

**Detroit  
Edison**

2000 Second Avenue  
Detroit, Michigan 48226  
(313) 237-8000

August 31, 1981  
EF2 - 54,390

Mr. L. L. Kintner  
U. S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Division of Licensing  
Washington, D. C. 20555



Dear Mr. Kintner:

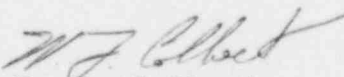
Reference: Enrico Fermi Atomic Power Plant, Unit 2  
NRC Docket No. 50-341

Subject: Seismic Qualification Review Team (SQRT) Audit  
Response to Open Items

As stated in our letter (EF2-54,251) of August 13, 1981 we attach, herewith, our response to open items Nos. 6, 7, 8, 1a, 2a and 3a.

If there are any questions, please contact Larry E. Schuerman at 313-649-7562.

Sincerely,

  
W. F. Colbert  
Technical Director  
Enrico Fermi 2

WFC:jl  
Attachment

cc: Mr. B. Little  
Dr. Morris Reich

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OPEN ITEM #6

Barton Flow Transmitter: SQRT Audit Item #21

Provide: 1) Bolt size and base plate dimensions as mounted on the panel; 2) Details of test mount conditions, and 3) Investigation of the device capability at resonance frequency of 30Hz in z-direction, by August 31, 1981.

Response: The seismic qualification of Barton Differential Pressure Transmitter (PPD#117C3387 used in B31-No 14a) was done by similarity to Barton Differential Pressure Transmitter (PPD#145C3026) - both devices are Model 368.

1. The base plate as mounted on Rack H21-P0006 is 6" x 14" x 1/8" thick. The mounting bolts are 5/16".
2. No details were given in ITT Qualification Test Report #RI-368-3 dated 10/13/71 (found in GE DRF #A00-1084. DV 117C3387) on mounting conditions. However, the transmitter was rigidly mounted to the test fixture and accelerometers were placed on the device in the x, y and z directions.
3. Comparing resonant frequency of ( $P = 30 \text{ Hz}$ ) to driving frequency ( $W = 33 \text{ Hz}$ ), the magnification factor is given by:

$$\text{Magnification Factor} = 1 / \sqrt{\frac{(1 - \frac{W^2}{P^2})^2}{P^2} + \frac{4N^2 W^2}{P^4}}$$

where  $N/P$  = damping factor (as a fraction of critical)

(From "Vibration Problems in Engineering" by S. Timoshenko - Page 40).

<u>N/P</u>	<u>Magnification</u>
0.02	5.35
0.03	3.67
0.04	2.85
0.05	2.37

The fragility limits established are 5.0g in both horizontal axis, and 3.0g in the vertical axis. The Fermi design requirements are 1.5g in both horizontal axis and 0.14g in the vertical axis. In this case, the fragility limits are enveloping the input magnified forces, using 5% damping.

OPEN ITEM #7

G. E. Relay: SQRT Audit Item #22

Provide amplification of Panel H11-P617, by August 31, 1981.

Response: Attached is a copy of G.E. Test Report Cofrentes H 13 - P618; DRF #H13-42. Panel H11-P617 at Fermi is similar to Panel H13-P618.

OPEN ITEM #8

G. E. Rack: SQRT Audit Item #24

Provide report(s) to show that resonance in side to side and vertical direction is higher than that in front to back direction by August 31, 1981.

Response: Attached is a copy of G.E. Test Report Cofrentes H22-P017B-H22-P018-H22-P005: DRF #H22-13. Panel H21-P025 at Fermi is similar to Panel H22-P018.

OPEN ITEM #1a

Provide updated list of equipment which was either not qualified or not installed at the time of SQRT Audit, by August 31, 1981.

Response: With construction still in progress and some equipment yet to be purchased and qualified, Project Management has determined that an effective way of handling this matter is to periodically update the SQRT list starting January 15, 1982, and every six months thereafter, until commercial operation.

OPEN ITEM #2a

Provide list of equipment that is listed in the Equipment Summary list but is no longer considered safety related, by August 31, 1981.

Response:

- G.E. supplied steam dryer.  
This item is identified as non-essential in Equipment Summary List Table I on Page 1.
- G.E. supplied feedwater sparger.  
This item is identified as non-essential in Equipment Summary List Table I on Page 1.

OPEN ITEM 2a (cont.)

- G.E. supplied in-core guide tube.  
As reported to your Dr. Arnold Lee earlier, this item is not considered safety related.
- G.E. supplied steam separator.  
This item is identified as non-essential in Equipment Summary List Table I on Page 5.

Updating would be done as required.

OPEN ITEM #3a

Provide the summary results of the Equipment Seismic Qualification Reassessment based on the use of 5% structural damping instead of 7% and a table similar to Table 5.4-1 of July 15, 1981, submittal to NRC for components requiring requalification by August 31, 1981.

In addition, provide a complete list of floor response spectra with respect to 5% structural damping, by August 31, 1981.

Response: We presented the status of our investigation on this item in a conference call by our Yogi Anand with you and your Dr. P.T. Kuo, Dr. Arnold Lee, Dr. Goutam Bagchi, and Dr. C. P. Tan.

A copy of our investigation with pertinent attachments would be sent to you by September 4, 1981.