BOSTON EDISON
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BECo 92-109

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U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

License DPR-35
Docket 50-293

Response to Supplement 1 to
Generic Letter 87-02 on SQUG Resolution of USI A-46

This letter provides our response to NRC Generic Letter 87-02, Supplement 1, issued to all Unresolved Safety Issue (USI) A-46 Licensees who are members of the Seismic Qualification Utility Group (SQUG).

As a member of the SQUG, we plan to implement the seismic verification program at Pilgrim Station through the Generic Implementation Procedure (GIP), Revision 2, developed by SQUG. Specifically, we commit to the SQUG commitments set forth in the GIP in their entirety, including the clarifications, interpretations, and exceptions identified in the May 22, 1992, NRC Supplemental Safety Evaluation Report Number 2 (SSER-2) on the GIP, as subsequently clarified by the August 21, 1992, SQUG letter to James G. Partlow, NRC.

Our schedule for implementation of the GIP and submission of a summary report is being developed in conjunction with our Long Term Program (LTP) integrated work management process and will be reported in the February 1993 semi-annual LTP update.

A description of the procedures and criteria used to generate the in-structure response spectra is attached. We understand that if the NRC does not respond by accepting, questioning, or rejecting the spectra within sixty (60) days, it is considered acceptable and implementation may proceed.

240051

R. A. Anderson

Commonwealth of Massachusetts)
County of Plymouth)

Then personally appeared before me, Roy A. Anderson, who being duly sworn, did state that he is Senior Vice President - Nuclear of Boston Edison Company and that he is duly authorized to execute and file the submittal contained herein in the name and on behalf of Boston Edison Company and that the statements in said submittal are true to the best of his knowledge and belief.

My commission expires: March 25 1999
DATE

James D. Keyes
NOTARY PUBLIC

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JDK/clc/regl8702

Attachments

1) Floor Response Spectra Description
2) Specification No. C-114-ER-Q-E0

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Senior NRC Resident Inspector
Pilgrim Nuclear Power Station

ATTACHMENT 1 TO BECo LETTER 92-109

Description of Floor Response Spectra For Use In Resolving USI A-46

The procedures and criteria used to generate the Pilgrim design basis floor response spectra for initial design and plant modifications, and which will be used to resolve USI A-46, are described below:

- The PNPS Floor Response Spectra (FRS) generated for design use are contained in BECo Specification C-114-ER-Q-EO. A copy of this document is attached as part of this submittal. This specification contains FRS for Class I structures, and for Class II structures housing Class I equipment. These spectra were originally generated by Bechtel, GE and Cygna utilizing lumped mass stick models with springs to account for interaction with the soil. Soil Structure Interaction (SSI) as described in the Standard Review Plan (SRP) was not used in the generation of the FRS in Specification C-114. The Bechtel and GE spectral analyses were performed in 1969. The Cygna analysis for the Intake Structure and Diesel Generator Building was performed in 1981 using similar techniques.

- The input motions for the Pilgrim design basis floor response spectra generated by Bechtel were based on a modified 1952 Taft earthquake time history with a Peak Ground Acceleration (PGA) of 0.15 g. Figure 1 provides a plot of an approximation of the response spectra for the Taft time history relative to the licensing basis Housner spectral shape anchored at 0.15 g. The Taft time history creates a response spectra that conservatively envelopes the Housner shape licensing basis.

- The analysis using lumped mass stick models and soil springs resulted in the calculation of building resonant frequencies. A listing of the first four modal frequencies for the Class I buildings is provided below for your information:

Bldg.	Dir.	Mode #1	Mode #2	Mode #3	Mode#4
Reactor	E-W	4.6Hz	12.4 Hz	17.0 Hz	22.9 Hz
	N-S	4.5	11.7	15.4	21.1
Turbine	E-W	3.4	5.9	14.5	22.3
	N-S	4.5	7.0	13.0	23.2
Radwaste	E-W	9.6	22.2	33.2	42.5
	N-S	11.3	23.1	32.8	43.6
Diesel	Horiz.	2.3	-	-	-
Intake	Horiz.	7.3	-	-	-

NOTE: Building model development was 2-Dimensional with rigid vertical response assumed. Modal frequencies are approximate values taken from Bechtel analysis for reactor, turbine, and radwaste buildings. The detailed data for modal frequencies of the intake and diesel structures are not available from the original Bechtel analysis. The first mode frequency for the intake and diesel structures has been estimated based on a review of the response spectra curves in Specification C-114.

