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AUTH.NAME AUTHOR AFFILIATION
ALEXICH,M.P. Indiana & Michigan Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Forwards BMI rept, "Hydrogen Combustion Modeling Assumptions for DC Cook Nuclear Plant," in response to SD Varga 850620 request for fog inerting test results.Sandia correlations for combustion & flame speed discussed.

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September 9, 1985
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Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
HYDROGEN CONTROL PROGRAM (10 CFR 50.44(c))

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

Dear Mr. Denton:

In his letter of June 20, 1985, Mr. Steven D. Varga approved with comments our schedule for the final resolution of the hydrogen control issue (10 CFR 50.44(c)). Mr. Varga requested that:

1) IMEC consider results of fog inerting tests in establishing values of ignition and propagation limits.

2) IMEC contact Sandia Laboratories to obtain the revised MARCH (HECTR) correlations for completeness of combustion and flame speed.

IMEC has responded to these requests by transmitting the enclosed report (Attachment 1) from Battelle Columbus Laboratories. The report provides technical background to the combustion model to be used in the program. The report includes discussion of the results of the fog inerting tests that were used to establish the ignition and propagation limits. IMEC has also contacted Sandia Laboratories, and has received the new test results and correlations for combustion completeness. The new correlation for flame speed that will be used is the default model in HECTR version 1.0.

In the opinion of Battelle Columbus Laboratories, these are the best correlations available from present knowledge and test results, and will be used in the burn model for the hydrogen control program. This information is also included in the report. Sandia also reported that a new flame speed correlation would be derived at some future time with the completion data reduction of FITS experimental results. There have been sufficient sensitivity studies done (Attachment 2) such that repeating the entire analysis with a slightly modified correlation is unnecessary.

The hydrogen burn model and parameters discussed in Attachment 1 will form the basis of the hydrogen control analysis for D. C. Cook Nuclear Plant.

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

Very truly yours,

M. P. Alexich
Vice President

cm

Attachment

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