UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Docket files
50-316

September 22, 1980

Docket No. 50-315
and 50-316

Mr. John Dolan, Vice President
Indiana and Michigan Electric Company
Post Office Box 18
Bowling Green Station
New York, New York 10004

Dear Mr. Dolan:

Prior to the TMI-2 accident the Commission's regulations regarding hydrogen control (10 CFR Section 50.44; GDC 50 in Appendix A to 10 CFR Part 50) dealt with calculated amounts of hydrogen generated from certain design basis accidents, such as the LOCA. These relatively small calculated amounts of hydrogen have been accommodated in the D. C. Cook Units 1 and 2 ice condenser containments by the use of small capacity hydrogen recombiners.

The accident at Three Mile Island Unit 2 (TMI-2) involved a large amount of metal-water reaction in the core with resulting hydrogen generation well in excess of the amounts specified in 10 CFR 50.44 of the Commission's regulations. Metal-water reactions in the range of 30 to 50 percent have been estimated. The hydrogen generated in the reaction was released to the containment, the combustible limit was exceeded and the hydrogen burned.

Studies conducted by the staff indicate that for ice condenser containments metal-water reactions in the range of what occurred at TMI-2 would result in hydrogen concentrations in the containments well above the combustible level for hydrogen in air. In addition, the studies indicated that the metal water reaction in excess of about 15% could result in containment pressures exceeding the design pressure. This subject has been discussed previously in the TMI Action Plan (NUREG-0660) with the ACRS and in recent Commission papers and briefings (SECY 80-107 and its supplements).

In light of this information the Commission recently placed the following hydrogen control measures in the full power license for the Sequoyah Nuclear Plant.

(a) By January 31, 1981, Tennessee Valley Authority (TVA) shall, by testing and analysis, show to the satisfaction of the NRC staff that an interim hydrogen control system will provide, with reasonable assurance, protection against breach of containment in the event that a substantial quantity of hydrogen is generated.

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(b) For operation of the facility beyond January 31, 1982, the Commission must confirm that an adequate hydrogen control system for the plant is installed and will perform its intended function in a manner that provides adequate safety margins.

(c) During the interim period of operation, TVA shall continue a research program on hydrogen control measures and the effects of hydrogen burns on safety functions and shall submit to the NRC quarterly reports on that research program.

In accordance with section 182(a) of the Atomic Energy Act of 1954, as amended, and 10 C.F.R. 50.54(f), you are required to provide within 20 days of the date of this letter written statements under oath or affirmation setting forth your plans and schedules in regard to the implementation of further hydrogen control measures at D. C. Cook, Unit Nos. 1 and 2. As part of your statement you should provide a preliminary description of any interim hydrogen control system you propose to use and a preliminary discussion of the manner in which the system will provide reasonable assurance that the containment will be protected in the event a substantial quantity of hydrogen is generated. We are considering modifying your license to incorporate the same or similar conditions as were included in the Sequoyah license. Please indicate in your response whether you agree to such modifications or if there are any reasons that this should not be done.

Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing

cc: See next page

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