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

Docket No. 50-341

MAR 20 1981

Mr. Harry Tauber
Vice President
Engineering & Construction
Detroit Edison Company
2000 Second Avenue
Detroit, Michigan 48226

Dear Mr. Tauber:

SUBJECT: REQUEST FOR INFORMATION CONCERNING EQUIPMENT QUALIFICATION FOR SEISMIC AND HYDRODYNAMIC LOADS FOR FERMI 2

In order to meet the operating license review schedule established for your facility, we request that you respond to the enclosed request for additional information as soon as possible.

The Seismic Qualification Review Team's (SQRT) tentative schedule shown below is based upon receipt of your complete and thorough response to the enclosed request one month before the planned site visit. In accordance with the procedure described under item 6 of the enclosure, we plan to select the equipment to be reviewed within one week of receipt of the applicants submittal. The schedule would then require you to provide the "Qualification Summary of Equipment" for the selected equipment within one week (or two weeks before the site visit).

Tentative Review Schedule

	Applicant Response to RFI	SQRT Site Visit	Complete Input to SER
Fermi 2	5/8	6/8 - 6/12	6/26/81

We request that you advise us as soon as possible if you can support this schedule since a change will impact our schedules for other plants.

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Since we are conducting these reviews with the assistance of the national labs, we request that one copy of all responses to the enclosed request be sent directly to:

Dr. Morris Reich
Department of Nuclear Energy
Building 129
Brookhaven National Laboratory
Upton, New York 11973

If we are to meet the above schedule it is essential that the labs receive your submittals at the same time as the NRC staff.

Sincerely,

Robert L. Tedesco
Assistant Director for Licensing
Division of Licensing

Enclosure:
Request for Additional Information

cc w/enclosure:
See next page

Mr. Harry Tauber
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414.0 Equipment Qualification Branch

414.1 In accordance with the requirements of GDC 2 and 4 all safety-related equipment is required to be designed to withstand the effects of earthquakes and dynamic loads from normal operation, maintenance, testing and postulated accident conditions. GDC 2 further requires that such equipment be designed to withstand appropriate combinations of the effects of normal and accident conditions with the effects of earthquake loads.

The criteria to be used by the staff to determine the acceptability of your equipment qualification program for seismic and dynamic loads are IEEE Std. 344-1975 as supplemented by Regulatory Guides 1.100 and 1.92, and Standard Review Plan Sections 3.9.2 and 3.10. State the extent to which the equipment in your plant meets these requirements and the above requirements to combine seismic and dynamic loads. For equipment that does not meet these requirements provide justification for the use of other criteria.

414.2 Provide a list of all safety-related systems together with a list of all safety-related equipment and support structures associated with each system. The equipment lists should indicate whether the equipment is NSSS supplied or BOP supplied. These lists should include all safety-related mechanical components, electrical, instrumentation, and control equipment, including valve actuators and other appurtenances of active pumps and valves.

414.3 For each safety-related equipment item, the following information should be provided:

(1) Method of qualification used:

a) Analysis or test (indicate the company that prepared the report, the reference report number and date of the publication).

b) If by test, describe whether it was a single or multi-frequency test and whether input was single axis or multi-axis.

c) If by analysis, describe whether static or dynamic, single or multiple-axis analysis was used.

d) Provide natural frequency (or frequencies) of equipment.

(2) Indicate whether the equipment has met the qualification requirements.

(3) Indicate whether the equipment is required for:

a) hot stand-by

b) cold shutdown

c) both

d) neither

(4) Location of equipment, i.e., building, elevation.

(5) Availability for inspection (Is the equipment already installed at the plant site?)

(6) A compilation of the required response spectra (or time history) and corresponding damping for each seismic and dynamic load specified for the equipment together with all other loads considered in the qualification and the method of combining all loads.

414.4 Identify all equipment that may be effected by vibration fatigue cycle effects and describe the methods and criteria used to qualify this equipment for such loading conditions

414.5 Describe the results of any in plant tests, such as in situ impedance tests, and any plans for operational tests which will be used to confirm the qualification of any item of equipment.

414.6 To confirm the extent to which the safety-related equipment meets the requirements of General Design Criterion 2 and 4, the Seismic Qualification Review Team (SQRT) will conduct a plant site review. For selected equipment, SQRT will review the combined required response spectra (RRS) or the combined dynamic response, examine the equipment configuration and mounting, and then determine whether the test or analysis which has been conducted demonstrates compliance with the RRS if the equipment was qualified by test, or the acceptable analytical criteria if qualified by analysis.

