UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

May 16, 1984

Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS COMMENTS ON THE STATUS OF USI A-46 (SEISMIC QUALIFICATION OF EQUIPMENT IN OPERATING PLANTS)

During its 289th meeting, May 10-12, 1984, the Advisory Committee on Reactor Safeguards was briefed on the status of USI A-46 (Seismic Qualification of Equipment in Operating Plants) and its forthcoming resolution which includes the use of past earthquake experience data to establish the seismic ruggedness of certain classes of nuclear power plant equipment. The briefing included presentations by representatives of the Seismic Qualification Utilities Group (SQUG), the Senior Seismic Review and Advisory Panel (SSRAP), and the NRC Staff. A more detailed briefing was presented to the ACRS Subcommittee on the Qualification Program for Safety-Related Equipment during meetings in Washington, D. C., on March 29 and April 25, 1984.

In a letter to William J. Dircks, on July 12, 1983, the Committee acknowledged and encouraged the program undertaken by the SQUG. The Committee cautioned, however, that more work was required to establish the operability of equipment during and after an earthquake, and that more data will be required to support conclusions drawn concerning the seismic resistance of the equipment involved. We now find that USI A-46 is approaching resolution based on the SQUG/SSRAP efforts and recommend that the utility group program, its advisory panel and corresponding NRC Staff review work be expedited. We endorse this approach as a valuable contribution to the resolution of this issue.

At this time we have the following comments concerning Task 4 (Seismic Qualification of Equipment Using Seismic Experience Data) of the USI:

1. The problem description for USI A-46 as it appears in NUREG-0606 (Vol. 6, No. 1) indicates that the objective of this USI is to, "establish an explicit set of guidelines that could be used to judge the adequacy of the seismic qualification of mechanical and electrical equipment at all operating plants in lieu of attempting to backfit current design criteria for new plants.... Also, explicit guidelines will be established for use in requalifying equipment whose seismic qualification was found to be inadequate." The Committee has been informed that such guidelines are being developed. We intend to review them before commenting on the final resolution.

2. For the eight classes of equipment considered, we believe that the work to date by the SQUG and the NRC Staff has established the feasibility of using seismic experience data to verify seismic ruggedness. However, we continue to caution that more work is required to establish similarity rules or other guidelines for judging the operability of the full spectrum of seismically sensitive systems and equipment challenged during and after an earthquake. More data (e.g., more types and larger samples) may be required to support conclusions drawn concerning the seismic adequacy of the equipment involved. Particular attention should be given to the operability of control equipment (e.g., relays or instruments and their controllers) during an earthquake. The preponderance of relay control logic in the operating plants should be of special concern as it relates to "relay chatter" considerations. Attention should be directed also to other classes of safety-related equipment not covered by the SQUG program (e.g., HVAC, diesel generators, auxiliary steam turbines, piping and heat exchangers) and to the essential supporting services for such equipment including control air, electric power, and cooling water. It is not clear that sufficient seismic experience data exists for some of this equipment.

3. We were impressed by the professional character of the SSRAP independent assessment. We agree in principle with the conclusions stated in the SSRAP report, "Use of Past Earthquake Experience Data to Show Seismic Ruggedness of Certain Classes of Equipment in Nuclear Power Plants," dated February 1984. However, we emphasize the importance of observing carefully the numerous caveats, exclusions, and reservations stated in the report and note the proposed applicability of the report only to limited classes of equipment and equipment configurations, and only to post-earthquake operability. We reserve judgment concerning the proposed seismic motion bounds below which it is unnecessary to perform explicit seismic qualification to demonstrate functionality.

We understand that a generic letter on the proposed resolution and implementation of USI A-46 will be issued in the near future the under the provisions of 10 CFR 50.54f. We intend to review this letter during the public comment period.

Sincerely,

Jesse C. Ebersole

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Chairman