- Appendix H of BECo Specification C-114-ER-Q-EO co ,ains a plot of the horizontal Ground Response Spectra (G S) for the Operating Basis Earthquake (OBE) load condition, and a digitized list of the OBE and SSE values. An approximate comparison of the spectral acce!eration at the 1st mode peak of the FRS, to the corresponding value of the GRS for the SSE at 5% shows the following:

Bldg.	Elevation (ft.)	FRS/GRS
Reactor	-17.5	2.0
	23.0	4.2
	51.0	7.7
	91.25	9.6
	117.0	12.1
Turbine	23.0	6.9
	37.0	9.8
	51.0	13.7
	105.5	35.1
Radwaste	37.0	4.5
	51.0	6.1
	64.0	7.3
	81.0	8.8
Diesel	23.0	2.1
	34.5	2.2
Intake	21.5	6.8
	38.0	10.3

- Additional background information on how the FRS were generated can be found in paragraphs 4.0 and 5.0 of Specification C-114-ER-Q-EO. Figures showing the lumped mass stick models used can also be found in the specification for the reactor, turbine, and radwaste buildings.

A review of these design basis spectra identified no concerns with respect to their appropriateness for use to resolve USI A-46. Building frequencies and floor amplifications are reasonable, and the models account for the influence of soil foundation conditions.

jcp/JGD2

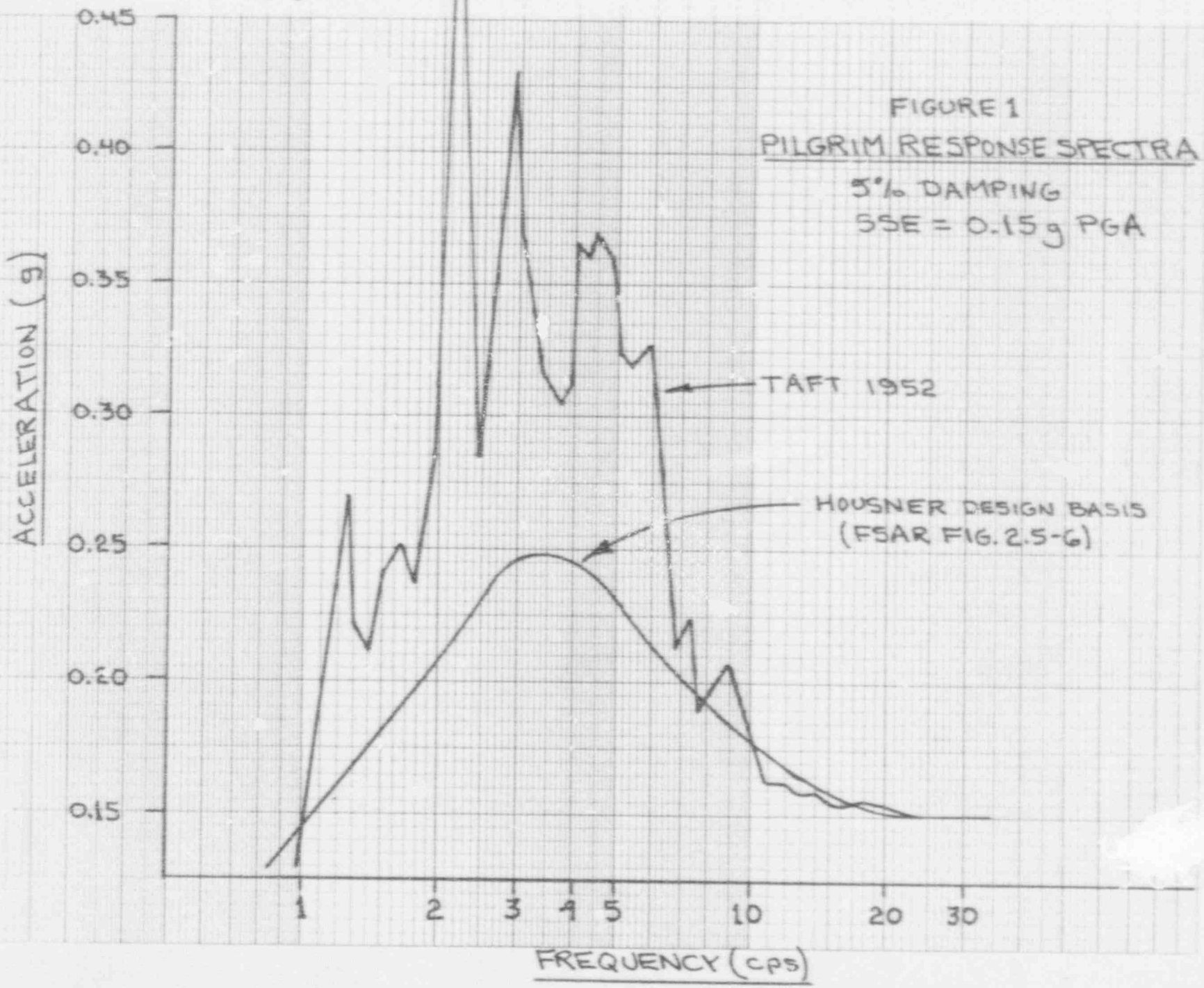

FIGURE 1
PILGRIM RESPONSE SPECTRA
5% DAMPING
SSE = 0.15g PGA