

April 28, 2006

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

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNIT 2 - REQUEST FOR
ADDITIONAL INFORMATION RELATED TO THE UNIT 2 STEAM DRYER
INSPECTION (TAC NO. MC0878)

Dear Mr. Crane:

The Nuclear Regulatory Commission (NRC) staff is reviewing the results of the recent steam dryer inspection at Quad Cities Nuclear Power Station (QCNPS), Unit 2. One aspect of this review is to ensure implementation of the commitments documented in your letter to the NRC dated January 26, 2006, "Commitments and Plans Related to Extended Power Uprate Operation." This review has determined that additional information is needed. The specific information being requested is formally addressed in the enclosure to this letter. The request was initially transmitted via e-mail to you on April 12, 2006. We received responses to some of the questions via e-mail. However, we request that the responses be formally submitted to the NRC on the docket.

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 have a question or need further information, please contact me at (301) 415-2277.

Sincerely,

/RA by D.Collins for/

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

Docket No. 50-265

Enclosure:
Request for Additional Information

cc w/encl: See next page

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

April 28, 2006

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNIT 2 - REQUEST FOR
ADDITIONAL INFORMATION RELATED TO THE UNIT 2 STEAM DRYER
INSPECTION (TAC NO. MC0878)

Dear Mr. Crane:

The Nuclear Regulatory Commission (NRC) staff is reviewing the results of the recent steam dryer inspection at Quad Cities Nuclear Power Station (QCNPS), Unit 2. One aspect of this review is to ensure implementation of the commitments documented in your letter to the NRC dated January 26, 2006, "Commitments and Plans Related to Extended Power Uprate Operation." This review has determined that additional information is needed. The specific information being requested is formally addressed in the enclosure to this letter. The request was initially transmitted via e-mail to you on April 12, 2006. We received responses to some of the questions via e-mail. However, we request that the responses be formally submitted to the NRC on the docket.

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 have a question or need further information, please contact me at (301) 415-2277.

Sincerely,
/RA by D.Collins for/
Maitri Banerjee, Senior Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-265

Enclosure:
Request for Additional Information

cc w/encl: See next page

DISTRIBUTION:

PUBLIC	LPLF R/F	RidsNrrDorlLplf
RidsNRRPMMBanerjee	RidsNrrLADClarke	RidsAcrsAcnwMailCenter
RidsOGCRp	RidsRgn3MailCenter	RidsNrrDorlDpr
TScarborough	CWu	RidsNrrDeEemb
RidsNrrDciCptb	RidsNrrDciEmcbA	

ADAMS Accession Number: ML061160445 *concurred via email

OFFICE	LPL3-2/BC	LPL3-2/LA	DE/EEMB/BC	DCI/EMCB-A/BC	LPL3-1/BC
NAME	D.Collins	DClarke*	KManoly	KGruss	LRaghavan
DATE	4/28/06	4/27/06	4/27/06	4/27/06	4/28/06

OFFICIAL RECORD COPY

Quad Cities Nuclear Power Station Units 1 and 2

cc:

Site Vice President - Quad Cities Nuclear Power Station
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Quad Cities Nuclear Power Station Plant Manager
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Regulatory Assurance Manager - Quad Cities
Exelon Generation Company, LLC
22710 206th Avenue N.
Cordova, IL 61242-9740

Quad Cities Resident Inspectors Office
U.S. Nuclear Regulatory Commission
22712 206th Avenue N.
Cordova, IL 61242

David C. Tubbs
MidAmerican Energy Company
One River Center Place
106 E. Second, P.O. Box 4350
Davenport, IA 52808-4350

Vice President - Law and Regulatory Affairs
MidAmerican Energy Company
One River Center Place
106 E. Second Street
P.O. Box 4350
Davenport, IA 52808

Chairman
Rock Island County Board of Supervisors
1504 3rd Avenue
Rock Island County Office Bldg.
Rock Island, IL 61201

