

June 10, 2002

MEMORANDUM TO: Christopher I. Grimes, Program Director
Policy and Rulemaking Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

FROM: Peter C. Wen, Project Manager */RA/*
Policy and Rulemaking Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MAY 30, 2002, MEETING WITH THE NUCLEAR
ENERGY INSTITUTE REGARDING EXPERIENCE-BASED SEISMIC
EQUIPMENT QUALIFICATION METHODOLOGY

On May 30, 2002, the NRC staff held a public meeting with representatives of the Nuclear Energy Institute (NEI) and the Seismic Experience-Based Qualification (SEQUAL) Owners Group to discuss issues related to the experience-based seismic equipment qualification (EBSEQ) methodology. Attachment 1 lists attendees at the meeting. Attachment 2 is a set of slides presented at the meeting by the industry representatives.

In 1992, under unique licensing basis and licensing commitments, the staff approved industry's submittal of Generic Implementation Procedure, Revision 2 (GIP-2) for the licensees to follow in the implementation program for resolution of Unresolved Safety Issue A-46 (Verification of Seismic Adequacy of Mechanical and Electrical Equipment in Operating Reactors.) GIP-2 used general earthquake experience for demonstrating seismic equipment adequacy. As the industry gains experience with the GIP-2 application, it feels that the same experience-based approach could be extended to the seismic equipment qualification for non-A46 plants (about 45 plants). There have been extensive interactions between the staff and industry groups on the subject of using an experience-based method for non-A46 plants since 1997. Recently, on April 18, 2001, NEI formally requested the staff to review a SEQUAL topical report, "Basis for Adoption of the Experience-Based Seismic Equipment Qualification Methodology by Non-A46 Nuclear Power Plants" (ADAMS Accession # ML011150260). The staff issued a letter dated August 13, 2001, describing the results of the staff's acceptance review of the topical report and areas of concern (ADAMS Accession # ML012260356). On January 31, 2002, the staff issued a request for additional information (RAI) to NEI regarding the topical report review (ADAMS Accession # ML020310056). NEI/SEQUAL's response to the staff's RAI was documented in a letter to the staff dated April 22, 2002 (ADAMS Accession # ML021130665). The purpose of the May 30 meeting was to elaborate on the issues raised in the staff's RAI and the industry's response.

During the meeting, an industry representative discussed an example of how the EBSEQ methodology for seismic qualification of new equipment would be applied to a vacuum pump for the emergency condenser circulating water system. The staff questioned how the nozzle loads on the pump were considered. No information was available at the meeting.

An industry representative presented an overview of a risk evaluation done to support the requested change in methodology. The staff questioned the soundness of the assumptions used in the risk assessment. In the risk comparison table discussed during the meeting, the industry representative indicated that the EBSEQ methodology would require a far less rigorous evaluation than is required by current qualification methods. However, the risk assessment indicates that the median capacity of the equipment is greater if the EBSEQ method is used for qualification. The staff has concerns regarding the validity of this result.

In addition, the staff commented that the current risk evaluation did not seem to represent a bounding analysis and that an uncertainty evaluation was not performed. The staff believed that for these and other reasons, such as not addressing all five principles of risk-informed decisionmaking, the proposed evaluation did not appear to conform with Regulatory Guide 1.174, "An approach for Using Probabilistic Risk Assessment in Risk-Informed Decision Making on Plant-Specific Changes to the Licensing Basis."

The staff indicated that it has no objection to using experience based methodology for seismic qualification of equipment, but indicated that the seismic requirements of Part 100 must be satisfied. The staff believes that the current form of experience-based methodology described in the SEQUAL topical report does not meet the seismic requirements of Part 100. Several fundamental differences between the staff and the industry were pointed out with regard to experience data collection (success vs. failure), use of design basis in-structure response spectra for seismic demand, and the range of dynamic similarity that would be expected among components in the same equipment class. The staff indicated that ASME is about to finalize the revision of the QME Standard to include an experience-based approach, which the staff believes to be technically sound and could receive the staff's endorsement later this year.

SEQUAL had planned to discuss the following four major technical issues from the staff's RAIs: (1) use of Method A in determining seismic demand spectra, (2) equipment class definitions, (3) one capacity spectrum for all classes, and (4) functionality during earthquake; however, the discussion could not be completed due to time constraints. At the conclusion of the meeting, the industry representatives expressed interest in continuing the dialogue with the NRC staff on the subject, and the staff agreed to meet with SEQUAL representatives to discuss the above RAI items in the near future.

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Package - ML

Memo -Accession# ML021630088

NRC-001

Slides - ML021580581

* See Previous Concurrence

OFFICE	PM:RPRP	SC:EMEB	BC:EMEB	SC:RGEB
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DATE	06/ 5 /2002	06/ 7 /2002	06/07/2002	06/10/2002

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DISTRIBUTION: MTG. SUMMARY w/NEI and SEQUAL Re Seismic Issues Dated

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OPA

**NRC-NEI/SEQUAL MEETING REGARDING EXPERIENCE-BASED
SEISMIC EQUIPMENT QUALIFICATION METHODOLOGY**

**LIST OF ATTENDEES
MAY 30, 2002**

<u>NAME</u>	<u>ORGANIZATION</u>
Richard Barrett	NRR/DE
Gene Imbro	NRR/DE/EMEB
Kamal Manoly	NRR/DE/EMEB
Goutam Bagchi	NRR/DE/EMEB
Pei-Ying Chen	NRR/DE/EMEB
John Fair	NRR/DE/EMEB
Clifford Munson	NRR/DE/EMEB
Stephen Dinsmore	NRR/DSSA/SPSB
Tim Reed	NRR/DRIP/RPRP
Peter Wen	NRR/DRIP/RPRP
Alex Marion	NEI
James Fisicaro	Duke-Energy
John Richards	Duke-Energy
Greg Hardy	ABS Consulting
Paul Baughman	ABS Consulting
Patricia Campbell	Winston & Strawn
Mostafa Ahmed	Westinghouse