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IREP

50-313

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

June 27, 1980

Mr. Jack Hickman
Division 4412
Sandia Laboratories
Albuquerque, New Mexico 87185

Dear Mr. Hickman:

Enclosed, herewith, is one copy each of the Arkansas Nuclear One - Unit No. 1 FSAR, Technical Specifications, and LER listing for your use in the Interim Reliability Evaluation Program (IREP). Other information will be forwarded as we receive it from Arkansas Power & Light Company (AP&L).

AP&L has informed us that the AP&L contact assigned to this study is Mr. William Craddock (phone (501) 371-4132).

Sincerely,

Robert W. Reid

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Licensing

Enclosure: As stated

cc without enclosure:
S. Israel
F. Rowsome

21 HANDLED ON JUL 3 1980

BALTIMORE GAS AND ELECTRIC COMPANY

P. O. BOX 1475
BALTIMORE, MARYLAND 21203

E. L. "MONTE" CONNER

June 25, 1980

C. C.
S. Israel
R. Clark
R. Reid

ARTHUR E. LUNDVALL, JR.
VICE PRESIDENT
SUPPLY

Office of Nuclear Regulatory Research
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Dr. Robert Bernero, Director
Probabilistic Analysis Staff

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Dr. Harold R. Denton, Director

Subject: Calvert Cliffs Nuclear Power Plant
Unit No. 1, Docket No. 50-317
Interim Reliability Evaluation Program

Reference: NRC letter dated 5/23/80 from D. G. Eisenhut to IREP Participants, same subject.

Gentlemen:

The referenced letter informed us of the NRC's intention to conduct an Interim Reliability Evaluation Program on a cross-section of operating plants as the second phase of a three-phase effort to develop and implement probabilistic techniques for overall assessment of risk to the public health and safety from core damage accidents. The letter confirmed earlier indications from NRC that Calvert Cliffs Unit No. 1 would be asked to participate in the program.

A meeting was held on June 12, 1980 by your Staffs with the prospective licensee participants to discuss the concept and objectives of the Program. We agree wholeheartedly with the concept of using probabilistic techniques for risk assessment and of applying those results to the regulatory process, both during the design review phase of plant licensing and during the operational phase with due regard to appropriate value-impact assessments. We firmly believe that all parties concerned - the public, the licensees, and the regulators - can benefit from such an approach that is well-planned and has the cooperative participation of both the licensees and the NRC. However, we have several basic concerns with the Interim Reliability Evaluation Program as it was outlined in our June 12, 1980 meeting with members of your Staffs. These concerns are enumerated below.

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1. Schedule. The proposed schedule for the program seems to be unrealistically compressed. It may be possible to conduct an evaluation of a specific plant in six months assuming the methodology is clearly understood by all parties and has been developed and tested. To attempt to develop a methodology concurrent with obtaining meaningful results and to do so with the full participation of licensee representatives, who are basically unfamiliar with the detailed program objectives and the possible types of methodology, is overly ambitious. Assuming completion of the program in this case, we are concerned that it would be at the expense of licensee understanding and participation, and that the results may be inconclusive and ambiguous because of time restrictions imposed on program development.

2. Methodology. The actual methods which will be used to initiate the program might apparently be drawn from experience at Crystal River or they might come from other sources. While we are not yet experts in risk assessment techniques, we do recognize that there are many ways to approach the task. It was indicated at our meeting that a "cookbook", which includes the basic methodology and assumptions upon which the entire program depends, would be developed as the program progressed, keeping about a month ahead of the actual program. The schedule, we were told, does not allow time for licensee input into the development of the "cookbook". We do not believe the results of the program will be meaningful without significant licensee participation in development of assumptions and methodology.

3. Timing. There is, as you know, a great deal of activity now taking place at all operating plants in response to the lessons learned at TMI-2. This activity includes such things as major modifications to auxiliary feedwater systems, changes to emergency power systems, control room changes (human factors engineering), operator training upgrades, the procurement of plant-specific simulators to improve operator response, and the like. These factors and others can and will have a major impact on system and operator response, and their impact on the results of the IREP must be just as great, assuming all of these changes are being made to enhance overall safety. In some cases, NRC has not had the manpower necessary to review design changes being made, and it would seem appropriate to delay the start of the IREP until all of the TMI-related modifications are at least reviewed so that final designs can be factored into the IREP data base.

4. Licensee Participation. We are concerned that the party coming out of the IREP at the end with the least total contribution and the least understanding will be the licensee. The verve with which the NRC's Probabilistic Analysis Staff has described the conduct of the program has us concerned that they may charge off and leave us dragging along behind in the dust. To this end, licensees may want to have an outside consultant provide guidance and/or review services.

5. Regulatory Ratcheting. The close involvement of the NRC's Licensing Staff in the IREP makes it clear to us that the possibility exists of short notice changes to licensing requirements. Even though the IREP has been described as a "research program", we all know that, as time goes on, the results of this research will become more and more concrete as a foundation for licensing changes. The spirit of cooperative research and learning with which the program is conducted will likely be replaced by regulation based on the resulting numbers, which in fact may have little real basis because the assumptions and methodology were arbitrarily chosen by the Staff. Further down the road, assumptions and agreements made in the early stages of this "research" may well be forgotten as NRC personnel changes occur, as they frequently do.

For all of these reasons, we do not believe either the Staff or the licensees involved will benefit significantly from the IREP as it is now planned; the program may in fact result in negative effects. We strongly recommend the following changes:

1. Provide for licensee input into the methodology and assumptions to be used. This includes time for substantive peer review and comment of the Crystal River study, and licensee review and comment of the "cookbook", with formal resolution of all concerns and comments prior to beginning the program. To this end, it may be beneficial to have a meeting once the final version of the groundrules is drafted to ensure that all of the participants have a basic knowledge of and agreement on the methods to be utilized.

2. One of the NRC's admitted main objectives of the program is to meet the (arbitrary) schedule. This constraint should be greatly deemphasized, and the program tied instead to reasonable development and implementation of a meaningful program. We feel strongly that a Spring 1981 completion date is unattainable with any meaningful results, and that the program should allow for a Fall 1981 completion date or later if the need for such an expansion of the schedule is indicated.

3. Schedule periodic check points in the program which provide specific and ample time for review of the project to that point, and allow for consideration of possible changes in direction, scope or method as a result of review of the experience of other IREP plants and of other studies proceeding concurrently, such as the NSAC study of Oconee.

We are certain that you share our desire to make the Interim Reliability Evaluation Program as meaningful and beneficial as possible to all concerned. To this end, we request the opportunity to discuss the resolution of these concerns prior to finalizing our plans for participation in the Program.

Very truly yours,

Arthur E. Lundvall Jr.

cc: J. A. Biddison, Esquire
G. F. Trowbridge, Esquire
Messrs. E. L. Conner, Jr. - NRC
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bcc: Messrs. A. E. Lundvall, Jr.
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S. Israel

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

MAY 23 1980

Docket No. 50-259

Mr. Hugh G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

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

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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

cc w/enclosure:
See next page

cc:

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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.