



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

Docket No. 50-317

August 15, 1980

Mr. A. E. Lundvall, Jr.
Vice President, Supply
Baltimore Gas and Electric Co.
P.O. Box 1475
Baltimore, Maryland 21203

Dear Mr. Lundvall:

Subject: IREP Schedule

At our meeting on August 4 we promised to send you an outline of the IREP schedule for the first 5 months annotated to highlight the skills and knowledge that could best be provided by your representative(s) on the IREP team. The anticipated start date is September 15, 1980. The following discussion refers to the IREP Procedure and Schedule Guide, Enclosure 1 to my letter of July 25, 1980.

First 2 weeks - First cut at tasks 1-5, late September. The team will be familiarizing itself with the plant documentation and performing the first few tasks in the IREP Procedure and Schedule Guide. We anticipate a number of document requests to be made from the procedure index or diagram index. Someone thoroughly familiar with the plant design and operations documentation would help the team to be selective and to request the appropriate documents.

Third through eighth week - First cut at tasks 6-17, October and early November. The team will be classifying initiating events, developing the catalogs of accident scenarios in broad outline (event tree analysis), defining system success vs. failure criteria, and tracing the possible causes of the initiating events to faults in the support systems which also serve the required mitigating systems. During this phase, the assistance of an individual who has a broad understanding of accident processes, systems design, and operation would be particularly valuable. We have not requested the voluminous plant design documentation on power generation equipment that may prove to be necessary to perform the fault tree analyses of transient initiators and non-passive failure LOCAs. Therefore, we will probably assign to the more knowledgeable owner's representative the lead responsibility for the development of the fault trees for the initiating events. He will also be expected to participate in each of the other tasks: event tree analysis, definition of the system success vs. failure criteria, etc.

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Ninth through sixteenth week - First cut at tasks 18-27, late November through January. This phase of the study will focus on fleshing out the reliability-predictive models of the systems (fault tree analysis). The visit to the plant by the team will occur late in the prior phase or early in this phase. We anticipate that the early work in this phase will concentrate on the relatively straight-forward front line engineered safety features. In the later phase the work will move to the modeling of the network of support systems. We expect a progressively growing need for owner's representative assistance to the team within this interval in the contexts of (1) surveillance and maintenance practices, (2) operating and emergency procedures, and (3) control and instrumentation.

Sixteenth through twentieth week - First cut at tasks 28-35, February. The initial screening of accident scenarios according to likelihood and the search for not-yet-identified common cause failure modes will take place in this interval. Particularly useful knowledge and skills in your representatives will be in the areas of possible operator corrective action in the face of multiple failures, control and instrumentation, and procedures.

In this and successive phases the team will be refining their models of the potentially dominant accident scenarios. The questions the team will need to ask of your personnel will be more sharply focused. The physical presence on the team of the more knowledgeable and valuable personnel will be less important than in the formative second phase (weeks 2-8). You will, however, want to keep your more senior people in engineering and operations apprised of the emerging picture of the dominant accident sequences. You may want to intersperse the occasional management briefings with more frequent technical briefings during the last few months of the program.

From our point of view, we would prefer as much continuity, knowledge, and skill as we can get in your participants. We do understand, though, that your better people are in great demand. If I were in your shoes and could manage it, I would assign a junior systems and licensing engineer or systems reliability engineer to stay with the IREP team throughout. He or she would be in it for the experience, for liaison, and to take a prominent role in the digestion and use of the results at the conclusion of the IREP study. He or she might be earmarked to exercise and keep the IREP models updated after the NRC study is complete, as Florida Power Corporation is planning to do. I would select that person for imagination, sound abstract thinking or broad overview, and at least a passing familiarity with mechanical, electrical and control systems engineering. That person should also have the facility with mathematics to rapidly learn probabilistic system reliability analysis while on the team. In addition to this continuous presence on the IREP team, I would assign a couple of others for temporary assignment to IREP. I would pick the most knowledgeable individual I could pry loose in plant operations and engineering for the 6 week second phase period

in October and November (event trees, system success criteria, and the analysis of initiating events). I would try to earmark 1 day per week of this same person's time from February through the conclusion of the study - while he or she remains at their normal post - to review the convergence on results. A third person, chosen for familiarity with control and instrumentation, maintenance procedures and emergency procedures would be detailed to IREP in January and February (late in the system reliability modeling phase and the subsequent probabilistic evaluations) to assure that the modeling of the network of support systems is done correctly, to participate in the evaluation of equipment unavailability due to test and maintenance, and to assist in modeling the possibilities for operator corrective action during accidents. That person, too, I would assign to part time review of IREP results after their return to normal assignment in March. To make sure that person can get up to speed promptly when he or she joins the team in January, that person should have attended - as a minimum - an engineering short course in probabilistic system reliability analysis or fault tree analysis.

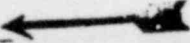
This representation, one person full time and two more highly-qualified people for 6 week assignments should meet our mutual need to assure that the models produced in IREP fairly portray your plant and offer your people considerable experience in probabilistic safety analysis without unduly burdening your already hard pressed staff, or so we believe. I hope that this helps you in your planning for IREP participation.

Sincerely,

Original signed by
Darrell G. Eisenhower

Darrell G. Eisenhower, Director
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cc: See Attached List

bcc: Docket File 
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