The staff requires that a "Qualification Summary of Equipment" as shown on the attached pages be prepared for each selected piece of equipment and submitted to the staff two weeks prior to the plant site visit. The applicant should make available at the plant site for SQRT review all the pertinent documents and reports of the qualification for the selected equipment. After the visit, the applicant should be prepared to submit certain selected documents and reports for further staff review.

Qualification Summary of Equipment

I. Plant Name: _____ Type:

1. Utility: _____ PWR _____

2. NSSS: _____ 3. A/E: _____ BWR _____

II. Component Name _____

1. Scope: [ ] NSSS [ ] BOP

2. Model Number: _____ Quantity: _____

3. Vendor: _____

4. If the component is a cabinet or panel, name and model No. of the devices included: _____

_____

5. Physical Description a. Appearance _____

b. Dimensions _____

c. Weight _____

6. Location: Building: _____

Elevation: _____

7. Field Mounting Conditions [ ] Bolt (No. ____, Size ____)
[ ] Weld (Length ____)
[ ] _____

8. a. System in which located: _____

b. Functional Description: _____

c. Is the equipment required for [ ] Hot Standby [ ] Cold Shutdown
[ ] Both [ ] Neither

9. Pertinent Reference Design Specifications: _____

_____

III. Is Equipment Available for Inspection in the Plant: [ ] Yes [ ] No

IV. Equipment Qualification Method:

[ ] Test [ ] Analysis [ ] Combination of Test and Analysis

Qualification Report*: _____

(No., Title and Date) _____

Company that Prepared Report: _____

Company that Reviewed Report: _____

V. Vibration Input:

1. Loads considered: a. [ ] Seismic only

   b. [ ] Hydrodynamic only

   c. [ ] Combination of (a) and (b)

2. Method of Combining RRS: [ ] Absolute Sum [ ] SRSS [ ] _____ (other, specify)

3. Required Response Spectra (attach the graphs): _____

4. Damping Corresponding to RRS: OBE _____ SSE _____

5. Required Acceleration in Each Direction: [ ] ZPA [ ] Other _____ (specify)

   OBE S/S = _____ F/B = _____ V = _____

   SSE S/S = _____ F/B = _____ V = _____

6. Were fatigue effects or other vibration loads considered?

   [ ] Yes [ ] No

   If yes, describe loads considered and how they were treated in overall qualification program: _____

*NOTE: If more than one report complete items IV thru VII for each report.

VI. If Qualification by Test, then Complete*:

1. [ ] Single Frequency [ ] Multi-Frequency: [ ] random [ ] sine beat [ ] _____

2. [ ] Single Axis [ ] Multi-Axis

3. No. of Qualification Tests: OBE_____ SSE_____ Other_____ (specify)

4. Frequency Range:_____

5. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

   S/S =_____ F/B =_____ V =_____

6. Method of Determining Natural Frequencies

   [ ] Lab Test [ ] In-Situ Test [ ] Analysis

7. TRS enveloping RRS using Multi-Frequency Test [ ] Yes (Attach TRS & RRS graphs [ ] No

8. Input g-level Test: OBE S/S =_____ F/B =_____ V =_____

   SSE S/S =_____ F/B =_____ V =_____

9. Laboratory Mounting:

   1. [ ] Bolt (No._____, Size_____) [ ] Weld (Length_____) [ ]_____

10. Functional operability verified: [ ] Yes [ ] No [ ] Not Applicable

11. Test Results including modifications made:_____

_____

12. Other test performed (such as aging or fragility test, including results):

_____

_____

*Note: If qualification by a combination of test and analysis also complete Item VII.

VII. If Qualification by Analysis, then complete:

1. Method of Analysis:

   [ ] Static Analysis [ ] Equivalent Static Analysis

   [ ] Dynamic Analysis: [ ] Time-History [ ] Response Spectrum

2. Natural Frequencies in Each Direction (Side/Side, Front/Back, Vertical):

   S/S = _____ F/B = _____ V = _____

3. Model Type: [ ] 3D [ ] 2D [ ] 1D

   [ ] Finite Element [ ] Beam [ ] Closed Form Solution

4. [ ] Computer Codes: _____

   Frequency Range and No. of modes considered: _____

   [ ] Hand Calculations

5. Method of Combining Dynamic Responses: [ ] Absolute Sum [ ] SRSS
   [ ] Other: _____ (specify)

6. Damping: OBE _____ SSE _____ Basis for the damping used: _____

7. Support Considerations in the model: _____

8. Critical Structural Elements:

A. Identification	Location	Governing Load or Response Combination	Seismic Stress	Total Stress	Stress Allowable

B. Max. Critical Deflection	Location	Maximum Allowable Deflection to Assure Functional Operability