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Downers Grove, IL 60515-5701

ComEd

November 4, 1996

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Byron Station Unit 2
30 Day 10 CFR 50.46 Report
NRC Docket No. 50-455

Reference: Commonwealth Edison Letter, D. M. Saccomando to US NRC, "Braidwood Station Units 1 and 2, Byron Station Units 1 and 2, Zion Station Units 1 and 2, 30 Day 10 CFR 50.46 Report, NRC Docket Nos. 50-456/457, 50-454/455, and 50-295/304," dated April 25, 1996.

This letter fulfills the 30 day reporting requirement of 10 CFR 50.46(a)(3)(ii) for Byron Nuclear Power Station Unit 2. The Reference transmitted to the NRC the most recent report for Braidwood, Byron, and Zion Stations.

Attachment 1 provides updated information regarding the Peak Clad Temperature (PCT) of the limiting Small Break and Large Break Loss of Coolant Accident analysis evaluation for Byron Station Unit 2. Attachment 1 includes all assessments as of Nov. 1, 1996. Attachment 2 contains a detailed description for each change or error reported,

Westinghouse has notified ComEd of several issues which have resulted in PCT assessments to both the large and small break LOCA analyses for Braidwood, Byron, and Zion Stations. ComEd has reviewed the Westinghouse notifications and concurs with Westinghouse's conclusions that ComEd has no reporting obligations under 10 CFR 21. For all the discrepancies contained in this report, Westinghouse and ComEd have determined that these issues do not constitute substantial safety hazards, and that all ComEd plants continue to comply with the requirements of 10 CFR 50.46 and 10 CFR 50 Appendix K acceptance criteria. Because compliance with 10 CFR 50.46 is maintained with existing PCT penalties, no near term reanalysis is planned for these Units.

Please direct any questions to this office.

Marcia T. Lesniak
Nuclear Licensing Administrator

Attachments

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cc: A. B. Beach, Regional Administrator - Region III
G. Dick, Byron Project Manager - NRR
S. Burgess, Senior Resident Inspector - Byron
Office of Nuclear Safety - IDNS

PLANT NAME: Byron Station Unit 2
ECCS EVALUATION MODEL: Small Break LOCA
REPORT REVISION DATE: 11/1/96
CURRENT OPERATING CYCLE: 7

ANALYSIS OF RECORD

Evaluation Model: NOTRUMP
Calculation: Westinghouse SEC-SAII-4730-C0, May, 1995
Fuel: VANTAGE5 17 x 17
FQ = 2.50
FNΔH = 1.65
SGTP = 30%

Reference PCT	PCT =	1723.0°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS		
NOTRUMP Specific Enthalpy Error (Note 3)	ΔPCT =	20.0°F
SALIBRARY Double Precision Error (Note 4)	ΔPCT =	-15.0°F
B. CURRENT LOCA MODEL ASSESSMENTS		
SBLOCTA Fuel Rod Initialization Error (Note 5)	ΔPCT =	10.0°F
Burst and Blockage/Time in Life (Note 2)	ΔPCT =	30.0°F
NET PCT	**PCT =**	**1768.0°F**

PLANT NAME: Byron Station Unit 2
ECCS EVALUATION MODEL: Large Break LOCA
REPORT REVISION DATE: 11/1/96
CURRENT OPERATING CYCLE: 7

ANALYSIS OF RECORD

Evaluation Model: BASH
Calculation: Westinghouse SEC-SAII-4747-C0, May, 1995
Fuel: VANTAGE5 17 x 17
FQ = 2.50
FNΔH = 1.65
SGTP = 30%

Reference PCT	PCT =	1915.0°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

Removed Upper Internal Assembly Alignment Pins (Note 1)	ΔPCT =	28.0°F

B. CURRENT LOCA MODEL ASSESSMENTS

100 psig IFBA, Use of ZIRLO fuel materials and futre increased peaking factors (Note 6)	ΔPCT =	53.0°F

NET PCT	**PCT =**	**1996.0°F**

Attachment 2
ComEd 10 CFR 50.46 Report
Westinghouse Assessments Not Included in Rack-Ups

1. Removed Upper Internal Assembly Alignment Pins

   This penalty addresses the removal of upper internals alignment pins at Byron Station. Two pins have been removed from Byron Unit 1 and six pins have been removed from Byron Unit 2. Removal of the alignment pins resulted in a LBLOCA PCT penalty of 5.0°F for Byron Unit 1. Byron Unit 2 previously accounted for the cut pins by penalizing FQ. Starting with Byron Unit 2 Cycle 6 a LBLOCA PCT penalty of 28.0°F was assessed instead of the FQ penalty. This will establish consistent treatment of the cut alignment pins for both Byron units.

