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 FACIL: 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana &
 AUTH. NAME: ALEXICH, M.P. AUTHOR AFFILIATION: Indiana & Michigan Electric Co.
 RECIP. NAME: DENTON, H.R. RECIPIENT AFFILIATION: Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards reanalysis of calculations for cladding strain oxidation & pellet-cladding interaction using RODEX2 Code performed by Exxon.

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INDIANA & MICHIGAN ELECTRIC COMPANY

P.O. BOX 16631
COLUMBUS, OHIO 43216

September 8, 1983
AEP:NRC:0637Q

Donald C. Cook Nuclear Plant, Unit 2
Docket No. 50-316
License No. DPR. 74
RESULTS OF THE RODEX2 FUEL
MECHANICAL DESIGN ANALYSIS

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555


Dear Mr. Denton:

This letter transmits the attached information as required in Section B, paragraph 2.4 of the Safety Evaluation And Environmental Impact Appraisal related to Amendment 48 to the Facility Operating License. Specifically, the appraisal states that we should resubmit the results of the cladding strain, oxidation and Pellet/Cladding Interaction (PCI) calculations with the approved version of the RODEX2 code.

The Attachment to this letter was prepared by our fuels vendor (Exxon Nuclear Company). The Attachment provides (1) the results of the cladding strain, oxidation and maximum pellet/cladding contact pressure calculations which were performed with the approved version of the RODEX2 code; and (2) the results of the previous calculations performed for Cycle 4 operations. As discussed with Exxon Nuclear Company personnel on September 7, 1983, the chances for PCI is not increased due to the slight increase in pellet-cladding contact pressure. In our judgment, this submittal satisfies the staff's concern addressed above.

This document has been prepared following Corporate procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,


M. P. Alexich
Vice President

MPA/pab

cc: John E. Dolan
W. G. Smith, Jr. Bridgman
R. C. Callen
G. Charnoff
E. R. Swanson, NRC Resident Inspector - Bridgman

Adol

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EXXON NUCLEAR COMPANY, Inc.

600 - 108th Avenue N.E., C-00777, Bellevue, Washington 98009 Telephone (206) 453-4300

September 7, 1983

ENC-AEP:254

Mr. George John
Senior Engineer, Nuclear Materials and Fuel Management
American Electric Power Service Corporation
One Riverside Plaza, 20th Floor
Columbus, Ohio 43215

SUBJECT: REANALYSES FOR D.C. COOK 2 USING APPROVED VERSION OF RODEX2

Dear Mr. John:

In Amendment 48 to the facility operating license for the D. C. Cook Unit 2 nuclear plant, the NRC required that the calculations for cladding strain, oxidation, and pellet-cladding interaction be performed using the approved version of RODEX2 code prior to the ENC fuel reaching an average burnup of 10,000 MWD/MTU. The RODEX2 code was under Staff review at the time Amendment 48 was issued. This letter reports the results of that reanalyses of these parameters using the version of the RODEX2 code which has since been approved for PWR application by the Staff.

Both the original analyses, reported in XN-NF-82-25, "Generic Mechanical Design Report, Exxon 17x17 Fuel Assembly", April 1982, and the reanalyses were for a peak rod burnup of 47,000 MWD/MTU. Both analyses were done for the same power histories with the same input assumptions. A comparison of results is:

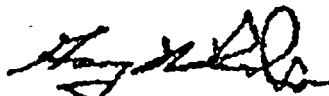
<u>Parameter</u>	<u>Analysis Reported In XN-NF-82-25</u>	<u>Analysis With Approved Version of RODEX2</u>
Cladding Strain,* %	0.10	0.079
Oxidation Thickness, Inches	0.00069	0.00069
Maximum Pellet/Cladding Contact Pressure, psi	1446	1469

*The cladding strain is the total positive cladding strain from the point of maximum creepdown until end-of-life. The cladding strain from beginning-of-life is negative for both analyses.

The calculation results confirm the validity of the original results. For both sets of analyses, the 1% strain criterion is satisfied. The amount of oxidation is unchanged and the differences in the pellet-cladding contact pressure is insignificant.

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

Sincerely,



H. G. Shaw
Contract Administrator

RAC:naa

cc: M. P. Alexich (AEP)
J. M. Cleveland (AEP)
R. A. Copeland (ENC)
J. Feinstein (AEP)
W. L. Zimmerman (AEP)

