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Docket Nos. 50-315
and 50-316

Mr. John Dolan, Vice President
Indiana and Michigan Electric Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Dolan:

As part of our continuing review of hydrogen control for ice condenser plants during postulated degraded core accidents, we have identified the need for additional information on several matters. The items pertain to the CLASIX code which has been used to support the licensing activities associated with ice condenser plants; e.g., determining the environmental conditions against which equipment survivability is to be evaluated.

It is requested that the Indiana and Michigan Electric Company establish a schedule to provide the information in response to the enclosed questions. These questions are also being sent to the Duke Power Company and TVA and a coordinated response will be acceptable. In regards to the overall review program for hydrogen control and equipment survivability, it is also requested that you inform us of your plans and schedules, particularly of the remaining submittals. We suggest that this can be done in a meeting between our staffs but no later than early September.

This request affects less than ten respondents, therefore, OMB clearance is not required.

Sincerely,

Original signed by:
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

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OFFICE	ORB 1	ORB 1					
SURNAME	DWigginton	SVarga					
DATE	8/5/83	8/10/83					

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cc: Mr. M. P. Alexich
Assistant Vice President
for Nuclear Engineering
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The Honorable Tom Corcoran
United States House of Representatives
Washington, D. C. 20515

James G. Keppler
Regional Administrator - Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

REQUEST FOR ADDITIONAL INFORMATION

1. With regard to the CLASIX code, the staff has previously requested clarification of the structural heat sink heat transfer models. The following pertinent points have been derived from the responses:

   i) Heat transfer is based on a temperature difference determined by ($T_{bulk} - T_{wall}$).

   ii) Heat transfer coefficients for degraded core accident analysis are determined from a natural convection (stagnant) correlation applicable to condensation heat transfer.

   iii) CLASIX does not explicitly model mass removal due to condensation heat transfer.

   Based on the description of the CLASIX structural heat sink model, it appears that the CLASIX model differs dramatically from generally accepted approaches and is not, as is claimed, consistent with standard methods such as those used in CONTEMPT. The differences are related to the treatment of the three items cited above. By comparison, previously accepted approaches are characterized by the following:

   i) Heat transfer is based on ($T_{sat} - T_{wall}$), when the surface temperature of the heat sink is less than T_{sat}; i.e., $T_{wall} < T_{sat}$.

   ii) Heat transfer coefficients are based on condensation only when $T_{wall} < T_{sat}$.

   iii) Condensed mass removal is based on condensation heat transfer with provisions for revaporizing a small fraction of the condensate.

A more detailed description of accepted practice is contained in NUREG-0588 and NUREG/CR-0255.

The effect of the CLASIX models would appear to be the de-superheating of the atmosphere too rapidly thus reducing gas temperatures and possibly altering the combustion characteristics.

Based on the above discussion, provide justification for the models incorporated in CLASIX or provide the results of analyses with acceptable models as outlined above. The analyses should encompass selected sensitivity studies to assure that the effects of the changes are determined for both containment integrity and equipment survivability considerations.

2. Provide a complete evaluation of fan (both air return and hydrogen skimmer as applicable) operability and survivability for degraded core accidents. In this regard discuss the following items:

   a. The identification of conditions which will cause fan overspeed, in terms of differential pressure and duration, and hydrogen combustion events.

   b. The consequences of fan operation at overspeed conditions. The response should include a discussion of thermal and overcurrent breakers in the power supply to the fans, the setpoints and physical locations of these devices, and the fan loading conditions required to trip the breakers.

   c. Indication to the operator of fan inoperability, corrective actions which may be possible, and the times required for operators to complete these actions.

d. The capability of fan system componetns to withstand differential pressure transients (e.g., ducts, blades, thrust bearings, housing), in terms of limiting conditions and components.

3. Provide an evaluation of the ultimate capability of ice condenser doors to withstand reverse differential pressures.

[illegible]