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PROPOSED MINUTES/SUMMARY OF THE
QUALIFICATION PROGRAM FOR SAFETY RELATED EQUIPMENT
SUBCOMMITTEE MEETING
AUGUST 6, 1985
WASHINGTON, DC

Purpose: The purpose of the meeting was to discuss the NRC proposed resolution of USI A-46, Seismic Qualification of Equipment in Operating Plants, the SQUG Program for Seismic Qualification, and the results of the SQUG evaluation of the March 3, 1985 Chilean Earthquake.

Meeting Attendees:

ACRS

C. Wylie, Chairman
J. Ebersole, Member
G. Reed, Member
C. Siess, Member
D. Ward, Member
W. Lipinski, Consultant
A. Cappucci, Staff

NRC STAFF

N. Anderson, NRR
T. Y. Chang, NRR

SQUG

J. Thomas, Duke Power
P. Yanev, EQE

Highlights, Agreements, and Requests

1. T. Y. Chang, USI A-46 Task Manager stated that the resolution package for the USI was last reviewed by CRGR on July 8, 1985. The CRGR recommended that the package go out for public comment.
2. The NRC Staff stated that collecting additional seismic experience data (as was collected for the 8 classes of equipment) would not be required for equipment beyond the 8 classes already investigated. However, the basis for seismic adequacy must be documented for each equipment type. This could be accomplished by verifying that the equipment exists in the data base plants or by test data currently being collected by EPRI and SQUG.

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3. In response to Subcommittee questions the NRC Staff indicated that the walkthroughs planned as part of the implementation for A-46 would check for anchorages and look for outliers for hot shutdown equipment. The NRC Staff suggested that these walkthroughs would not be as extensive as those performed on Diablo Canyon. Additional equipment (including interactions) would be picked up by the resolution of USI A-17, System Interactions. They suggested that the Diablo Canyon walkthrough was actually "overkill".
4. In response to questions by Dr. Lipinski, the Staff indicated that A-46 would only require evaluation of equipment functionality and not system operation for support systems. For example, airsystem components which would be required for an air operated valve to function for safe shutdown (such as valves, pumps, etc.) would be evaluated. However, a break in an air line 30 or 40 feet away from the component would not be looked at.
5. Dr. Siess asked the Staff if the A-46 program would be integrated with other NRC seismic programs such as outlined in generic letters, IE Bulletins, Staff requirements, etc. Mr. Anderson, NRR, indicated that the Staff was aware of other activities in this area and would try to acknowledge those activities so as not to duplicate the work already done. However, no steps have been taken to integrate all of these requirements.
6. The scope of the seismic adequacy review appears to include more equipment than the definition would indicate. For example, PORVs, SRVs, and supporting function equipment for hot shutdown are included.
7. Both the NRC Staff and the SQUG appear to agree that the area of relay chatter needs to be evaluated in some detail. The NRC general guidelines for reviewing relays for seismic adequacy require that relays associated with equipment required for hot shutdown which are required

to function after strong shaking would need to be evaluated. This evaluation would also include those relays which must function during the strong shaking. There are approximately 1000 relays per plant which need to be evaluated. The SQUG is attempting to define the functionality requirements so those which would not affect safe shutdown could be eliminated.

8. During its investigations of the response of industrial facilities to large earthquakes, the SQUG sent 2 investigation teams to evaluate the March 3, 1985 Chilean earthquake which occurred off the coast (epicenter) of Chile with a magnitude of 7.8. The first team went to Chile in March 1985 with the second team arriving in May 1985. The event has been compared to a well instrumented San Francisco 1906 earthquake. The peak accelerations recorded were 0.67-0.68g horizontal and .86g vertical. The presentation made by Mr. Peter Yanev, EQE indicated that this earthquake was larger than most which have occurred on the U.S. west coast. The only 2 comparable in the U.S. were the San Francisco (M8.3) and the Kern County (M7.7) which occurred in 1906 and 1952, respectively. Mr. Yanev presented approximately 50 slides depicting damage to residential buildings and industrial facilities (I understand that there were over 5000 photos taken). These slides showed that industrial facilities (built with U.S. equipment installed) suffered very little damage (damage was mostly structural) and most of the equipment operated as intended. Emergency power supplies, such as diesel generators operated as intended, however there were problems reported with some relays. As I understand it, there is a seismic design basis of approximately 0.15g-0.20g static load applied to most structures with 0.5g applied to the switchyard components. Most piping and cable trays seemed to be undamaged (except for insulation on piping), but a few slides showed severe damage to piping supports. Piping which appeared to sustain damage was either highly corroded or damaged due to seismic anchor point motion. Approximately 10% of large storage tanks failed (loss of contents) due to severe circumferential

buckling. Mr. Yanev indicated that the Chileans perform "smarter" seismic engineering than in the U.S. He attributed this to earthquake experience (there have been 12 earthquakes of magnitude 7.5 or greater since 1906) and lack of resources.

NOTE: Additional information can be obtained from a transcript of the meeting which is located in the public document room, 1717 H St., NW, Washington, DC, or can be purchased from Ann Riley & Associates, Ltd., 1625 I Street, NW, Suite 921, Washington, DC 20006, 202/293-3950.

1 through several of his plants down there at the Duke system.
2 So I feel like I have a pretty good breadth of knowledge about
3 what we are going to be talking about today.

4 MR. CARBON: GAO has recently done a study for some
5 Senate group, has it not, on NRC?

6 MR. McDOWELL: Yes. I am glad you brought that up.
7 I brought several reports here to you that reflect some of our
8 recent initiatives. We have done a report on probabilistic
9 risk assessment which was just out June 19, 1985. We have
10 also just issued one on the inspection program for operating
11 reactors, NRC's program. We issued that April 24, 1985. I
12 have got copies of those here available to you.

13 We have got a report going on backfitting right
14 now. In fact, we are in the process of processing that
15 through our agency. We have just completed a report that just
16 signed by the Controller General and is now in print on the
17 Three Mile Island Action Plan, the status of it.

18 We are in the middle, kind of, of a report on
19 quality assurance initiatives at operating nuclear power
20 plants. So we have been kind of covering the waterfront here.

21 MR. MOELLER: You have done reports on emergency
22 planning, as I recall.

23 MR. McDOWELL: That's right.

24 MR. MOELLER: Even, I think, on health physics or
25 the occupational doses.