PSNH PUBLIC SERVICE
Company of New Hampshire

SEABROOK STATION
Engineering Office:
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February 8, 1984

SBN- 623
T.F. B6.4.8

United States Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

References: (a) Construction Permits CPPR-135 and CPPR-136, Docket Nos. 50-443 and 50-444
(b) USNRC Board Notification (BN No. 83-121), August 23, 1983

Subject: Markowitz Allegation

Dear Sir:

In Reference (b), we received Board Notification No. 83-121, dated August 23, 1983, entitled, "Allegation Concerning Seabrook Station". The allegation was contained in a letter from George T. Markowitz to E. J. Brunner, of NRC Region I, dated June 10, 1983. The letter was entitled "An Argument Versus Current Nuclear Power Generation Based on the Experiences of an Engineer". A portion of the letter concerned some of the Seabrook relief valves purchased from the J. E. Lonergan Valve Company by United Engineers and Constructors (UE&C).

Attached are the notes of a meeting conducted at the UE&C office in Philadelphia on September 29, 1983, with the NRC to discuss the specific allegations pertaining to Seabrook and UE&C.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

John DeVincentis
Project Manager

Attachment

cc: Atomic Safety and Licensing Board Service List



N005
1/1

# NOTES OF MEETING

Job No.: 9763.006

Date: September 29, 1983

Place: Philadelphia Home Office - 14U2 - 8:30 A.M.

Subject: ALLEGATIONS CONCERNING SEABROOK STATION
Markowitz Letter to NRC

Attendees:

| NRC | YAEC | LONERGAN VALVE CO. |
|---|---|---|
| David Terao | R. K. Tucker | J. E. Littlefield<br>VP Engineering |
| **UE&C** | | |
| D. H. Rhoads | J. J. Parisano | R. F. Perry |
| E. Skolnick | E. Pilhuj | J. S. Zimmatore |
| H. H. Katz | D. D. Boyle | |

Discussion:

Mr. Terao asked what is the scope of the Lonergan valves in use at Seabrook Station.

Response: They are used in piping Class 2 & 3 Systems, mostly for thermal relief valves as follows:

Spent Fuel System, Demineralized Water System, Component Cooling Water System, Containment Building Spray System, Service Water System, REactor Coolant System, Safety Injection System, Diesel Generator Cooling Unit, Waste Process Liquid Drain System.

Valves are certified and qualified for both steam and water services. The particular model valve, the model LCT-11, that was most criticized by Markowitz is used in the following systems:

Spent Fuel System, 3 valves
Chemical and Volume Control System, 1 valve
Waste Process Liquid Drain System, 1 valve
Component Cooling Water System, 10 valves

Mr. Terao summarized that he thought Mr. Markowitz was complaining that the end loads for the valve was not required by the ASME Code. The UE&C specification required the end loads for a design margin to accommodate possible future changes in the valve design.

Mr. Terao reviewed the specifications and calculations for the valve end loads.

It appears that Mr. Markowitz objected to providing calculations for valve end loads that were required by the specification but were over and above ASME code requirements.

Mr. Terao discussed the "thrust ring" (coined by Markowitz) of the valve body which Mr. Markowitz considered to be overstressed by his own personal calculations performed subsequent to the final analysis report.

Mr. Terao was shown a drawing of the valve model in question. Dr. R. F. Perry discussed the transfer of the load from the bonnet to the body of the valve. It was pointed out that the purpose of the gaskets and gasket seating ring ("thrust ring") was to seal the valve and that the major loads were transferred from the bonnet to the body through the much stiffer threaded connection and not through gasket seating ring.

It was pointed out that even under the invalid assumption that the gasket seating ring does transfer the major load, the Markowitz calculation is not realistic because it assumes bending deformation of the gasket seating ring when because of its geometry, it is clear that it actually sustains primarily shear deformation.

Review of Specific Allegations:

The following items refer to Mr. G. T. Markowitz's letter of April 21, 1983 as forwarded to NRC by Reckoning, '80s letter of June 10, 1983 and NRC letter of August 23, 1983.

1. Page 3 - Lack of communication between Lonergan Valve Company and UE&C, as early as 1976 concerning the seismic calculation.
   Response: Mr. Markowitz was not with Lonergan in 1976 and the comments are completely unjustified. Meetings and correspondence were conducted.

2. Page 3 - UE&C "Catch All" Specification - listing Pages B1 and B2 as vague and unreasonable.
   Response: There are specific requirements in the design specification of what is to be provided. The imposed loads (nozzle loads) are over and above the ASME requirements and are clearly specified. It is understood that ASME sets forth "minimum requirements".

3. Page 4 - UE&C Engineers were not unanimous as to whether seismic loads should be added to valve end loads.
   Response: Set forth in specification - not a point of discussion.

