



**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

April 1, 1994

BECO 94-036

**E. T. Boulette, PhD**  
Senior Vice President - Nuclear

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

License DPR-35  
Docket 50-293

REQUEST FOR APPROVAL OF  
ALTERNATIVE REACTOR BUILDING RESPONSE SPECTRA

As part of an initiative to comprehensively evaluate the Pilgrim Reactor Building response to earthquake ground motion, a state-of-the-art finite element model has been developed and analyzed using soil-structure interaction and current Standard Review Plan criteria. The ground motion input time history is based on the criteria of R.G. 1.60, anchored at Pilgrim's 0.08g Operating Basis Earthquake and 0.15g Safe Shutdown Earthquake. In-structure spectra are generated at modal damping values based on R.G. Guide 1.61 and ASME Code Case N411. Results for the new in-structure spectra demonstrate the conservatism of the approaches and techniques used in the late 1960's for the current Pilgrim design floor spectra.

We request NRC approval to use these new response spectra and the R.G. Guide 1.61 and ASME Code Case N411 modal damping as an alternate to the existing Pilgrim design response spectra and modal damping for the Reactor Building only. The intended use would be any future evaluation or design of existing or new Reactor Building structures, systems and components. Acceptance criteria in terms of design codes, loading combinations and stresses, would remain consistent with current FSAR criteria.

We are particularly interested in approval of these alternate spectra and modal dampings for future piping system evaluation and design to preclude unnecessary and potentially costly modifications that might otherwise be required under current criteria. We enclose for review the detailed descriptions of the new modeling and analyses work and the response spectra results. Additionally, since this submittal is subject to 10CFR170 fees, we request a written cost estimate of anticipated charges after the NRC staff has performed its initial assessment of the documentation provided.

Very truly yours,

E. T. Boulette

9404210285 940401  
PDR ADDCK 05000293  
P PDR

*Approval Requested*

ATTACHMENTS:

1. EQE Letter #42103-0-012, dated September 21, 1993, providing written permission for reproduction and transmittal for documents associated with EQE Project No. 42103
2. Supporting Documentation for Alternative Spectra

cc: (w/o attachments)

Mr. R. Eaton, Project Manager  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation  
Mail Stop: 14D1  
U. S. Nuclear Regulatory Commission  
1 White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

U. S. Nuclear Regulatory Commission  
Region I  
475 Allendale Road  
King of Prussia, PA 19406

Senior NRC Resident Inspector  
Pilgrim Nuclear Power Station

ATTACHMENT 1

September 21, 1993

42103-O-012  
NE-93-133

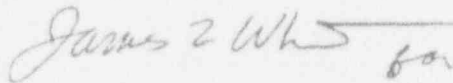
Mr. J.G. Dyckman  
Civil/Structural Division Manager  
Boston Edison Company  
25 Braintree Hill Office Park  
Braintree, MA 02184

Subject: EQE Copyright Statement

Dear Sir:

EQE Incorporated grants permission to Boston Edison Company to reproduce copies of all documents created under purchase order LBR 107049 (EQE Project No. 42103). This permission is granted for internal use only, and for use by 3rd party organizations for future work on Pilgrim Station.

Very truly yours,



Paul D. Baughman  
Northeast Regional Manager

JLW:cjd

## ATTACHMENT 2

### SUPPORTING DOCUMENTATION FOR ALTERNATIVE SPECTRA

This attachment consists of the following seven documents:

- Item #1. EQE Engineering Report No. 42103-R-001 entitled "Seismic Reanalysis of Reactor Building, Pilgrim Nuclear Power Station", dated July 1993 (BECO document reference SUDDS/RF 93-140).
- Item #2. Stevenson & Associates Calculation No. 91C2672-C-002 entitled "Soil Properties for the Soil Structure Interaction Analysis for the Pilgrim Site", Rev. 0, dated January 26, 1993 (BECO document reference SUDDS/RF 93-029).
- Item #3. EQE Engineering Calculation No. 42103-C-001 entitled "Reactor Building Seismic Model", Rev. 0, dated July 29, 1993 (BECO document reference SUDDS/RF 93-144).
- Item #4. EQE Engineering Calculation No. 42103-C-002 entitled "PNPS Reactor Building SSI Analysis and Response Spectra Generation", Rev. 0, dated July 29, 1993 (BECO document reference SUDDS/RF 93-145) and selected appendices as follows:
  - Item #5. Appendix A: Soil Profile Analysis - R.G. 1.60 SSE Level (BECO document reference SUDDS/RF 93-146).
  - Item #6. Appendix F: SSI Analysis - R.G. 1.60 SSE Level (BECO document reference SUDDS/RF 93-149).
- Item #7. EQE Engineering Transmittal Letter No. 42103-0-008 entitled "Reactor Building Response Spectra" dated August 2, 1993, which includes response spectra plots for OBE @ 1, 2 and 4%, SSE @ 2, 3, 4, 5 and 7%, and SSE for Code Case N411 damping (BECO document reference SUDDS/RF 93-141).

nas/BUILDING