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

May 23, 1980

Docket No. 50-295

Mr. D. Louis Peoples
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Peoples:

SUBJECT: INTERIM RELIABILITY EVALUATION PROGRAM

The numerous studies of the licensing process that have been performed in the aftermath of the TMI-2 accident have made strong recommendations to employ probabilistic techniques as an adjunct to the safety evaluation process, because they afford a systematic procedure for examining a plant and a means for identifying the more important contributors to safety that deserve our attention.

As a result, the TMI Action Plan (NUREG-0660, to be published), developed by the NRC, includes a Reliability Engineering and Risk Assessment task that culminates in the evaluation of all operating reactors. The initial phase of this task is the Interim Reliability Evaluation Program (IREP) performed by NRC to develop standardized procedures that can be used to evaluate all plants. The first step in the program was the evaluation of Crystal River Unit 3, which is nearing completion. The second step is the evaluation of six operating plants simultaneously to further refine procedures. These six plants are Indian Point 3, Zion 1, Calvert Cliffs 1, Browns Ferry 1, Millstone 1, and Arkansas 1. Your facility was selected to participate in this next round of study because it is part of a cross-section of operating plants and the experience you gain from this interaction would be beneficial for evaluating the remainder of your nuclear plants in the final phase of this program.

The IREP studies will help to identify those accident sequences which dominate the contribution to public health and safety risks which originate from core damage accidents. These studies should provide insights from a risk assessment perspective regarding vulnerabilities which may exist in procedures, testing schemes, and basic plant design. While these insights are important to NRC to properly perform our functions, we regard

them as equally important to plant owners. If operational problems which could occur are recognized to be potential precursors of serious accidents (e.g., an additional fault, either human or hardware caused, that could lead to significant core damage), corrective action may be taken to reduce the likelihood of plant damage or of substantial offsite radiological releases. Similarly, if single point vulnerabilities or a high likelihood of common mode failures are identified, the utility can evaluate and take action to minimize their significance.

In this step of the program the six nuclear power plants will be analyzed, in parallel, by six teams of analysts composed of six to eight analysts per team. Analysts will be drawn from the Probabilistic Analysis Staff of the Office of Nuclear Regulatory Research, the Office of Nuclear Reactor Regulation, National Laboratories, and consulting engineering firms acting as subcontractors to the National Laboratories. We estimate approximately six months will be required to prepare draft final reports on these analyses.

One of the lessons learned from the Crystal River study is that the owner-utility should be intimately involved throughout the effort to: (1) facilitate the acquisition of plant design and operational data by analysts, and (2) understand the details of the analysis and communicate progress and results to the utility management on a routine basis. For this reason, we invite you to assign an engineer, knowledgeable about operational details of the plant, to participate as an active member of the team of analysts studying your facility. We anticipate that three of the analytical teams will be located in Bethesda, Maryland, two in Albuquerque, New Mexico, and one in Idaho Falls, Idaho. We estimate that this will require a six-month full-time assignment with the analytical team during which this analyst will serve as liaison between the team of analysts and the utility, as well as participate in the risk assessment analyses being performed. Incidently, Nuclear Safety Analysis Center (NSAC) is performing a pilot reliability study on the Oconee plants and up to three Duke Power personnel will participate full time in that effort.

We request that the team of analysts be permitted to spend approximately five days at the plant, observing equipment, examining plant documentation, and discussing plant operation and maintenance with operators, maintenance technicians, and engineers. Various plant information, outlined in the enclosed list, will also be necessary at the outset as well as periodic contacts to verify our understanding of details of plant operation or design. We estimate this may require an additional one to two man-months of utility effort at your engineering headquarters and at the site.

We believe analyses of this type will be valuable in identifying "weak links" in plant safety. The recently completed reliability studies of auxiliary feedwater systems (NUREG-0611 and NUREG-0635) identified several cases where the system was susceptible to a total loss of AC power. As a result of a similar analysis sponsored by Florida Power Corporation, modifications to eliminate an AC dependency in the operation of the turbine driven auxiliary feedwater pump were in progress when the Crystal River Study was initiated. We also anticipate that potential procedural modifications and administrative actions will be identified which may reduce the potential for human errors.

Obviously, the effort involved is large and will require a significant effort both by NRC and the utilities. However, development of risk perspectives in these plants will permit a more logical assessment of priorities for safety improvements, if any are to be required, and will enhance the establishment of a standardized analytical approach to future analyses of other plants.

As a first step in this program, we request a meeting with you and your staff and representatives from the other five utilities on Wednesday, June 4, 1980, at 10:00 am at our Bethesda office (Room P-500) to discuss the program and its potential impact on your facility and to obtain your active participation in this effort. The NRC Project Manager for your facility will be our point of contact for additional information.

Sincerely,

Darrell G. Eisenhut, Director
Division of Licensing

Enclosure:
List of Information

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Enclosure 1

INFORMATION NEEDS FOR IREP STUDY

1. An up-to-date FSAR

2. Current Technical Specifications

3. A P&ID index, electric power one-line diagrams, and a complete set of P&ID's and control circuit drawings for systems to accomplish the following functions:

   a. Emergency core cooling

   b. Containment overpressure protection (e.g., sprays, fan coolers, etc.)

   c. Post-accident radioactivity removal (e.g., NaOH addition, etc.)

   d. Containment heat removal (e.g., component cooling, service water, etc.)

   e. Reactivity control (e.g., scram system, boron addition, CVCS, etc.)

   f. Secondary heat removal (e.g., condenser, auxiliary feedwater, main feedwater, condensate, main steam, etc.)

   g. Reactor coolant system overpressure protection (e.g., PORVs, SRVs, etc.)

   h. Supporting systems for the above (e.g., HVAC, instrument air, lubrication, DC power, cooling, etc.)

4. A plant procedures index, if available, and a complete set of emergency and operating procedures.

5. A tabular compilation of plant-specific LERs.

6. Proposed modifications to the plants which are in progress or have been committed to by the licensee.

7. An index of available system descriptions.

8. Manuals used in operator or senior operator training.

9. An estimate of the minimum ECC and containment ESF systems which can realistically prevent core melting for a range of break sizes or containment failure.