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May 1, 1979

Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
United States Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. Grier:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
IE Bulletin No. 79-04

The purpose of this letter is to respond to the directives set forth in IE Bulletin No. 79-04 which is concerned with the use of incorrect weights for swing check valves manufactured by the Velan Engineering Corporation in piping stress analyses. Our responses to specified Action Items 1 through 5 in Bulletin No. 79-04 are given below:

Item 1

List all Seismic Category I piping systems (or portions thereof) where 3, 4, or 6-inch diameter Velan swing check valves are installed or are scheduled to be installed.

Response

One (1) Seismic Category I system has been identified which has Velan swing check valves in the size range of interest. The system is the Fuel Pool Cooling System which has 4-inch valves installed. The valves of concern are Class 150 pressure rating.

Item 2

Verify for all those systems identified in Item 1 above that correct check valve weights were used in the piping analysis. Explain how and when the correct valve weights were determined.

Response

The valve weight used in the original piping analysis for deadweight and seismic loads and stresses for the system identified in Item 1 could not be located. Calculations have been made, therefore, to show that the piping

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system is safely designed even if the valve weight used in the original analysis was only 50% of the correct weight.

Item 3

If incorrect valve weights were used, explain what actions have been taken or are planned to re-evaluate the piping systems affected.

Response

It is not known whether or not the correct valve weights were used in the original piping analysis. Therefore, a re-evaluation has been made which assumes a weight error of the same magnitude (50% of true weight) as that indicated on Page 1 of Bulletin No. 79-04. The 4-inch swing check Velan valve of concern has a 150 psi rating and its weight, which was obtained from the Velan Company, is 98 pounds. It is assumed in the re-evaluation that the original calculations used 49 pounds for the 4-inch valve weight.

The original analysis performed on the 4-inch piping system of interest was based on the use of typical B 31.1-1967 code recommended spans for deadweight, and on seismic spans developed on the basis of analysis performed for Oyster Creek Station by J. A. Blume. The same spans were used in the re-evaluation. The results are presented in Item 4.

Item 4

Specify for all the affected systems identified in Item 1 whether modifications were or are required to the piping systems or their supports because of changes in valve weight. Also, include the basis for this determination. For those systems in which the actual valve weight is greater than the design weight, provide a summary of stresses and loads and their allowable limits for the piping and its supports.

Response

No modifications are required to the system identified in the response to Action Item No. 1. The assumptions used in this determination are as follows:

1. For a 4-inch line, the span for deadweight and vertical seismic loading is 14 feet, and the span for horizontal seismic loading is 20 feet.

2. The spans are assumed to be simply supported. In order to achieve the maximum effect for both deadweight and seismic loading, the valve was assumed to be at the center of the span. For 150 psi pressure rated valves, the maximum line pressure by ANSI B 16.5 (1968) is 275 psi and this value was used.

3. The maximum seismic G-loading developed by J. A. Blume was 0.43 G horizontal and 0.29 vertical. These values were used in the calculations.

4. The steel was assumed to have an allowable stress of s = 12000 psi, which is a conservative choice for a line subjected to seismic stress.

The maximum stress was calculated and found to be less than the allowable of 1.2s or 14400 psi as shown in the following table:

	Calculated Stress (psi)	Allowable Stress (psi)
4-inch line	8207.2	14400

For support loads, it is assumed that the supports are adequate for the pipe weight plus the valve at half its actual weight. The support loads were recalculated to determine the percent increase when the additional 50% of valve weight is factored in. The percent increase in support loading is:

	Deadweight	Seismic
4-inch line	8.1	5.8

In view of the stated design factors of safety used by Bergen-Paterson, the support subcontractor, which are 500% for support hardware and 1000% for anchor bolts loaded in tension, it is clear that this maximized increase in support loading does not affect the safety of the design.

Item 5

Identify the analytical technique including identification of any computer codes used to determine the stresses indicated in Item 4.

Response

The analytical technique for stresses was simple beam theory applied in hand calculations. No computer codes were used. Calculations were performed for deadweight, longitudinal pressure, horizontal seismic and vertical seismic loads and the absolute values of the resulting stresses were added numerically.

Very truly yours,

Ivan R. Finfrock, Jr.

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Vice President

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cc: United States Nuclear Regulatory Commission
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