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ComEd

ZRA97055 November 11, 1997

U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Attention: Document Control Desk

Subject: Zion Nuclear Power Station, Units 1 and 2 Annual 16 CFR 50.46 Report Supplement/30 Day Report NRC Docket Nos. 50-295 and 50-304

Reference: Letter from M. T. Lesniak, ComEd to U.S. Nuclear Regulatory Commission, dated April 23, 1997, Braidwood Station Unit 1 and 2, Byron Station Units 1 and 2, Zion Station Units 1 and 2, 30 day 10 CFR 50.46 Report

This letter provides a Zion Station specific supplement to the referenced 10 CFR 50.46 report and fulfills the 10 CFR 50.46 (a) (3) (ii) 30 day reporting requirement for significant changes or errors.

Title 10 of the Code of Federal Regulations Section 50.46, requires that changes to or errors discovered in an acceptable Emergency Core Cooling System (ECCS) cooling performance evaluation model or in the application of such a model be reported at least annually. In addition, if a change or error results in a calculated Peak Fuel Cladding Temperature (PCT) which is significantly different from that which was calculated for the limiting transient using the last acceptable model, a 30 day report must be submitted. The 30 day report must include the nature of the change, the effect of the change and a schedule for providing a reanalysis or taking other action as may be needed to show compliance.

The current Zion Station acceptable evaluation model (analysis of record) is associated with the 1992 incorporation of Vantage-5 fuel. This analysis used a generic ECCS injection flow versus Reactor Coolant System (RCS) pressure curve for Loss of Coolant Accident (LOCA) conditions using assumptions which bounded a plant with Zion's characteristic design features. The analysis of record ECCS injection flow was verified by a ComEd Zion Station specific ECCS injection flow versus RCS pressure calculation using the RETRAN computer code. The ComEd calculation included an assumption of



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15% pump performance degradation from vendor tests curves. The pump degradation allowed by the Zion Station Inservice Testing Program (10% from baseline values) is programmatically controlled to remain conservative with respect to the ComEd calculation assumption. The ComEd ECCS injection flow calculation did not use a time dependent RCS pressure curve since the calculation determined the steady state ECCS injection flow available at any given RCS pressure during a LOCA.

The results of the ComEd calculation identified a small range of RCS pressures for which the Zion Station specific ECCS injection flow was slightly less than that assumed in the analysis of record. However, for the rest of the RCS pressure ranges the ECCS injection flow was greater than that assumed in the analysis. The results of the ComEd calculation were transmitted to Westinghouse to evaluate the impact of this deviation on the Small Break LOCA (SBLOCA) analysis of record. Westinghouse determined that the deviation in ECCS flows was more than compensated for by the excess flows in the other RCS pressure ranges. Westinghouse also confirmed that even rather large changes in ECCS flow, up to 10%, would not adversely affect the loop seai clearing, or prolong the period of stagnation at the secondary side conditions. ComEd has reviewed and accepted the Westinghouse ECCS flow deviation evaluation.

Based upon further consideration, it would have been appropriate to reflect the ECCS flow evaluation issue in previous 10 CFR 50.46 reports. Attachment A to this letter provides a Zion Station specific supplement to the most recent 10 CFR 50.46 report (Reference) reflecting the information for the ECCS flow evaluation issue. This information will be incorporated into the Attachments for the next 10 CFR 50.46 report. Recently, Westinghouse has estimated the ECCS cooling performance PCT benefit from the evaluation as being 70 °F, which while considered a significant difference in terms of 10 CFR 50.46 (a) (3) (ii) reporting criteria, actually represents a reduction in the net PCT for the SBLOCA analysis and compliance with 10 CFR 50.46 requirements is maintained. Zion Station is in the process of incorporating a new ECCS cooling performance evaluation into the design basis. This process is intended to be complete concurrent with the Unit 1 Z1R15 reload analysis.

ComEd believes no other evaluations, related to 10 CFR 50.46 reporting requirements, similar to the ECCS flow evaluation exist. However, as a part of the corrective action associated with this issue, ComEd is evaluating the consistency between Zion Station plant characteristics associated with the other SBLOCA analysis parameters and the analysis of record assumptions. Any formal PCT impact evaluations will be reported in accordance with 10 CFR 50.46.

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Attachment B to this letter is a listing of the commitments made by ComEd in this submittal. Please direct any questions you may have concerning this submittal to this office.

Respectfully,

John C. Brons

Site Vice President Zion Nuclear Station

Attachments

cc: NRC Regional Administrator - RIII Zion Station Project Manager - NRR Senior Resident Inspector - Zion Station Office of Nuclear Facility Safety - IDNS IDNS Resident Inspector

ATTACHMENT A ZRA97055 Page 1 of 1

Zion Station Supplement to 10 CFR 50.46 Report^(a)

Attachment 1 - ComEd 10 CFR 50.46 Report

Zion Station Unit 1 and Unit 2 Small Break LOCA

Add under "A. Prior LOCA Model Assessments"

ECCS Flow Evaluation

 $\Delta PCT = 0.0 \,^{\circ}F$

Attachment 2 - ComEd 10 CFR 50.46 Report Assessment Notes

Add

ECCS Flow Evaluation

A complete break spectrum Small Break Loss of Coolant Accident (SBLOCA) analysis was performed in 1991 (approved in 1992) assuming certain ECCS flows (analysis of record). Subsequently, ComEd performed a Zion Station specific ECCS flow calculation based on Zion Station specific ECCS test flow data. This calculation determined that for certain pressure ranges the ECCS flows assumed in the SBLOCA analysis was less than the flows assumed in the Westinghouse analysis. The shortfall is approximately 1 to 5 lb/sec in the pressure range between 1143 and 1230 psia. However in all other pressure ranges the ECCS flows are about 2 to 13.7 lb/sec higher than the flow assumed in the analysis of record. Westinghouse performed an evaluation to determine the impact of this shortfall and determined that the small shortfall in the ECCS flows is more than compensated by the excess flows in the other pressure ranges. While no credit was assumed for the benefit, for PCT margin tracking purposes Westinghouse estimated a PCT benefit of 70 °F based on generic sensitivity studies. A conservative 0 °F PCT impact is assigned for the ECCS Flow Evaluation.

a) This attachment supplements the report contained in ComEd letter from M. T. Lesniak, dated April 23, 1997, "Braidwood Station Unit 1 and 2, Byron Station Units 1 and 2, Zion Station Units 1 and 2, 30 day 10 CFR 50.46 Report." This supplement applies to Zion Station only.

List of Commitments Identified in ZRA97055

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The following table identifies those actions committed to by ComEd in this document. Any c is actions discussed is this submittal represent intended or planned actions by ComEd. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify Mr. Robert Godley, Zion Station Regulatory Assurance Manager, of any questions regarding this document or any associated regulatory commitments.

Commitment	Committed Date or Outage
Zion Station is in the process of incorporating an ECCS cooling performance reanalysis into the design basis. This process is intended to be complete concurrent with the Unit 1 Z1R15 reload analysis.	Unit 1 Z1R15
As a part of the corrective action associated with this issue, ComEd is evaluating the consistency between Zion Station plant characteristics associated with the other SBLOCA analysis parameters and the analysis of record assumptions. Any formal PCT in pact evaluations will be reported in accordance with 10 CFR 50.46.	N/A