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April 6, 1984
BECO 84-052

Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

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

NUREG 0737, Item II.E.4.2.(6):
Additional Information on Purge and Vent Valve Upgrade

Dear Sir:

Item II.E.4.2.(6) states that containment purge valves must satisfy the operability criteria set forth in Branch Technical Position CSB 6-4 or the Staff Interim Position of October 23, 1979. Boston Edison Company (BECO), in a letter to Mr. D. B. Vassallo dated February 15, 1983, proposed to address this issue by installing 8" Clow valves in place of the 20" butterfly valves that are now in place.

In a telephone conference on February 7, 1984, BECO was requested by NRC to provide additional information on the valves, their proposed configuration, and on a number of design qualification questions. The following narrative provides brief answers to those questions along with the appropriate references.

In addition, Boston Edison is providing the actual source documents as attachments to this letter to aid in your review.

Background:

In the referenced conversation of February 7, 1984, the NRC expressed concern about the following four areas:

1. Can the valves close against dynamic pressure?
2. Are the valves seismically qualified?
3. Have the valves the ability to withstand the stresses in susceptible parts such as the stem?
4. Are the valves sized sufficiently?

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The NRC emphasized that tests must be conducted in a configuration which agrees with the actual PNPS installation. Where that has not, or could not, be done, it must be demonstrated by analysis that the actual valve configuration will allow valve operability at PNPS.

The valves were purchased from Clow Corporation under Bechtel Purchase Order (P.O.) 10394-M-119-1-AC, which allows the use of combinations of generic qualifications, tests and independent analysis to demonstrate applicability of the equipment to PNPS. Bechtel furnished Clow a drawing which showed the piping configuration for the installation of the valves at PNPS.

Prior to the construction of the PNPS valves, Clow had performed a series of generic tests and analyses for containment vent and purge valves. A number of tests and analyses were also prepared by Clow for similar installations in nuclear units other than PNPS. Results of these were correlated to PNPS requirements in the following reference documents which are attached to this letter:

<u>Attachment</u>	<u>Number</u>	<u>Title</u>
1	Report No. 11-15-83. (10394-M-119-1-23-1)	Purge and Vent Valve Operability Qualification Analysis.
2	PEI-TR-83-29 (10394-M-119-1-27-1)	Clow Corporation Addendum II to Patel Technical Report
3	DR-82-2739(N), Rev. A	Design Report
4	Letter 10394-BLE-1417 dated 11-24-82.	Bechtel Letter to Boston Edison Company about sizing of P&V Valves
5	This is a list of re- ports referenced by Clow Corporation in Attachment 1, 2 and 3 above and cross- referenced with the document control number.	References

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Response to NRC Concerns

Concern:

Can the valves close against dynamic pressure?

Response:

The valves are designed to close for the PNPS design requirements. The arrangement and orientation of these valves ensures minimum leakage from the valves when they are closed.

As discussed in Attachment No. 1, Clow performed tests to determine the mass flow and aerodynamic torque characteristics of the design. These tests were then correlated to the PNPS requirements. Worst case conditions (paragraph 1.1) were evaluated against the design condition specified.

The method used is outlined in paragraph 1.2.C. and includes factors for dynamic torque prediction. Both valve and actuator assembly are considered (paragraph 2.0), and actuator output torque figures are furnished (paragraph 2.2.3.2).

Correlation of the design to PNPS operating and installation requirements are in paragraph 3.0.

Concern:

Are the valves seismically qualified?

Response:

Yes, the valves, including the actuators and all accessories, are seismically qualified and are installed in a Seismic Category 1 design piping system in accordance with PNPS requirements. The method used (Attachment No. 2) by Clow to qualify the valves is a combination of testing and analysis (paragraph 3.1). The actuator is qualified generically (paragraph 3.2) and the accessories are covered by ASCO and NAMCO reports (paragraph 3.2.3).

Concern:

Have the valves the ability to withstand the stresses in susceptible parts such as the stem?

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Response:

The valves, pressure and non-pressure retaining parts, are designed to withstand the loads imposed by PNPS design requirements.

The valves are certified to ASME Section III, Class 2, 1980 for pressure retaining parts. Compliance to that code is demonstrated in Clow Design Report DR-82-2739(N) Rev. A (Attachment No. 3). Valve operability is also addressed in the Clow Design Report, as well as in the seismic qualification analysis performed by Patel Engineers and described in report PEI-TR-833700-1, dated October 1, 1983.

Both reports verify that the valves will function satisfactorily both as a pressure boundary and as an actual safety component. The valve shaft or stem was explicitly included in analysis.

Concern:

Are the valves sized sufficiently?

Response:

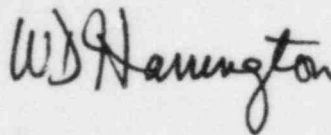
Reducing the size of the valves from the present 20" to 8" lengthens vent and purging time. The new 8" valves allow containment entry within 8 hours of initiation (Attachment No. 4); therefore they are adequately sized.

The NRC guideline in Standard Review Plan 6.2.4, and Branch Technical Position - Containment Systems Branch 6-4 Section B.1.C states that an 8" valve diameter is the largest allowed without additional radiological analysis. Our interpretation of this requirement is that valves 8" and smaller are acceptable.

These 8" valves are therefore an acceptable compromise between possible safety concerns and necessary operational efficiencies.

Boston Edison believes that this submittal satisfactorily addresses NRC's questions on our purge and vent valve upgrade. Should you wish further information after reviewing this, please contact us.

Very truly yours,



PMK/kmc

Attachments (See next page)

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- Attachments:
- (1) Report No. 11-15-83 (10394-M-119-1-23-1): Purge and Vent Valve Operability Qualification Analysis
 - (2) PEI-TR-83-29 (10394-M-119-1-27-1): Clow Corporation Addendum II to Patel Technical Report
 - (3) DR-82-2739(N), Rev. A: Design Report
 - (4) Letter 10394-BLE-1417, dated 11-24-82: Bechtel Letter to Boston Edison Company about sizing of Purge and Vent valves
 - (5) This is a list of reports referenced by Clow Corporation in Attachments (1), (2) and (3) above and crossreferenced with the document control number