

January 31, 2000

Mr. Oliver D. Kingsley, President
Nuclear Generation Group
Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: QUAD CITIES - ENVIRONMENTAL ASSESSMENT AND FINDING OF NO
SIGNIFICANT IMPACT FOR AN EXEMPTION FROM THE REQUIREMENTS
OF 10 CFR PART 50, SECTION 50.60 AND APPENDIX G (TAC NOS. MA7140
AND MA7141)

Dear Mr. Kingsley:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption from the requirements of Title 10 of the Code of Federal Regulations, (10 CFR) Part 50, Section 50.60(a) for the Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities). This action is in response to your letter dated November 12, 1999, that submitted new pressure-temperature (P-T) limits for Quad Cities. The new P-T limits were developed using the methodologies in the American Society of Mechanical Engineers (ASME) 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.

A copy of the environmental assessment has been forwarded to the Office of the Federal Register for publication.

Sincerely,

/RA/

Stewart N. Bailey, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-254 and 50-265

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSION
COMMONWEALTH EDISON COMPANY
AND
MIDAMERICAN ENERGY COMPANY
DOCKET NOS. 50-254 AND 50-265
QUAD CITIES NUCLEAR POWER 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 certain requirements of Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Section 50.60(a) for Facility Operating Licenses Nos. DPR-29 and DPR-30, issued to Commonwealth Edison Company (ComEd, or the licensee) for operation of the Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities), located in Cordova, Illinois.

ENVIRONMENTAL ASSESSMENT

Identification of the Proposed Action:

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.

To address provisions of amendments to the technical specifications (TS) P-T limits, the licensee requested in its submittal dated November 12, 1999, that the staff exempt Quad Cities from application of specific requirements of 10 CFR Part 50, Section 50.60(a) and Appendix G,

and substitute use of ASME Code Cases N-588 and N-640. 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 A-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.

The proposed action is in accordance with the licensee's application for exemption dated November 12, 1999.

The Need for the Proposed Action:

ASME Code Case N-588 and Code Case N-640 are needed to revise the method used to determine the RCS P-T limits, since continued use of the present curves unnecessarily restricts

the P-T operating window. Since the RCS P-T operating window is defined by the P-T operating and test limit curves developed in accordance with the ASME Section XI, Appendix G procedure, continued operation of Quad Cities with these P-T curves without the relief provided by ASME Code Case N-640 would unnecessarily require the RPV to maintain a temperature exceeding 212 degrees Fahrenheit in a limited operating window during the pressure test. Consequently, steam vapor hazards would continue to be one of the safety concerns for personnel conducting inspections in primary containment. Implementation of the proposed P-T curves, as allowed by ASME Code Case N-640, does not significantly reduce the margin of safety and would eliminate steam vapor hazards by allowing inspections in primary containment to be conducted at lower coolant temperature.

In the associated exemption, the staff has determined that, pursuant to 10 CFR 50.12(a)(2)(ii), the underlying purpose of the regulation will continue to be served by the implementation of these Code Cases.

Environmental Impacts of the Proposed Action:

The Commission has completed its evaluation of the proposed action and concludes that the exemption described above would provide an adequate margin of safety against brittle failure of the Quad Cities reactor vessels.

The proposed action will not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, 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 nonradiological environmental impacts, the proposed action does not involve any historic sites. It does not affect nonradiological plant effluents and has no

other environmental impacts. Therefore, there are no significant nonradiological impacts associated with the proposed action.

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

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 resources not previously considered in the Final Environmental Statement for the Quad Cities Nuclear Power Station, Units 1 and 2, dated September 1972.

Agencies and Persons Consulted:

In accordance with its stated policy, on January 28, 2000, the staff consulted with the Illinois State official, 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 Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission 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 November 12, 1999, which is available for public inspection at the Commission's Public

Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC. Publicly available records will be accessible electronically from the ADAMS Public Library component on the NRC Web site, <http://www.nrc.gov> (the Electronic Reading Room).

Dated at Rockville, Maryland, this 31st day of January 2000.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Anthony J. Mendiola, Chief, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation