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The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: EQUIPMENT QUALIFICATION-RISK SCOPING STUDY

During the 344th meeting of the Advisory Committee on Reactor Safeguards, December 15-16, 1988, we considered a report from our Subcommittee on Reliability Assurance pertaining to its review of the Equipment Qualification (EQ)-Risk Scoping Study, performed by the Sandia National Laboratories (SNL) for the NRC Office of Nuclear Regulatory Research (RES). This matter was also discussed with representatives of RES and SNL during our 339th meeting, July 14-16, 1988 and during previous meetings of our Reliability Assurance Subcommittee on December 16, 1987; June 14, 1988; and December 12, 1988. We also had the benefit of the documents referenced.

The purpose of this study was to assess the risk significance and risk uncertainties associated with current EQ requirements for safety-related electrical equipment. The approach was to use information from existing PRAs to determine what electrical equipment would be needed to prevent or mitigate the consequences of a severe accident and, at the same time, would be exposed to a harsh environment related to that accident.

For the most part, the conclusions and recommendations from this study are plant specific. For this reason, the NRC staff proposed, and we agree, that the insights from this study can be used in two ways:

- ~ As items to be considered further in the Individual Plant Examination and the Accident Management programs.
- ~ As a means to limit or better focus the EQ inspections at existing plants.

One conclusion from the study is that the importance of the accident radiation dose in EQ is overemphasized. We believe that this warrants a review of some of the current requirements in Regulatory Guide 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants."

Another observation of general significance is that existing PRAs utilize equipment failure rates derived from experience in normal operating environments. There is no basis for confidence that these failure rates are realistic for equipment required to operate in a harsh environment, whether resulting from a severe accident or a design-basis accident. The significance to risk of this observation is potentially important and deserves further study.

The following comments do not relate specifically to this study but do relate to the process of managing research.

We believe that review of the study by a four-person peer review panel contributed significantly to the credibility of the conclusions and the quality of the final report. We were favorably impressed with the expertise and variety of the panel members and the way they interacted with the research team.

Finally, we suggest that had a risk-based scoping study been performed before the EQ research program was begun, rather than after it was completed, the nature and scope of the program might have been different, and presumably better. While such a study should not be expected to dictate all aspects of a large, complex research program, it should help to distinguish between the clearly important and the clearly unimportant, and perhaps even between what is knowable and what is not.

Sincerely,

William Kerr
Chairman

References:

1. EQ-Risk Scoping Study, Draft Final Report - L. D. Bustard, Sandia National Laboratories, A. M. Kolaczowski, G. T. Medford, and J. Clark, Science Applications International Corporation, dated May 1988
2. Letter from George E. Sliter, Electric Power Research Institute, to Moni Dey, NRC Office of Nuclear Regulatory Research, Subject: EQ-Risk Scoping Study Peer Review, dated June 10, 1988
3. Letter from K. S. Canady, Duke Power Company, to Moni Dey, NRC Office of Nuclear Regulatory Research, Subject: EQ-Risk Scoping Study Peer Review, dated June 28, 1988
4. Letter from S. P. Carfagno, Franklin Research Center, to L. D. Bustard, Sandia National Laboratories, Subject: EQ-Risk Scoping Study, dated June 15, 1988
5. Draft Final Comments, Peer Review of the Sandia National Laboratory Equipment Qualification-Risk Scoping Study, A. J. Wolford, H. L. Magleby, EG&G Idaho, Inc., dated June 1988
6. EQ-Risk Scoping Study: Discussion of Peer-Review Comments (undated)

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