Docket Nos. 50-295
and 50-304

February 26, 1988

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Mr. L. D. Butterfield, Jr.
Nuclear Licensing Manager
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Butterfield:

SUBJECT: ZION STATION UNIT 1 AND 2 - COPPER CONTENT OF REACTOR VESSEL BELTLINE WELDS FOR PTS EVALUATION (TAC NOS. 60777 AND 60778)

The enclosed Safety Evaluation Report is a review of the third submittal from Commonwealth Edison Company (CECo), giving the basis for CECo's position with regard to the copper and nickel contents of the controlling beltline material for Zion Station Units 1 and 2, submitted in response to the PTS rule, 10 CFR 50.61.

The first PTS submittal for Zion 1 and 2 by CECo on January 17, 1986 was based on a report by Westinghouse Electric Corporation, WCAP-10962. The controlling reactor vessel material from the standpoint of pressurized thermal shock evaluations was correctly identified as the circumferential beltline weld in the Zion 1 reactor vessel and the lower shell longitudinal welds in the Zion 2 reactor vessel. Both critical welds were made with weld wire heat number 72105. To arrive at the best estimate copper and nickel contents for these vessel welds, Westinghouse averaged 87 measurements given in WCAP-10962 that had been reported for several weldments made with wire 72105. All but 30 of these came from studies made by B&W and reported in BAW 1799. The unusually large number of measurements of copper and nickel contents for heat 72105, was the result of some special studies conducted by B&W to determine throughwall variability in a nozzle dropout, and other studies on pieces of weld material from the archives.

The chemical composition given in BAW 1799 was 0.35% Cu and 0.59% Ni. However, in WCAP-10962, Westinghouse added about 30 measurements taken mainly from two surveillance reports by Southwest Research Institute (SWRI) which gave the results of X-ray fluorescence measurements on irradiated broken Charpy bars. When these 30 measurements are included, WCAP-10962 reported an average of 87 values of 0.32% Cu and 0.56% Ni.

In its review of the first CECo submittal for Zion 1, the staff concluded that many of the 30 measurements included in the list in WCAP-10962 were not appropriate, and the copper and nickel contents should be 0.35% and 0.59%, respectively, as reported in BAW 1799. The finding was transmitted to CECo by letter

of August 14, 1986. At a meeting on October 3, 1986, representatives of CECo and Westinghouse presented additional data and arguments in support of their position, but their arguments were not persuasive to the staff. The CECo position was put in writing in another submittal dated December 29, 1986, which referenced WCAP-11350, a compilation of the technical information presented at the meeting. The staff again did not support the CECo position in an SER transmitted to CECo on May 7, 1987. A third submittal by CECo, dated September 18, 1987, commented on the staff SER and restated the contents of their December 29, 1986 submittal in the form of attachments to the letter. The enclosed SER is a review of the September 18, 1987 submittal.

The staff has reviewed the CECo submittal of September 18, 1987. Our conclusion is unchanged from the one transmitted to CECo on August 14, 1986, and again on May 7, 1987. We find that the CECo submittal provides no new information. Our enclosed SER gives the basis for the conclusion that the CECo's reported values of copper and nickel content are not acceptable and that when "RT_{PTS}" is evaluated using values the staff finds appropriate, the Zion Unit 1 plant will reach the screening criterion before the end of licensed life. CECo, therefore, should submit plans for further flux reduction. The Zion Unit 2 plant has the same controlling material, but the reported fluence is low enough to prevent reaching the screening criterion before the end of licensed life.

The staff believes that further discussion of the statistical treatment of the data would be productive only if CECo were to present new information with regard to the copper and nickel content of the weld material.

Sincerely,

Original Signed by/

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects

Enclosure:
As stated

cc: See next page

(*See Previous Concurrence)

PDIII-2:PM	PDIII-2:LA	PDIII-2:PD
*JNorris:bj	*LLuther	DMuller
2/11/88	2/12/88	2/26/88

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Commonwealth Edison Company

Zion Station

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