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AUTH.NAME AUTHOR AFFILIATION
FITZPATRICK,E. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION
MURLEY,T.E. Document Control Branch (Document Control Desk)

SUBJECT: Discusses hydrogen control program schedule update. Hydrogen analysis results delayed from 920731 to 930228 due to late delivery of version of MAAP code suitable for ice condenser analysis & rework of failure assumptions.

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Power Company
P.O. Box 16631
Columbus, OH 43216

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Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
HYDROGEN CONTROL PROGRAM (10CFR50.44(c))
SCHEDULE UPDATE

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Attn: T. E. Murley

August 5, 1992

Dear Dr. Murley:

In an NRC letter dated April 10, 1989, it was indicated that the 10CFR50.44 hydrogen control review effort for the Donald C. Cook Nuclear Plant, which had been terminated by the NRC in 1986, would be subsumed into the Individual Plant Examination effort. Indiana Michigan Power Company (I&M) submitted the Individual Plant Examination results in letter AEP:NRC:1082E dated May 1, 1992. In that submittal, I&M committed to complete by July 31, 1992, additional analyses to demonstrate the ability of the hydrogen control system to mitigate the consequences of the release of hydrogen into Cook Nuclear Plant containment during postulated degraded core accidents. The purpose of this letter is to provide a status of the analytical efforts to date to bring closure to this issue.

The Cook Nuclear Plant hydrogen analysis program, which was terminated in 1986, used a combination of MARCH-2 and CLASIX computer codes. When the outstanding hydrogen issues were combined with the Individual Plant Examination (IPE) project, it was decided to complete the analysis with the MAAP code which was being used for the IPE Level 2 analysis. This code contains similar hydrogen generation and burn models to the two codes used in 1986. The IPE Level 2 analysis was scheduled to be performed during 1991 near the end of the project. We intended to perform the MAAP hydrogen analysis after the Level 2 results were available.

Completion of the IPE Level 2 analysis was delayed by late delivery of a version of the MAAP code suitable for ice condenser analysis and by the rework necessary due to the assumption of failure at the containment basemat. These issues are unrelated to hydrogen issues, but the delays and resultant manpower demands diverted our hydrogen work. As a result, only preliminary work on resolving the outstanding hydrogen issues was begun before the IPE was submitted on May 1, 1992. At that time, analysis had been completed to

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identify the important hydrogen sequences, to benchmark the basic hydrogen burn models of the MAAP code against the CLASIX code, and to identify some unique features of Cook Nuclear Plant that would require MAAP code changes.

Subsequent to the IPE submission, it was found that the MAAP code, with its conservative hydrogen modeling assumptions, was predicting global hydrogen burns in the upper containment. Such burns are considered overly conservative, given our hydrogen flow rates, because it is believed that hydrogen will burn continuously at the exit of the ice condenser. Moreover, global burns result in exaggerated pressure spikes and could lead to unnecessary plant modifications. Continuous burning, on the other hand, is expected to eliminate the possibility of accumulation of sufficient hydrogen concentrations to support a global burn in the upper containment. To support the continuous burn model, however, additional literature searches for empirical test results have been conducted, including a review of proprietary data for the BWR's Hydrogen Control Owners Group (HCOG). The latter data is considered the most complete data in this regard and activities have been ongoing with Enercon (HCOG Contractor) for more than seven months to determine its applicability and releasibility. These efforts now indicate that HCOG data will support continuous burns for Cook Nuclear Plant, and we are currently awaiting HCOG's decision regarding commercial terms for release of the needed proprietary data. This decision is expected very soon.

Associated with this issue, our vendor, Fauske & Associates, expects that further modifications to the MAAP code will be required to properly model the hydrogen burn characteristics in various regions of containment. Fauske estimates approximately six months to modify and benchmark the MAAP code using the HCOG data and then complete the analysis. Some of this work cannot begin until the HCOG data has been made available and has been analyzed for our geometry and flow conditions. Steps are being taken to perform as many of these tasks in parallel as possible.

Based on all of the above work activities, most of which were not well defined until the hydrogen analysis work evolved in the spring, it is now expected that the hydrogen analysis will not be completed until February 28, 1993. Any revisions to this data will be promptly brought to the attention of our NRC Project Manager.

Sincerely,

E E Fitzpatrick

E. E. Fitzpatrick
Vice President

tjw

cc: D. H. Williams, Jr.
A. A. Blind - Bridgman
J. R. Padgett
G. Charnoff
NFEM Section Chief
A. B. Davis - Region III
NRC Resident Inspector - Bridgman