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MEMORANDUM FOR: Roger J. Mattson, Director  
Division of Systems Integration

THRU: T. P. Speis, Assistant Director for Reactor Safety, DSI  
B. W. Sheron, Chief, Reactor Systems Branch, DSI  
G. N. Lauben, Section Leader, Reactor Systems Branch

FROM: Richard J. Barrett, Section A, RSB, DSI

SUBJECT: UNSUCCESSFUL ATTEMPT TO MONITOR REACTOR VESSEL LIQUID  
LEVEL IN LOFT

At the conclusion of the recent L2-5 experiment at LOFT, a brief test was conducted to determine whether the reactor vessel liquid level could be maintained above the top of the core but below the hot leg exit nozzles. The procedure involved monitoring fluid temperature at several elevations in the upper plenum to determine the liquid level, and cycling the ECCS to add liquid as required. The technique was intended for use during the L2-6 core-damage experiment to minimize the transport of fission products throughout the LOFT system.

At about 190 seconds into the experiment, the liquid level dropped into the core, and clad temperatures rose steadily from 400K to as high as 950K. Throughout this period, however, the upper plenum temperature readings remained constant at about 400K, incorrectly indicating that the core was still covered.

This result as it relates to liquid level detection inadequacies was brought to the attention of the Core Performance Branch shortly after the test. It is our understanding from CPB that liquid level detectors proposed by industry are not of the type used in the LOFT test. Thus the relevance of the event is not clear. I will keep you advised if I hear of anything new.

Original signed by

Richard J. Barrett, Section A  
Reactor Systems Branch, DSI

cc: L. Rubenstein  
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