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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 9 1980

Docket No.: 50-333

MEMORANDUM FOR: R. J. Bosnak, Chief, Mechanical Engineering Branch, DE
THRU: *JK* F. C. Cherny, Section B Leader, Mechanical Engineering
Branch, DE
FROM: M. Hartzman, Section B, Mechanical Engineering Branch, DE
D. Terao, Section A, Mechanical Engineering Branch, DE
SUBJECT: TRIP REPORT - VISIT TO STONE & WEBSTER TO DISCUSS NRC
CONFIRMATORY PIPING CALCULATIONS FOR NORTH ANNA UNIT 2 PLANT.

The MEB has performed an ASME Class 2 confirmatory analysis of the Low Head Safety Injection System in the North Anna Unit 2 plant. Stone & Webster, as the architect-engineer of this system, provided the isometric drawing, support drawings, mass coordinates and pipe data, and thermal and seismic load data.

The objective of this meeting was to discuss the following items:

1. Modelling and Operability of the LHSI Pumps

Modelling of the pumps was discussed because the isometric and pump drawings did not show clearly how the pumps are embedded in the concrete structure nor the exact number or location of the supports. Each pump was shown to sit in a well; the casing is surrounded by foam plastic except at the upper position which contains the nozzle and the motor. This portion is attached to the containment wall by two sets of rigid supports, one set of which was not shown on the isometric drawing. During and after a LOCA, these supports experience a one inch displacement, thus indicating that the shaft could be bent substantially near the upper bearing such that operability during and after a LOCA could be impaired.

2. Modelling of the Piping System

Topics which were discussed included mass models and the restraint stiffnesses.

3. Calculation of the Containment Growth due to LOCA Conditions

A comparison was made of techniques used by MEB and S&W for calculating containment growth due LOCA, and some of the conservatism involved.

4. Seismic Amplified Response Spectra Calculation

S&W submitted a set of amplified response spectra to be used as input to the confirmatory analyses. The generation of these spectra, their shape as well as a comparison of the base mat spectrum with the design spectrum shown in the FSAR was discussed. An inconsistency in the latter was noted.

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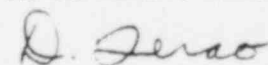
5. Comparison of Numerical Results

The S&W and NRC calculation of the natural frequencies showed close agreement. The total flange loads on the pump nozzles were shown to be sensitive to the system model used in the analyses and thus complete agreement was not obtained.

The following additional information was requested from S&W and VEPCO:

1. A discussion of the conservatisms included in the development of the amplified response spectra.
2. A summary of the forces and moments acting at the pump nozzle flanges due to weight, thermal expansion, thermal and seismic anchor movements, and OBE and SSE inertia loading.


M. Hartzman, MEB, DE


D. Terao, MEB, DE

- cc: R. Vollmer
J. Knight
A. Dromerick ←
K. Wichman
F. Cherny
H. Brammer
F. Schauer
M. Hartzman
D. Terao

Mr. J. H. Ferguson
Executive Vice President - Power
Virginia Electric & Power Company
P. O. Box 26666
Richmond, Virginia 23261

ccs:

Mr. Anthony Garbaradella
Office of the Attorney General
11 South 12th Street - Room 308
Richmond, Virginia 23219

Richard M. Foster, Esq.
Musick, Williamson, Schwartz
Leavenworth & Cope, P. C.
P. O. Box 4579
Boulder, Colorado 80306

Michael W. Maupin, Esq.
Hunton, Williams, Gay & Gibson
P. O. Box 1535
Richmond, Virginia 23212

Mrs. June Allen, President
North Anna Environmental Coalition
1105 - C Olive Street
Greensboro, North Carolina 27401

Mrs. Margaret Dietrich
Route 2, Box 568
Gordonsville, Virginia 22942

Mr. James C. Dunstan
State Corporation Commission
Commonwealth of Virginia
Blandon Building
Richmond, Virginia 23209

Alan S. Rosenthal, Esq.
Atomic Safety and Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dr. John H. Buck
Atomic Safety and Licensing Appeal Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Atomic Safety and Licensing Board Panel
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. T. Webster
U. S. Nuclear Regulatory Commission
P. O. Box 128
Spotsylvania, Virginia 22553