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 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315  
 50-316 Donald C. Cook Nuclear Power Plant, Unit 2, Indiana & 05000316  
 AUTH. NAME: AUTHOR AFFILIATION:  
 MALONEY, G.P. Indiana & Michigan Electric Co.  
 RECIP. NAME: RECIPIENT AFFILIATION:  
 DENTON, H.R. Office of Nuclear Reactor Regulation

SUBJECT: Responds to 791109 ltr re impact of clad behavior data on  
 current ECCS analysis. Current limits remain valid.

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# INDIANA & MICHIGAN ELECTRIC COMPANY

P. O. BOX 18  
BOWLING GREEN STATION  
NEW YORK, N. Y. 10004

January 17, 1980  
AEP:NRC:00322

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
Subject: ECCS Analysis (Draft NUREG-0630)

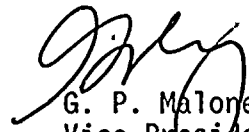
Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Denton:

This letter responds to Mr. D. G. Eisenhower's letter of November 9, 1979 concerning the impact of the clad behavior data published in draft NUREG-0630 on the current ECCS analysis for operating plants. In our letter of January 8, 1980 (AEP:NRC:00322A), we stated that our preliminary review of the impact of the new NRC data on the Unit 1 ECCS analysis showed that our current limits remain valid. A more complete review of this situation substantiates our preliminary conclusion. Our evaluation which is the basis of this finding is included as Attachment A to this letter.

The impact of the NRC data on Unit 2 was discussed in our letters of January 8, (AEP:NRC:00322A), January 9, (AEP:NRC:00322B), and January 11, 1980 (AEP:NRC:00322C).

Very truly yours,

  
G. P. Maloney  
Vice President

GPM:em

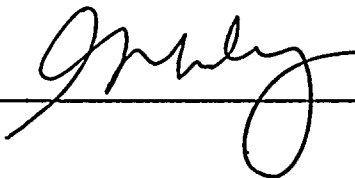
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STATE OF NEW YORK )  
COUNTY OF NEW YORK ) ss.

G. P. Maloney being duly sworn, deposes and says that he is the Vice President of licensee Indiana & Michigan Electric Company that he has read the foregoing statement concerning the 10 CFR 50.46 limit of the Donald C. Cook Nuclear Plant and knows the contents thereof; and that said contents are true to the best of his knowledge and belief.



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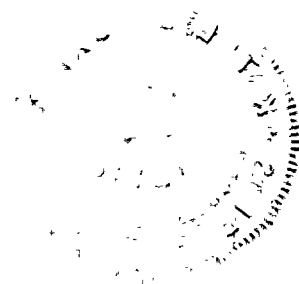
Subscribed and sworn to before me this                      day of



---

Notary Public

KATHLEEN BARRY  
NOTARY PUBLIC, State of New York  
No. 41-606592  
Qualified in Queens County  
Certificate filed in New York County  
Commission Expires March 30, 1981



Mr. Harold R. Denton, Director

-2-

AEP:NRC:00322

cc: R. C. Callen  
G. Charnoff  
R. S. Hunter  
R. W. Jurgensen  
D. V. Shaller -Bridgman

ATTACHMENT A  
TO  
AEP:NRC:00322

EFFECT OF NEW CLAD SWELLING AND RUPTURE DATA ON 10 CFR 50.46 LIMITS  
FOR  
DONALD C. COOK UNIT 1

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Exxon Nuclear Company (ENC) has performed plant specific analysis for Donald C. Cook Unit 1 to determine the effects on the Peak Clad Temperature (PCT) of the NRC-proposed Clad Swelling and Rupture Model(1). This analysis shows that the differences between the PCT's calculated with the NRC models are sufficiently small such that the current total peaking factor limits for Donald C. Cook Unit 1 protect the 2200°F PCT limit. Therefore, it is concluded that Donald C. Cook Unit 1 continues to be in conformance with the criteria of 10 CFR 50.46.

The changes in calculated PCT for ENC fuel at Donald C. Cook Unit 1 when the NRC model for clad swelling and rupture is used in place of the ENC model are summarized in Table 1. The calculations were performed for the 1.0 DECLS limiting break at Donald C. Cook Unit 1 (2). The PCT impact is seen to be relatively small ranging from 22°F to 35°F depending upon fuel exposure. Previous ENC calculations for Donald C. Cook using the ENC WREM-IIA ECCS Evaluation Model (3) showed the available margin to the 2200°F limit to be in excess of 40°F. Therefore, the PCT differences due to the use of the NRC Clad Swelling and Flow Blockage Model all fall within the available margin to the 2200°F limit.

These sensitivity calculations were made in accordance with ENC's approved WREM-IIA PWR ECCS Evaluation Model (3,4, 5). The fuel rod internal pressure for each exposure corresponds to the nominal conditions identified in the Donald C. Cook exposure sensitivity analysis (6). In all cases, the PCT with the NRC clad swelling and rupture model is less than 2200°F.





TABLE 1  
EFFECT OF NRC RUPTURE AND FLOW BLOCKAGE MODEL  
ON D. C. COOK 1 ECCS ANALYSIS

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Peak Pellet Exposure (MWD/MTM)	0	20,000	30,000	40,000
Total Peaking $F_Q$ *	1.95	1.95	1.774	1.65
Heatup Rate at Rupture ( $^{\circ}\text{C/S}$ )	2.0	1.5	1.0	.5
PCT Impact of NRC Model vs: ENC Model ( $^{\circ}\text{F}$ )	+22 $^{\circ}\text{F}$	+28 $^{\circ}\text{F}$	+35 $^{\circ}\text{F}$	+29 $^{\circ}\text{F}$

\* Current Technical Specifications



## REFERENCES

1. D. A. Powers and R. O. Meyer, "Cladding Swelling and Rupture Models for LOCA Analysis, " Draft NUREG-0630, November 8, 1979.
2. "Donald C. Cook Unit 1 LOCA Analyses Using the ENC WREM-Based PWR ECCS Evaluation Model (ENC WREM-II), " XN-76-51, October 1976.
3. "Exxon Nuclear Company WREM-Based Generic PWR ECCS Evaluation Model Update ENC WREM-11A: Responses to NRC Request for Additional Information," XN-NF-78-30 (A) & XN-NF-78-30, Amendment (A), May 1979.
4. " Exxon Nuclear Company WREM-Based Generic PWR ECCS Evaluation Model, " XN-75-41:
  - a. Volume I, July 1975
  - b. Volume II, August 1975
  - c. Volume III, Revision 2, August 1975
  - d. Supplement 1, August 1975
  - e. Supplement 2, August 1975
  - f. Supplement 3, August 1975
  - g. Supplement 4, August 1975
  - h. Supplement 5, Revision 5, October 1975
  - i. Supplement 6, October 1975
  - j. Supplement 7, November 1975.
5. "Exxon Nuclear Company WREM-Based Generic PWR ECCS Evaluation Model Update ENC WREM-II," XN-76-27, July 1976; Supplement 1, September 1976; Supplement 2, November 1976.
6. "Flow Blockage and Exposure Sensitivity Study for ENC D. C. Cook Unit 1 Reload Fuel Using ENC WREM-11 Model, "XN-76-51; Supplement 1, January 1977; Supplement 2, February 1978; Supplement 3, April 1978.