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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

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M. M. Mann
Assistant Director of Regulation for Reactors

METAL-WATER REACTIONS

As you know, the ACRR recently reviewed potential hydrogen generation mechanisms in light-water reactors following a loss of coolant. In connection with this discussion a member of the ACRR has requested that the light-water reactor vendors be asked to perform calculations, as soon as possible, to determine the fraction of the core alloy reacting with water (or steam) as a function of progressive degradation of the ECCS. The types of degradation assumed should include (a) a progressive reduction in flow through all elements, but with nominal ECCS initiation timing, (b) a progressive delay of flow initiation, but with design flow through all elements, and (c) applicable (or interesting) combinations of (a) and (b).

The break size assumed should be a double-ended rupture of the largest pipe. Best, realistic, or most probable assumptions should be used and identified clearly. Wherever possible, those assumptions most critical to the result also should be identified.

For a few typical cases, a measure of the post-LOCA core temperature distribution should be provided.

Original Signed by
R. F. Fraley

Raymond F. Fraley
Executive Secretary

cc: ACRR Members

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