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G. CARL ANGGINI
SUPERINTENDENT
NUCLEAR OPERATIONS DEPARTMENT

July 14, 1980

BECo. Ltr. #80-146

Mr. Boyce H. Grier
Office of Inspection and Enforcement
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA. 19406

License No. DPR-35
Docket No. 50-293

Response to IE Bulletin #80-11

Dear Sir:

In a letter dated May 8, 1980, you transmitted IE Bulletin #80-11 titled, "Masonry Wall Design", which identified problems with the structural integrity of concrete masonry walls with Seismic Category I piping attached to them. Boston Edison Company was requested to take the following actions in a review of this problem at Pilgrim Nuclear Power Station:

1. Identify all masonry walls in your facility which are in proximity to or have attachments from safety-related piping or equipment such that wall failure could affect a safety-related system. Describe the systems and equipment, both safety and non-safety-related, associated with these masonry walls. Include in your review, masonry walls that are intended to resist impact or pressurization loads, such as missiles, pipe whip, pipe break, jet impingement, or tornado, and fire or water barriers, or shield walls. Equipment to be considered as attachments or in proximity to the walls shall include, but is not limited to, pumps, valves, motors, heat exchangers, cable trays, cable/conduit, HVAC ductwork, and electrical cabinets, instrumentation and controls. Plant surveys, if necessary, for areas inaccessible during normal plant operation shall be performed at the earliest opportunity.

Response

Prior to receipt of Bulletin 80-11, Boston Edison Company initiated a field survey of the inaccessible block walls while Pilgrim I was shutdown for re-fueling (January - May 1980). Thirty (30) walls were surveyed. A set of sixty-eight (68) detailed drawings and extensive photographs documented the effort. Two hundred -eighty (280) walls remain to be surveyed by the walk-down teams presently in the field. Based on the duration of the survey experienced for the inaccessible areas and an objective to develop accurate details of the walls for use in the analytical phases, we anticipate completion

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of the survey by mid-October, 1980. These numbers reflect total walls including those that will not require analysis once the survey teams verify that no safety-related systems would be affected by wall failure.

Parallel to the field survey effort the walls are being reviewed to determine pressurization and impact loading requirements. These design inputs, in conjunction with the survey results, will be used to classify and prioritize those walls which will require re-evaluation for structural adequacy.

The survey to date has revealed a relatively small amount of piping attached to the block walls. The only safety-related piping systems known to be attached are: High Pressure Coolant Injection (4 pipe supports), Fuel Pool Cooling (2 pipe supports), Residual Heat Removal (1 pipe support). Reactor Building Closed Cooling Water (2 pipe supports) and Reactor Core Isolation Cooling (1 pipe support).

The majority of the attachments are from individual conduits and cable trays. In addition, a small amount of HVAC, instrumentation, and control panels have been located. A significant portion of the electrical systems, however, are safety-related. The identification of these systems is currently being performed as the survey results are received. A more detailed description of all the systems associated with the walls will be available upon completion of the survey.

2. Provide a re-evaluation of the design adequacy of the walls identified in Item 1 above to determine whether the masonry walls will perform their intended function under all postulated loads and load combinations.
 - a. Establish a prioritized program for the re-evaluation of the masonry walls. Provide a description of the program and a detailed schedule for completion of the re-evaluation for the categories in the program. The completion date of all re-evaluations should not be more than 180 days from the date of this Bulletin. A higher priority should be placed on the wall re-evaluations considering safety-related piping 2-1/2 inches or greater in diameter, piping with support loads due to thermal expansion greater than 100 pounds, safety-related equipment weighing 100 pounds or greater, the safety significance of the potentially affected systems, the overall loads on the wall, and the opportunity for performing plant surveys and, if necessary, modifications in areas otherwise inaccessible. The factors described above are meant to provide guidance in determining what loads may significantly affect the masonry wall analyses.

Response

We have developed a program to re-evaluate the walls which the survey determines are in the proximity to or have safety-related systems attached to them. This program consists of developing allowable stresses based on industry accepted standards and plant specific data, obtaining the developing load data, determining conservative loading combinations, reviewing any existing calculations, developing analytical capabilities and procedures, and finally, performing the re-analysis.

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Priorities for this program will be based on the type and number of safety and non-safety related systems associated with the walls, function of the wall, location of the wall and accessibility of the wall. We anticipate finalized re-evaluation criteria to be available by mid-August. The review of existing calculations, determination of required loading combinations, and development of analytical capabilities and procedures is intended to be complete by September. The task of generating the required load data will be accomplished as the survey results are available. Once the loading is determined the actual analysis may proceed. Judging from the number of walls having re-analysis requirement potential we do not expect completion within the 180 day reporting period. We will analyze those walls which pose the highest safety significance first and propose a realistic detailed re-evaluation schedule after some analysis has been performed within the second reporting deadline.

- Existing test data or conservative assumptions may be used to justify the re-evaluation acceptance criteria if the criteria are shown to be conservative and applicable for the actual plant conditions. In the absence of appropriate acceptance criteria a confirmatory masonry wall test program is required by the NRC in order to quantify the safety margins inherent in the re-evaluation criteria. Describe in detail the actions planned and their schedule to justify the re-evaluation criteria used in Item 2. If a test program is necessary, provide your commitment for such a program and a schedule for submittal of a description of the test program and a schedule for completion of the program. This test program should address all appropriate loads (seismic, tornado, missile, etc.). It is expected that the test program will extend beyond the 180 day period allowed for the other Bulletin actions. Submit the results of the test program upon its completion.

Response

Justification for the re-evaluation criteria will be submitted with the re-evaluation report within 180 days of the Bulletin date. Justification will be based on references to effective codes and established standards of the practice related to concrete and masonry design typically used throughout the industry. We feel that there is sufficient test data already available to substantiate any existing standards and codes.

It is anticipated that such justification will be considered appropriate, and that a test program will not be necessary, except as required to determine plant specific structural properties.

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We trust this letter adequately addresses your concerns. However, should you have any questions relative to our response, please do not hesitate to contact us.

Very truly yours,

G. Carl Andognini

Commonwealth of Massachusetts)
County of Suffolk)

Then personally appeared before me G. Carl Andognini, who, being duly sworn, did state that he is Superintendent - Nuclear Operations Department of Boston Edison Company, the applicant herein, 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: *July 6, 1984*

Dorothy M. Lopez

Notary Public

cc: Director
Office of Inspection and Enforcement
Division of Safeguards Inspection
Washington, D. C. 20555