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, IL 60532-4351

Illinois Emergency Management Agency
Division of Disaster Assistance & Preparedness
110 East Adams Street
Springfield, IL 62701-1109

Document Control Desk - Licensing
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Senior Vice President of Operations
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Vice President - Licensing and Regulatory Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Director - Licensing and Regulatory Affairs
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

Assistant General Counsel
Exelon Generation Company, LLC
200 Exelon Way
Kennett Square, PA 19348

Manager Licensing - Dresden, Quad Cities and Clinton
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

REQUEST FOR ADDITIONAL INFORMATION

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

DOCKET NO. 50-265

In reviewing Exelon Generation Company, LLC's (Exelon's) results of the steam dryer inspection at Quad Cities Nuclear Power Station (Quad Cities), Unit 2, the NRC staff has determined that the following information is needed in order to complete its review:

1. Please provide the following information to the NRC staff:
 - (a) steam dryer inspection results and analysis, including metallurgical reports;
 - (b) steam dryer failure root cause report;
 - (c) steam dryer stress analysis report;
 - (d) justification for the steam dryer repair, including the extent of the repair, impact of the repair on steam dryer structural characteristics, and evaluation of remaining steam dryer; and
 - (e) description, analysis, and justification for the electro-magnetic relief valve (ERV) modification in support of extended power uprate (EPU) operation, including evaluation of the shaker table test failure?
2. Provide the main steam line (MSL) strain gage and accelerometer data, and walkdown information, during the power ascension.
3. For the QCNPS, Unit 2 power ascension test procedure, TIC-1402, please provide the power ascension intervals for test condition (TC) steps and hold times above original licensed thermal power (TC 12 to 18).
4. Provide the basis for the vibration acceptance criteria for Levels 1 and 2 in Attachment 9.2 of TIC-1402.
5. Provide the basis for the MSL strain gage data acceptance criteria for Levels 1 and 2 in Attachment 9.3 of TIC-1402.
6. Provide the scope and objectives of the walkdowns that are planned at specific test condition steps.
7. Provide the extent of and the justification for leaving the small cracks in service during operation, especially at EPU.

8. For the large dryer crack in the skirt base metal at the 135-degree location, provide the following information and documentation supporting your responses.
 - (a) What may be the magnitude of plastic strains and residual stresses introduced by the reported installation difficulty?
 - (b) What may be the corresponding reduction in the fatigue stress limits?
 - (c) What may be the stresses acting at the crack location?
 - (d) What is the stress intensity at the crack tip?
9. In the stress analysis submitted by Exelon in August 2005 (Report GENE-0000-0043-5391-01-P), the maximum stress intensity in the skirt was high (24,285 psi) when 2 percent damping was assumed. Then damping in the skirt was increased to 4 percent and the corresponding maximum stress intensity was reduced to about 9,000 psi. Explain the basis for assuming that 4 percent damping is a reasonable estimate of the actual structural damping.
10. Explain why some small fatigue cracks in several vane assemblies are not repaired. Did initial installation introduce any residual stress at the crack locations? What may be the magnitude of this stress? What may be the driving force for these cracks? How does this driving force compare with the one acting on the large crack at the 135-degree location? How much these small cracks may grow during the next fuel cycle?
11. Are the MSL strain gage data at 2957 MegaWatts thermal (MWt) available? How does this data compare with the corresponding data at 2885 MWt and at pre-EPU condition? Provide similar comparison for reactor pressure vessel level sensor data.
12. What may be the magnitude of the weld residual stresses at the repaired crack location? What may be the effect of these residual stresses on the fatigue stress limits? Explain why the repaired crack location may not be susceptible to fatigue cracking.
13. Address how the magnitude of residual stresses created as a result of highly constrained weld repair is determined. How do these residual stresses affect the fatigue life for the material?
14. Discuss the potential for loose parts resulting from the failure of the backing bar.