



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

SEP 28 1979

MEMORANDUM FOR: Frank Schroeder, Acting Director
Division of Systems Safety

FROM: Voss A. Moore, Acting Assistant Director
for Plant Systems, DSS

SUBJECT: LONG RANGE RESEARCH PLAN - WATER REACTOR SAFETY RESEARCH

Plant Systems has reviewed the draft of a proposed plan for water reactor safety research developed by Dr. L. S. Tong, RES, dated September 21, 1979. We have the following comments:

1. 3.A.I Fire Protection, Item 2.

We are of the opinion that to obtain data on the effectiveness of safety related equipment (other than cable) in performing safety functions when subjected to exposure fires would be academic. We know that because no two fires are alike, the results and consequences from each fire (real or test) can be quite different. In our fire protection evaluations, we assume, conservatively, that any equipment in the fire zone is incapacitated.

2. 3.A.I Fire Protection, Item 3.

We do not believe that a study on corrosion of stagnant fluids in fire protection systems will uncover anything new. It is a well known fact that stagnant liquids cause corrosion, tuberculation and other mechanical problems. We have access to data collected by industry over the last 75 years. Various NFPA committees have also been concerned with this problem, and have addressed it in appropriate industry standards, such as requiring the establishment of maintenance procedures, and giving guidance to the design of liquid systems. As an example, for wet-pipe sprinkler systems, the code requires that pipes be pitched so that the system can be drained, that the system be designed with the ability for back flush, and capability of removing branch lines for visual inspection of the pipe intervals on a periodic basis.

3. 3.A.I Fire Protection

We recommend that instead of the two items discussed above, more confirmatory tests be performed on systems simulating actual plant conditions that we have reviewed and found to be acceptable.

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4. 3.A.II Qualification Testing Evaluation, Item 1.

Completion of qualification test methodology assessment is targeted for FY-1986. We recommend that the schedule be expedited as we expect to make final licensing decisions on methodology prior to 1986. Also, more emphasis should be placed on sensitive active electrical components, such as transmitters, switches, relays, etc.

5. 3.A.II Qualification Testing Evaluation, Item 5

RES indicates that they plan to establish minimum acceptable safety and reliability requirements for TMI-2 equipment. We are of the opinion that the primary responsibility for establishment of such requirements should rest with NRR.

6. 3.A.III Human Factors, Item 3.

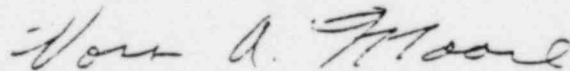
RES plans to complete in FY-1983 a human factors study, the results of which should be reflected in improved control systems and control room designs. Per Commission direction, the NRR staff plans to begin a short study of control room design improvements in FY 80. This study, which we expect to complete in FY 81, will result in developing guidelines and criteria for improving both existing and future control room designs. The RES program could provide a valuable input to our study if the schedule for this program is adjusted to produce results early in FY 81.

7. Auxiliary Systems Reliability Studies.

As we have already agreed with PAS/RES, we expect PAS, with some input from the Auxiliary Systems Branch/DSS, will conduct reliability studies on several selected systems. This study should start during FY 80.

8. BOP Systems Transient Studies.

Transients occurring in BOP designed systems have not been completely analyzed. Based on the TMI-2 accident, and incidents in other plants, we are of the opinion that additional studies to better understand the safety implications of these auxiliary systems is necessary. We would like these studies to start during FY 82.



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