2. Burst and Blockage/Time in Life

   Typically the Small Break LOCA was performed using BOL fuel performance data (PAD) and evaluated at other burnups using the SPIKE code. Presently this is explicitly modeled using a "time in life study." The burst and blockage model does not have any effect on the PCT if the PCT is less than 1700°F. The analysis of record for Zion already incorporated the penalty due to burst and blockage (a time in life study was performed). However, the axial nodalization error and the revised rod internal pressure model had synergistic effects in the burst and blockage model which result in a SBLOCA PCT penalty of 83°F for Zion. As a result of the NOTRUMP specific enthalpy error, an additional 20°F penalty is applicable to Zion resulting in a total penalty of 103°F. As a result of the NOTRUMP specific enthalpy error and SALIBRARY double precision error, a 30°F burst and blockage/time in life penalty is now applicable to the SBLOCA for Braidwood and Byron.

3. NOTRUMP Specific Enthalpy Error

   A typographical error was found in a line of coding in the NOTRUMP code. This line of coding was intended to model the calculation found in Equation L-127 of WCAP-10230P-A. Although the equation in the topical report is correct, the coding represented the last term as a partial derivative with respect to the fluid node mixture region total energy instead of the mixture region total mass. This 20°F penalty applies to the SBLOCA analyses for Braidwood, Byron, and Zion.

4. SALIBRARY Double Precision Errors

   During migration of the LOCA codes from the CRAY computer to UNIX-based platforms, programming errors were made in two library routines related to improper specification of double precision variables. These errors were found and fixed during later code maintenance. Test cases with individual codes in the models demonstrated very small differences in only the SATAN and NOTRUMP code results, with correspondingly minor effects on final peak clad temperature predictions. Because the error only affects a very limited number of LBLOCA analyses which were performed on the UNIX platform prior to correcting the codes, the evaluation of effects for LBLOCA analyses were assessed on a plant-specific basis. The LBLOCA analyses for Byron, Braidwood, and Zion were not affected. For SBLOCA analyses performed on the UNIX platform, representative plant calculations resulted in an estimated generic effect of -15°F for affected analyses. This error only applies to the SBLOCA analyses for Braidwood and Byron since the Zion analyses were performed on the CRAY platform.

5. SBLOCTA Fuel Rod Initialization

An error was discovered in the SBLOCTA code related to adjustments which are made as part of the fuel rod initialization process which is used to obtain agreement between the SBLOCTA model and the fuel data supplied from the fuel thermal-hydraulic design calculations at full power, steady-state conditions. Specifically, an adjustment to the power, which is made to compensate for adjustments to the assumed pellet diameter was incorrect. Additionally, updates were made to the fuel rod clad creep and strain model to correct logic errors that could occur in certain transient conditions. These model revisions had a small effect on the fuel rod initialization process and could produce small effects during the transient. Due to the small magnitude of effects, and the interaction between the two times, they are being evaluated as a single, closely related effect, The error affects the model NOTRUMP. Representative plant calculations with the corrected model demonstrated that these revisions result in a predicted peak clad temperature increase on the order of 10°F. This 10°F penalty is applicable to Byron, Braidwood and Zion.

6. 100 psig Backfill Pressure, Use of ZIRLO Fuel Materials and Increased Peaking Factors.

Byron Unit 2 Cycle 7 reload fuel contains fuel rods initially pressurized to 100 psig. The previous cycle was pressurized to 200 psig. The reload fuel also contains ZIRLO cladding, mid-grids and intermediate flow mixing grids. The previous cycle used Zirc-4. Future cycles analysis will contain increased peaking factors, however the current cycle does not make use of the analysis. The conservative combination of the effects is estimated at 53°F.