of the affected components potentially requiring modifications as well as a schedule for completing any plant modifications or open items in our September 1, 2005 response. At this time, there are no plans to perform site-specific testing in support of the downstream effects evaluations.

Coatings:

The debris quantity determination for failure of coatings is being performed and will be completed in accordance with the current NEI and NRC issued guidance (NEI 04-07, Pressurized Water Reactor Sump Performance Evaluation Methodology), in support of the September 1, 2005 GL response. This information will be included as part of the maximum head loss postulated.

Initial testing by the Westinghouse Owners Group is commencing to determine PWR specific values for the Destruction Pressure and the resulting Zone of Influence for Design Basis Accident (DBA)-Qualified Coatings. Exelon and AmerGen will evaluate the results of this testing as it becomes available for potential debris quantity determination. Exelon and AmerGen will inform the NRC of any plans to utilize this information.