



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

MAY 1 2 1981

Docket No. 50-341

APPLICANT: Detroit Edison Company

FACILITY: Fermi 2

SUBJECT: SUMMARY OF MARCH 27, 1981 OL REVIEW MEETING REGARDING REVISED SEISMIC RESPONSE SPECTRA AND REASSESSMENT OF STRUCTURAL AND EQUIPMENT DESIGN MARGIN

The major purpose of the meeting was to discuss the changes in the seismic response spectra for the Fermi 2 site resulting from the use of currently acceptable methods for deriving the spectra as outlined in Appendix A to 10 CFR 100 "Seismic and Geologic Siting Criteria for Nuclear Power Plants" and Regulatory Guide 1.60, "Design Response Spectra for Seismic Design of Nuclear Power Plants". Another purpose of the meeting was to discuss the methods for reassessment of the capability of safety-significant structures, systems and components to perform their safety function for earthquake loads resulting from these revised response spectra. Enclosure 1 is a list of attendees.

The staff in the Geosciences Branch provided the results of its review of seismic response spectra for Fermi 2. For the construction permit (CP) review, the Seismology Division of the National Ocean Survey (now part of the USGS) assigned a peak acceleration value of 0.15g for the Safe Shutdown Earthquake (SSE). The applicant derived a design spectra by scaling the response spectra from four earthquakes. For the OL review, the NRC staff compared the applicant's spectra with methods currently accepted by the staff. These include Reg. Guide 1.60 and site specific spectra from real time histories. The results are given in Enclosure 2, which shows that the design spectra for Fermi 2 is substantially below currently acceptable spectra. The Safe Shutdown Earthquake (SSE) has not changed for this site from the SSE determined at the CP review stage; however, the characterization of the ground motion produced by the SSE has changed. The staff suggested that the Lawrence Livermore Laboratory rock site specific spectra could be used or an updated site specific spectra could be made. In order to resolve this issue in a timely manner the staff requested documentation of the response spectrum that will be used to define seismic input. As discussed at the meeting the Livermore rock site spectra could also be used as a comparative tool; a spectra which envelopes the Livermore spectra would also be acceptable. Documentation should include a short description of the seismic input response spectrum method chosen and appropriate spectrum plots of the method chosen.


The staff in the Division of Engineering stated that the reassessment should be made of structures, systems and components required for a safe shutdown. The staff indicated that loss of coolant accident loads would not need to be combined with earthquake loads in this reassessment.

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Applicant agreed to performed a reassessment by May 8, 1981. The reassessment will include the selection of a seismic response spectra acceptable to the staff, identification of equipment required for a safe shutdown and assessment of capability for this equipment and associated structures to withstand the Safe Shutdown Earthquake.

Subsequent to the meeting, the staff provided criteria for use in the reassessment. Enclosure 3 gives the criteria for structures provided by staff in the Structural Engineering Branch. Enclosure 4 gives the criteria for equipment provided by staff in the Mechanical Engineering Branch. The staff in equipment Qualification Branch said that seismic qualification test data and analyses should be shown to be applicable to the larger earthquake required for a safe shutdown, by presenting the same information for the new response spectra as requested in the NRC letter dated March 20, 1981.



L. L. Kintner, Project Manager
Licensing Branch No. 1
Division of Licensing

Enclosure:
As stated

cc: See next page

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Enclosure 1

DECO - NRC 3/27/81 MEeting
Attendees List

NRC

L. L. Kintner
L. Reiter
J. Kimball
R. E. Jackson
B. Jagannath
P. T. Kuo
H. Levin
J. Knight
R. Bosnak
D. Terao

Detroit Edison

L. E. Schuerman
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W. F. Colbert
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Western Geophysical

