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 FACIL: 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316
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 ALEXICH, M. P. Indiana & Michigan Electric Co.
 RECIP. NAME: RECIPIENT AFFILIATION
 DENTON, H. R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Requests extension of burnup restriction for current Cycle 4
 described in Section B.2.4 of safety evaluation & EIA re
 Amend 48 to License DPR-74. Justification for request
 submitted.

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August 26, 1983
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Donald C. Cook Nuclear Plant, Unit 2
Docket No. 50-316
License No. DPR-74
REQUEST FOR EXTENSION OF FUEL BURNUP IDENTIFIED IN THE
SAFETY EVALUATION REPORT FOR CYCLE 4

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

References

1. Safety Evaluation and Environmental Impact Appraisal by the Office of Nuclear Reactor Regulation, Related to Amendment No. 48 to Facility Operation License No. DPR-74, Indiana and Michigan Electric Company, Donald C. Cook Unit No. 2, Docket No. 50-316.
2. XN-NF-81-58(P), Revision 2, "RODEX2: Fuel Rod Thermal-Mechanical Response Evaluation Model," Exxon Nuclear Company, February 1983.
3. XN-NF-82-06(P), Revision 1, "Qualification of Exxon Nuclear Fuel for Extended Burnup," Exxon Nuclear Company, June 1982.

Dear Mr. Denton:

This letter requests that the burnup restriction described in Section B.2.4 of the Safety Evaluation and Environmental Impact Appraisal Related to Amendment 48 to the Facility Operating License for Donald C. Cook Nuclear Power Plant, Unit 2 (Ref. 1), be extended to 20,000 MWD/MTU. This extension will allow completion of the current cycle. The current limit of 10,000 MWD/MTU is expected to be reached on September 20, 1983. Without such an extension, we would be unable to fulfill the requirements of the license condition. Our justification for this request is discussed below.

In the Staff's Safety Evaluation Report for Cycle 4 operation at the D.C. Cook Unit 2 Nuclear Plant (Ref. 1), it was concluded that the existing calculations for cladding strain, oxidation, and pellet-cladding interaction (PCI) satisfy the acceptance criteria with considerable margin. Because these quantities had been evaluated with the Exxon Nuclear (ENC) RODEX2 code, which was still under Staff review, the SER required that confirmation analyses of the parameters be done

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when the review on the RODEX2 code is completed and approved, and prior to the ENC designed fuel reaching a batch average burnup of 10,000 MWD/MTU.

The cladding strain, oxidation, and PCI are not significantly affected during the irradiation interval between 10,000 and 20,000 MWD/MTU. Calculations with the most recent version of RODEX2 (Ref. 2) indicate that for conservatively assumed conditions (i.e., 750° F cladding temperature for nine months), the cladding oxidation thickness increases by one mil during this time interval. These calculations also indicate that during this interval, the cladding is still in the initial creepdown phase. This conclusion is supported by experimental data reported in XN-NF-82-06, "Qualification of ENC Fuel for Extended Burnup," Revision 1, dated June 1982 (Ref. 3). Because hard pellet contact does not occur during this period, PCI and cladding strain do not increase between 10,000 and 20,000 MWD/MTU, and the margin to the 1% cladding strain is not decreased.

Because the conditions of cladding strain, oxidation, and PCI do not change appreciably during the irradiation interval between 10,000 and 20,000 MWD/MTU, we feel that an extension of the SER burnup restriction to 20,000 MWD/MTU would not result in an increased probability of fuel failure or reduced margins of safety. We therefore request that the license restriction be modified.

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

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because the Commission is not a judicial body, it cannot issue orders or judgments. It can only make recommendations to the President and the Congress. The Commission's report is a recommendation, not a decision. The President and the Congress are the ones who make the final decision on whether to grant the license. The Commission's role is to provide information and advice to the President and the Congress. The Commission's report is a recommendation, not a decision. The President and the Congress are the ones who make the final decision on whether to grant the license. The Commission's role is to provide information and advice to the President and the Congress.

and, consequently, not to attribute to the unexplained.

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