

Mr. Oliver D. Kingsley, President
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July 19, 2001

SUBJECT: ENVIRONMENTAL ASSESSMENT OF THE EXEMPTION FROM THE
REQUIREMENTS OF 10 CFR 50 PART 60 AND APPENDIX G, FOR BYRON
STATION, UNITS 1 AND 2, AND BRAIDWOOD STATION, UNITS 1 AND 2 - (TAC
NOS. MB0751, MB0752, MB0753 AND MB0754)

Dear Mr. Kingsley:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to the application from Commonwealth Edison Company (ComEd) for exemption request dated July 5, 2000, as supplemented on December 8, 2000. The proposed exemption would allow the use of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Cases N-588, "Alternative to Reference Flaw Orientation of Appendix G for Circumferential Welds in Reactor Vessels, Section XI, Division 1," and N-640, "Alternative Reference Fracture Toughness for Development of P-T Limit Curves for ASME Section XI, Division 1," instead of the methodologies in 10 CFR Part 50, Appendix G.

Subsequent to the date of the original request, ComEd was merged into Exelon Generation Company, LLC (Exelon). By letter dated February 7, 2001, Exelon informed the NRC that it assumed responsibility for all pending NRC actions that were requested by ComEd.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Mahesh Chawla, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-454, STN 50-455,
STN 50-456 AND STN 50-457

Enclosure: Environmental Assessment

cc w/encl: See next page

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Byron/Braidwood Stations

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Sincerely,

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Mahesh Chawla, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-454, STN 50-455,
STN 50-456 AND STN 50-457

Enclosure: Environmental Assessment

cc w/encl: See next page

Distribution:

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DATE	06/27/01	06/29/01	06/27/01	07/6/01	07/12/01	07/17/2001

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UNITED STATES NUCLEAR REGULATORY COMMISSION
EXELON GENERATION COMPANY, LLC
DOCKET NOS. STN 50-454, STN 50-455, STN 50-456 AND STN 50-457
BYRON STATION, UNITS 1 AND 2
BRAIDWOOD STATION, UNITS 1 AND 2
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from the requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Section 50.60(a) for Facility Operating License Nos. NPF-37, NPF-66, NPF-72 and NPF-77, issued to Exelon Generation Company, LLC, (the licensee), for operation of the Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2 located in Ogle County in Illinois and Will County in Illinois, respectively. Therefore, as required by 10 CFR 51.21, the NRC is issuing this environmental assessment and finding of no significant impact.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

The proposed action would exempt Byron and Braidwood from application of specific requirements of 10 CFR Part 50, Section 50.60(a) as it applies to Appendix G, and substitute with the use of ASME Code Cases N-588 and N-640. 10 CFR Part 50, Appendix G, requires that pressure-temperature (P-T) limits be established for reactor pressure vessels (RPVs) during normal operating and hydrostatic or leak rate testing conditions. Specifically, 10 CFR

Part 50, Appendix G, states, "The appropriate requirements on both the pressure-temperature limits and the minimum permissible temperature must be met for all conditions." Appendix G of 10 CFR Part 50 specifies that the requirements for these limits are the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, Appendix G Limits.

The proposed action is in accordance with the licensee's application for exemption dated July 5, 2000, as supplemented by letter dated December 8, 2000.

The Need for the Proposed Action:

The proposed action (i.e., granting the exemption) is needed because utilization of Code Case N-588 and Code Case N-640 will widen the current narrow P-T operating window, especially in the region of low temperature operations. The two primary safety benefits that would be realized are a reduction in the challenges to the low-temperature over pressure protection (LTOP) system, resulting in an inadvertent opening of a power-operated relief valve (PORV) and a reduction in the risk of damaging the reactor coolant pump seals due to pump operation, under conditions where it is difficult to maintain adequate seal differential pressure to ensure proper pump operation.

Code Case N-588 permits the postulation of a circumferentially-oriented flaw (in lieu of an axially-oriented flaw) for the evaluation of the circumferential welds in RPV P-T limit curves. Code Case N-640 permits the use of an alternate reference fracture toughness (K_{Ic} fracture toughness curve instead of K_{Ia} fracture toughness curve) for reactor vessel materials in determining the P-T limits. Since the pressure stresses on a circumferentially-oriented flaw are lower than the pressure stresses on an axially-oriented flaw by a factor of 2, using Code Case N-588 for establishing the P-T limits would be less conservative than the methodology currently

endorsed by 10 CFR Part 50, Appendix G and, therefore, an exemption to apply the Code Case would be required by 10 CFR 50.60. Likewise, since the K_{Ic} fracture toughness curve shown in ASME Section XI, Appendix A, Figure -2200-1 (the K_{Ic} fracture toughness curve) provides greater allowable fracture toughness than the corresponding K_{Ia} fracture toughness curve of ASME Section XI, Appendix G, Figure G-2210-1 (the K_{Ia} fracture toughness curve), using Code Case N-640 for establishing the P-T limits would be less conservative than the methodology currently endorsed by 10 CFR Part 50, Appendix G and, therefore, an exemption to apply the Code Case would also be required by 10 CFR 50.60. It should be noted that, although Code Case N-640 was incorporated into the ASME Code recently, an exemption is still needed because the proposed P-T limits (excluding Code Cases N-588 and N-640) are based on the 1989 edition of the ASME Code.

Environmental Impacts of the Proposed Action:

The NRC has completed its evaluation of the proposed action and concludes granting the exemption would provide an adequate margin of safety against brittle failure of the Byron and Braidwood reactor vessels. The proposed action (i.e., granting the exemption) will not significantly increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not have a potential to affect any historic sites. It does not affect non-radiological plant effluents and has

no other environmental impact. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

Accordingly, the NRC concludes that there are no significant environmental impacts associated with the proposed action.

Environmental Impacts of the Alternatives to the Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed action (i.e., the “no-action” alternative). Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any different resource than those previously considered in the Final Environmental Statement for the Byron and Braidwood stations dated April 1982 and June 1984 respectively.

Agencies and Persons Consulted:

On June 22, 2001, the staff consulted with the Illinois State official, Mr. Frank Niziolek of the Illinois Department of Nuclear Safety, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the environmental assessment, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated July 5, 2000, as supplemented by letter dated December 8, 2000. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room, located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management Systems (ADAMS) Public Electronic Reading Room on the Internet at the NRC web site, <http://www.nrc.gov/NRC/ADAMS/index.html>. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737 or by e-mail to pdr@nrc.gov.

Dated at Rockville, Maryland, this 19th day of July 2001.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Mahesh Chawla, Project Manager, Section 2
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Division of Licensing Project Management
Office of Nuclear Reactor Regulation