File A-17

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

OCT 25 1979

Generic Task No. A-17

MEMORANDUM FOR: M. Aycock, Deputy Director, Unresolved Safety Issues Program

FROM: J. Angelo, Task Manager, Generic Task No. A-17

SUBJECT: ACRS REQUESTS

By memo dated October 16, 1979, I was requested to respond to an item on the ACRS report on Indian Point Generating Station, Unit 3 that recommends that the plant be reviewed for systems interactions that might lead to significant degradation of safety.

I infer from hand-written notes on an accompanying memo from W. T. Russell dated October 9, 1979 that the response should give the status of actions, including the status of related implementation and backfitting.

With regard to this issue, as it relates to Indian Point Generating Station, Unit 3, the task group has taken no action to conduct a specific study of this particular plant arrangement. Instead, the task group is currently conducting a systems interaction study as a generic matter. The scope of this study is contained in a Task Action Plan. Progress on this study has been reported in a number of interim reports issued by Sandia Laboratories and in meeting summaries issued by the task manager.

The present status of Generic Task No. A-17 is that Phase I of the task will be completed on or about January 1, 1980, with a final report issued on or about March 1, 1980. Phase I will attempt to identify whether any potential significant interactions have not been addressed in the Standard Review Plan. Phase I will also attempt to develop and assign tasks on or about March 30, 1980, for completion in Phase II. These tasks for Phase II may include such items as implementation of the findings from Phase I as well as follow-on studies that could extend the range and scope of the generic study. Phase II is expected to take at least one year to complete, and that takes it out to March 1981.

With regard to the specific way that the generic study is being conducted, the following is a summary:

1732 359

8001110301

OCT 25 1979

1. Three safety functions have been defined as essential to prevent unacceptable core damage. These three functions are the removal of core decay heat, control of reactor subcriticality, and protection against loss of reactor coolant pressure boundary.

2. A search of plant systems and components whose failure could lead to a loss of any one of the three safety functions defined above.

3. Fault trees are constructed for each of the three safety functions independently; that is, the fault trees for any one safety function are independent of the other two functions even though there may be components which appear in the fault trees of two or three of the safety functions. These fault trees are constructed by placing components in a faulted condition. These basic faults are connected through an arrangement of logic elements so as to depict all of the ways in which the safety function can be lost.

4. The fault trees are analyzed by the use of a computer code, in this task it is the Set Equation Transformation System (SETS) code. The output of this analysis is a listing of all of the unique combinations of component faults that can cause the loss of the safety function if these faults should occur.

5. These unique combinations are examined to determine if there is any common characteristic that could link these components in such a way as to cause the components in that unique combination to fail.

6. The unique combinations of faults (or failures) that come out of step 5 above are then evaluated for significance.

7. Finally, the Standard Review Plan is assessed to find out how well it covers the fault combinations.

Please note that this generic study is concerned almost exclusively with the physical arrangement of systems which includes the physical connections by pipes and wires, and the physical location of the components in the unique fault combinations. The generic study does not include such items as operator errors, design errors, installation or manufacturer errors, and maintenance, or calibration errors as specific interactions. The generic study includes normal plant operating conditions (excluding the refueling operations) and includes transients that can be expected to occur at frequent or moderately frequent intervals. These transients include loss of offsite power and loss of the main condenser heat sink as well as normal startup and shutdown.

John Angelo

J. Angelo, Task Manager
Generic Task No. A-17

1732 360