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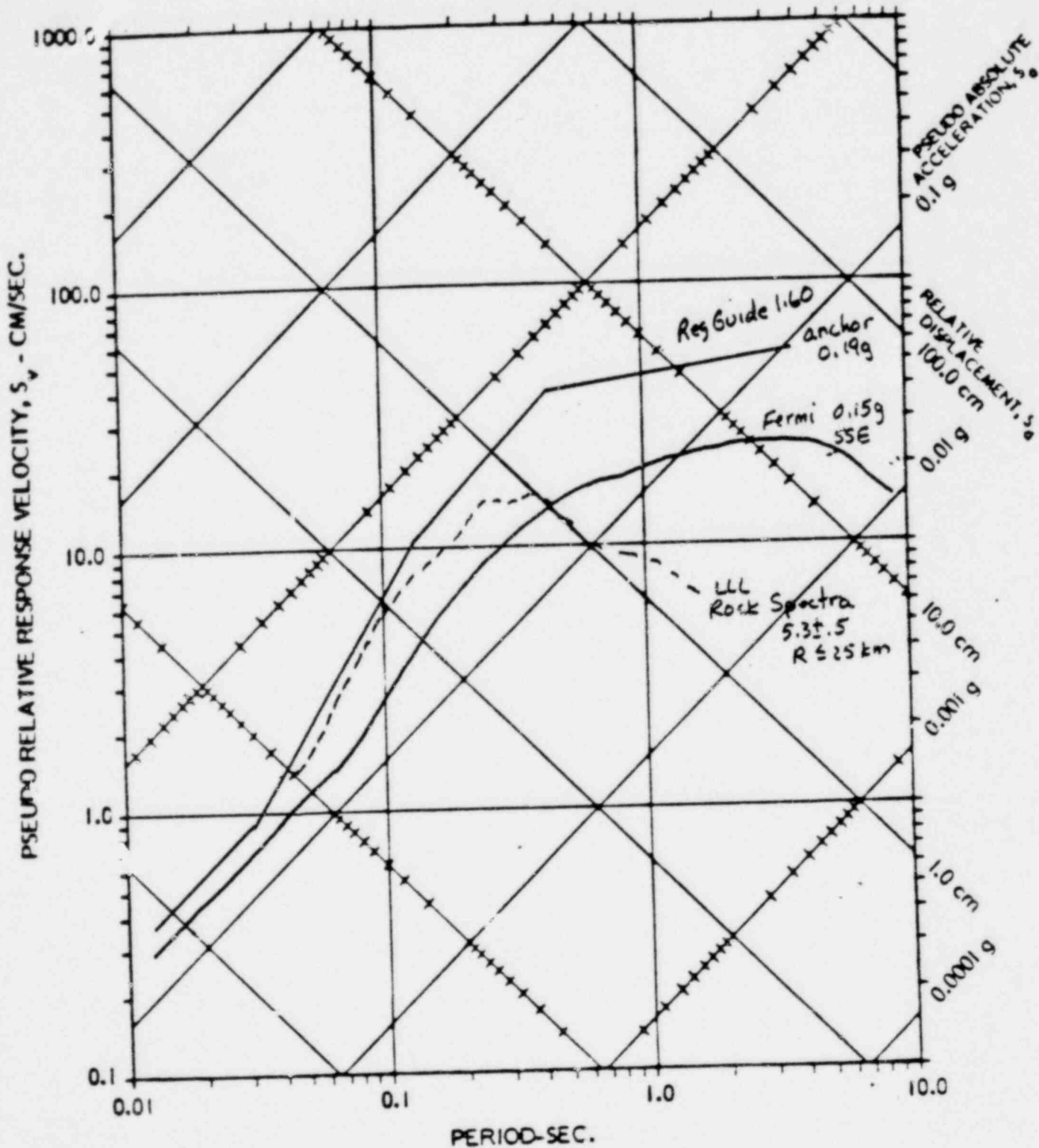
NUS Corporation

J. E. Slider

Sargent & Lundy

A. K. Singh
R. A. Witt

ENCLOSURE 2



All at 5% damping

Alternative response spectrum plots Fermi-2

Enclosure 3

Criteria for Reassessment of Structures

- (1) The design criteria as stipulated in relevant portions of Standard Review Plan Sections 3.7 and 3.8, as augmented by staff's positions, should be used.
- (2) For Mark I containment the criteria as stipulated in NUREG-0661 should be used.
- (3) Damping value as specified in Regulatory Guide 1.61 may be used.
- (4) The as-built strengths of structures can be used, if these are supported by test data: for concrete, the cylinder compressive test results; for reinforcing steel and structural steel, the mill test results. The strengths to be used in the reassessment should be established on a sound statistical basis.

Enclosure 4

Criteria for Reassessment of Equipment

- (1) Identify all piping systems required for safe shutdown of the plant assuming the occurrence of an SSE event.
- (2) For those piping systems, components, and supports identified in (1), the reassessment should include a representative sampling of piping, components, and supports and show the effect the design basis versus new seismic response spectra on the design. The reassessment should include the following topics:
 - a. For piping, provide a table showing for selected locations, the new seismic stress, the total stress (pressure, weight, and seismic), and the allowable stress.
 - b. For valves, provide a similar table showing the acceleration values for the design basis, the new seismic design, and the allowable accelerations.
 - c. For supports, provide a similar table showing the support loads for the design basis, the new seismic design, and the support allowable load.
 - d. Provide the overall margin to failure for each of the above component.
- (3) Include a discussion on the conservatisms inherent in seismic design.
- (4) Provide a detailed discussion of one of the selected piping subsystems and include a comparison of the design basis spectra versus the new seismic spectra applicable to the subsystem showing those frequencies where the new seismic spectra are not bounded by the design basis spectra. Include a discussion on the modal frequencies and participation factors of the selected piping subsystem. Show what the resulting effects of those frequencies (where the new seismic spectra are not bounded by the design basis spectra) are on the piping stresses, support loads, and valve accelerations.
- (5) Provide a discussion on the effect of the new seismic response spectra on the safety-related small piping and instrumentation design. Specifically address how the seismic support spans as specified in the Enrico Fermi - 2 "Small Piping Design Standard", are affected by the new seismic response spectra.

MEETING SUMMARY DISTRIBUTION

Docket File
NRC PDR
Local PDR
TIC/NSIC/Tera
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R. Tedesco

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W. Kreger
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Chief, Radiological Assessment Branch
L. Rubenstein
T. Speis
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R. Baer
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D. Vassallo
P. Collins
D. Ziemann



NRC Participants:

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BJagannath, PTKuo, HLevin, JKnight, RBosnak
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bcc: Applicant & Service List