

EXXON NUCLEAR COMPANY, INC.

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March 22, 1985
GFO:85:010

Mr. Richard DeYoung, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Error in the TOODEE2 Code Used in the Evaluation Model for PWR's

Ref.: G.F. Owsley (ENC) letter to Mr. H. Denton (NRC); Subject: Error in the 48,000 MWD/MTU LOCA-ECCS Analysis for D.C. Cook Unit 1, dated March 21, 1985

Dear Mr. DeYoung:

As has been reported to the Office of Nuclear Reactor Regulation in a telephone call from Mr. James Morgan of our organization on March 15, 1985 and by the reference letter, an error was discovered in the Evaluation Model used by Exxon Nuclear which affected the LOCA-ECCS analyses for some PWRs. This error was identified by Exxon Nuclear on March 15, 1985. The error was in an expression for a multiplier on the heat transfer coefficient used in TOODEE2, which was incorrectly programmed into the code.

TOODEE2 calculates the thermal response (heatup) of the hot fuel rod following the end of the blowdown transient until the core temperature transient is terminated. The incorrect coding caused the heat transfer coefficient multiplier in TOODEE2 to be 1.045, when it was intended to be 1.0 based on input to the code.

This notification is provided following the procedures identified in Part 21.21(b)(3). However, Exxon Nuclear does not believe this error could create a substantial safety hazard. Exxon Nuclear has now evaluated the impact of the error on all affected reactors and has concluded that the error would not result in exceeding the criteria of Part 50.46 during operation at the Technical Specification limits.

The reactors which were reanalysed by Exxon Nuclear with the error corrected were D. C. Cook Unit 1, Fort Calhoun, and St. Lucie Unit 1. The licensees operating each of these plants were notified of the error on March 15, 1985 and have been advised of the impact of the error on the analysis performed by Exxon Nuclear for their reactors.

The error effecting D. C. Cook Unit 1 was in the analyses to support increased burnup from 42.2 MWD/kg to 48.0 MWD/kg as reported in Exxon Nuclear document XN-NF-83-11. The analyses to support burnup points up to 42.2 MWD/kg were previously reported in XN-NF-81-07 and were done with a version of TOODEE2 which did not contain the error.

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AN AFFILIATE OF EXXON CORPORATION

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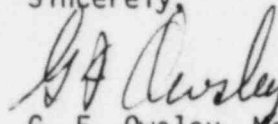
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ENC has reperformed the 48 MWD/kg exposure analysis which was affected by the coding error. The peak clad temperature calculated with this analysis using the corrected version of TOODEE2 at 48 MWD/kg is 1785°F versus the previous value of 1736°F for operation with a single LPSI pump. Using the same sensitivity study applied in XN-NF-83-61 the PCT increase from the analysis for maximum rather than minimum (single pump) LPSI flow is 42°F. Therefore, the PCT reported in XN-NF-83-61 was increased from 1736°F to 1778°F to account for maximum LPSI flow. Thus in the corrected analysis the calculated PCT is increased from 1785°F to 1827°F. The upward adjustment in PCT to account for maximum LPSI flow was not reported in the reference letter.

If there are questions, or if I can be of further help, please contact me.

Sincerely,



G. F. Owsley, Manager
Reload Licensing Liaison

GFO:lco

cc: Mr. J.G. Feinstein (AEP)
Mr. D. L. Wigginton (NRC)