



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D. C. 20555-0001

May 11, 1994

Docket Nos. 50-295  
and 50-304

Mr. D. L. Farrar  
Manager, Nuclear Regulatory Services  
Commonwealth Edison Company  
Executive Towers West III, Suite 500  
1400 OPUS Place  
Downers Grove, Illinois 60515

Dear Mr. Farrar:

SUBJECT: ACCEPTANCE OF THE SUBMITTAL ENTITLED "LOW UPPER-SHELF TOUGHNESS FRACTURE ANALYSIS OF REACTOR VESSELS OF ZION NUCLEAR POWER STATION, UNITS 1 AND 2 FOR LOAD LEVEL A & B CONDITIONS" (TAC NOS. M84422 AND M84423)

By letter dated May 11, 1992, and supplemented on July 29, 1993, Commonwealth Edison Company (CECo or the licensee) submitted a Babcock and Wilcox Owners Group Materials Committee topical report BAW-2148P, "Low Upper-Shelf Toughness Fracture Analysis of Reactor Vessels of Zion Units 1 and 2 for Load Level A & B Conditions," for staff review and approval. This report was intended to demonstrate through fracture mechanics analysis that there exist margins of safety against fracture equivalent to those required by Appendix G of American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section III, for beltline welds having upper-shelf energy (USE) values below the 50 ft-lb screening criterion.

The staff, with assistance from Oak Ridge National Laboratory (ORNL), has completed the review of this report. Based on the information submitted, the staff agrees with the contractor's conclusion presented in the technical evaluation report (TER) attached, that "The Zion, Units 1 and 2 reactor pressure vessels have been shown to have adequate margins of safety against ductile tearing in low upper-shelf longitudinal welds, at presently projected end-of-life, for Level A and B conditions, by analysis results meeting the criteria contained in ASME Code Case N-512."

The staff's review of the topical report BAW-2178P "Low Upper-Shelf Toughness Fracture Mechanics Analysis for Level C & D Loads" is also complete, however, there are further licensee actions required to apply BAW-2178P to the Zion Nuclear Power Station, Units 1 and 2 reactor vessels which are addressed in separate correspondence. As soon as these actions are complete, the final determination regarding the Zion 1 and 2 reactor vessels having margins of safety against fracture equivalent to those required by Appendix G of ASME Code Section III for all levels (A, B, C, and D) will be made. Although BAW-2148P did not evaluate plate material, the information submitted in response to Generic Letter (GL) 92-01 indicates that all beltline plates in the Zion

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Mr. D. L. Farrar

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vessels have end-of-life USE values exceeding 50 ft-lbs. This information will be confirmed as part of the staff's GI 92-01 review.

Sincerely,

Original signed by:

Clyde Y. Shiraki, Senior Project Manager  
Project Directorate III-2  
Division of Reactor Projects III/IV  
Office of Nuclear Reactor Regulation

Enclosures:

1. Safety Evaluation
2. Technical Evaluation Report

cc w/enclosure:  
See next page

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DATE	5/11/94	5/11/94	5/11/94	1/94	1/94	1/94
COPY	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO

Mr. D. L. Farrar  
Commonwealth Edison Company

Zion Nuclear Power Station  
Unit Nos. 1 and 2

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