4. Page 4, first paragraph - Negotiations had reached a stalemate.
   Response: We were actively pursuing the resolution of any and all questions concerning calculations.

5. Discussed "shear shape factor", the difference between an average value and a peak value.
   Response: This was included in the valve calculation.

6. Page 5a - Lack of technical resolution of the end load question over the years.
   Response: Requirements were always in the specification.

7. Page 5b - Lack of manpower and structure at JELCO.
   Response: No comment, refer to JELCO.

   b.1 - Lack of general direction concerning end load question.
   Response: Always set forth in specification.

   b.2 - Resolution of "shear shape factor".
   Response: Difference between an average shear value and a peak shear value. The factor is to accommodate the peak values of the shear stress distribution through the material cross-section. To conservatively include the higher shear stress areas in the material, a "shear stress factor" is utilized.

   b.2 - Mistakes were detected in JELCO analysis.
   Response: This is part of normal review of documentation.

8. Page 7, all - Does not concern UE&C.

9. Page 7e - Does not concern UE&C.

10. Page 8.f.1 - Combining seismic and operating loads.
    Response: Always required in accordance with UE&C specifications.

    f.2 - Concerning measurement of torque or gasket force.
    Response: There is a specified minimum and maximum torque for assembly of the valve. The calculations of gasket seat ring loads are based on minimum seating requirements for a specific gasket material, as specified in ASME III, Appendix XI.

11. Page 8.g - Concerning checking of simple multiplication or addition.
    Response: As stated, it is not a UE&C responsibility to conduct the mathematical check. The report is reviewed for technical content and for conformance to design specification requirements; certainly, if a mathematical error is discovered or noted, it will be commented on for correction.

12. Page 8.h - Concern of the valve model LCT-11 end loads across the valve model LCT-11, body thrust ring would not be required.
Response: Discussed that the valve end loads are transferred through the bonnet to body threads and not the gasket and gasket seat ring. (See also discussion on Page 2 of Meeting Notes).

13. Page 8.i - Concerning stiffness of piping system on valve.
Response: The required end loads used in the valve analysis are stated in the specification. They are representative of worst case conditions imposed by the adjoining pipe and bear no relationship to the stiffness of the piping system.

14. Page 8.j - Use of optimistic stress values.
Response: As discussed, the stress values in question are not applicable because the valve end loads are transferred through the threaded joint and not transmitted through the gaskets and gasket seat ring.

15. Page 8.k - JELCO declined to allow Mr. Markowitz to read his report.
Response: Does not concern UE&C.

16. Page 9 - Discussion of LCT-11 compression end load mentioned in Items 12 thru 15.
Response: See response to Item 12.

17. Page 10 - Thread loads should be checked.
Response: The stresses at the threads due to piping loads and gasket loads were considered in vendor's analysis.

18. Page 9 - (1) Over-stress of thrust ring due to bending moment induced by an axial end load.
(2) Shear stress in the thrust ring exceeds the allowable at the neutral axis.
Response: See response to Item 12.
The gasket seating ring has a 3/16" x 3/16" square cross-section which does not behave as a beam in bending but sustains primarily shear deformation.

The shear stress on this ring is as follows:

$F_g$ = 1684 Lbs., gasket seating force

$A_s = 2 \pi Rt$, shear area

$= 2 \pi (0.703) (3/16)$

$= 0.828\ IN^2$

$F_v = 0.40\ S_y$ (Allowable shear stress, ASME III, Appendix XVII-2212)

= 0.40 (36000)

= 14,400 PSI

$$\tau = \frac{F_g}{A_s}$$ , shear stress

$$\tau = \frac{1684}{0.828} = 2{,}034 \text{ PSI} < 14{,}400 \text{ PSI, OK}$$

19. Page 10 - Stiffness of the valve points in the piping system.
Response: See response to Item 13.

20. Page 10 - Safety factor of 1.2
Response: The 1.2 value is not a safety factor. It is the permissible increase in code allowable stress used in piping analysis for occassional loads, and is not applicable to the subject analysis.

21. Page 10 - Loads on threads
Response: The thread stresses have been addressed in the analysis.

Provided Mr. Terao a copy of the following to take with him:

1. Bid issue of Specification 248-7, Rev. 1, dated 1/19/76 (now void)
2. Latest issue of Specification 248-7, Rev. 3, dated 1/12/82.
3. Seismic requirements 9763-SD-248-7, Specification Issue Ø, dated 11/17/75.
4. Copy of final signed Seismic Calculations, FP-90819 of Lonergan Valve Company.
5. Pressure safety relief valve data sheets
6. Lonergan Valve Drawing No. A2614, Rev. E (RP-90645-08)

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