

September 21, 2006

Mr. Christopher M. Crane  
President and Chief Nuclear Officer  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3, AND QUAD CITIES  
NUCLEAR POWER STATION, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL  
INFORMATION RELATED TO EXELON GENERATION COMPANY, LLC'S  
EXTENDED POWER UPRATE OPERATION COMMITMENTS  
(TAC NOS. MD2932 AND MD2933)

Dear Mr. Crane:

By letter to the Nuclear Regulatory Commission (NRC) dated January 26, 2006, Exelon made a regulatory commitment to meet with NRC management to discuss the results of evaluations performed to support long-term operation of the Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities), at the extended power uprate (EPU) level.

The NRC staff is reviewing the modifications installed at Quad Cities and the results of the tests performed to support EPU operation, and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. This request for information was electronically transmitted to your staff on August 24, 2006, and during a discussion with your staff via telephone on September 8, 2006, it was agreed that Exelon would provide a response to these questions by September 30, 2006. After the NRC staff reviews the response, we will schedule a final technical conference call with you to discuss the response. Once all technical issues are resolved, the management meeting mentioned above will be scheduled.

C. Crane

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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 you should have any questions, please contact John Honcharik at (301) 415-1157.

Sincerely,

*/RA/*

Maitri Banerjee, Senior Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-237, 50-249,  
50-254 and 50-265

Enclosure:  
RAI

cc w/encl: See next page

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Sincerely,

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OFFICIAL RECORD

REQUEST FOR ADDITIONAL INFORMATION

RELATED TO LONG-TERM EXTENDED POWER UPRATE OPERATION CONDITIONS AT

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-237 AND 50-249

By letter to the Nuclear Regulatory Commission (NRC) dated January 26, 2006, Exelon Generation Company, LLC (Exelon) made a regulatory commitment to meet with NRC management to discuss the results of evaluations performed to support long-term operation of the Quad Cities Nuclear Power Station, Units 1 and 2 (QC1 and QC2), at the extended power uprate (EPU) level. The NRC staff has determined that the following information is needed in order to complete its review:

1. How will Exelon monitor the performance of the acoustic side branches (ASBs) installed at QC1 and QC2 in maintaining acceptable main steam line (MSL) pressure fluctuations and vibrations during long-term operation up to extended power uprate (EPU) conditions? For example, what are the plans for monitoring MSL strain gage and accelerometer data; performing plant walkdowns of the ASBs and MSL piping and components; inspecting and testing of MSL components (such as ASBs and electromatic relief valves); and conducting steam dryer inspections? What are the consequences associated with the loss of ASB performance (such as clogging by debris or wear of the wire mesh)? How will ASB performance degradation be addressed?
2. What are the sources of new acoustic resonance peaks that appear in the MSL strain gage data discussed in Exelon Report AM-2006-002 (Revision 0), "Quad Cities Unit 2 Main Steam Line Acoustic Source Identification and Recommendations for Load Reduction," and Exelon Report AM-2006-003 (Revision 0), "Quad Cities Unit 1 Main Steam Line Acoustic Source Identification and Load Reduction," submitted in Exelon letters dated May 3 and August 2, 2006, respectively, following return of the QC units to EPU operation with the ASB modifications? For example, see the resonance peak at 36 Hz in the QC1 MSL strain gage data, and the resonance peaks between 22 and 25 Hz, and at 158 Hz, in QC2 MSL strain gage data. What are the plans to ensure that such peaks do not cause unacceptable pressure loads on the steam dryer and vibrations in MSL components?
3. What are the plans to ensure that extended operation of QC1 and QC2 between original licensed thermal power (OLTP) and EPU conditions will not result in unacceptable acoustic-generated pressure fluctuations and vibrations? For example, see the resonance peaks at 127 and 143 Hz between OLTP and EPU conditions in the Structural Integrity Associates Report SIR-06-199 (May 1, 2006), "Quad Cities Unit 2 Strain Gage and Accelerometer Data Reduction Summary," referenced in Exelon Report AM-2006-002 enclosed with the licensee's submittal dated May 3, 2006.

Enclosure

4. Figures 10 through 13 in Exelon Report AM-2006-002 show the QC2 MSL B vibration spectra at OLTP and EPU conditions prior to ASB installation for frequencies up to 1 kHz. The figures show harmonics at twice and three times the fundamental singing frequency (about 320 and 480 Hz). What is the potential impact of any new resonances that might be excited at higher frequencies due to the installation of the ASBs?
  
5. In its EPU restart reports submitted on May 3 and August 6, 2006, Exelon does not include a revised steam dryer stress analysis for QC1 and QC2 using MSL strain gage data collected during EPU operation with the ASB modifications. As discussed in the past, the NRC staff has not accepted specific aspects of Exelon's steam dryer stress analysis. For example, the bias error and uncertainty assumptions for the acoustic circuit methodology (ACM) are not supported by a comparison of the QC2 steam dryer pressure loads calculated by the ACM during EPU operation before the ASB modifications to actual measured QC2 steam dryer data for specific frequencies intervals or steam dryer locations. Exelon has not justified the assumptions for damping applied in its steam dryer stress analysis in light of the data from the hammer tests of the replacement steam dryers. Also, the bias error/uncertainty assumptions associated with the finite element model stress-to-force transfer functions (based on comparison to dynamic hammer test data on the QC1 and QC2 replacement dryers) needs to be properly addressed. The exponent used by the licensee for the load extrapolation from maximum achieved thermal power to licensed EPU power is not clearly supported by data near the maximum achieved thermal power in the frequency range of interest. Some uncertainties in the steam dryer stress analysis, such as load extrapolation and time shifting, appear more appropriately addressed as bias errors. With the current effectiveness of the ASBs in reducing MSL pressure fluctuations and vibrations to less than OLTP levels prior to the ASB modifications, it is not necessary to resolve these issues with Exelon's steam dryer stress analysis at this time for EPU operation of QC1 and QC2. However, these issues might need to be addressed if the ASB effectiveness becomes degraded at QC1 or QC2, or if Exelon plans to use its steam dryer stress analysis approach, along with its bias error/uncertainty assumptions, for other plants.

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