

BALTIMORE GAS AND ELECTRIC COMPANY

GAS AND ELECTRIC BUILDING
BALTIMORE, MARYLAND 21203

September 11, 1979

ARTHUR E. LUNOVALL, JR.
VICE PRESIDENT
SUPPLY

Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Mr. Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Subject: Calvert Cliffs Nuclear Power Plant
Units Nos. 1 & 2, Docket Nos. 50-317 & 50-318
CVCS Piping Vibratory Loads

Reference: BG&E letter dated 1/23/79 from R. F. Ash to
R. W. Reid, same subject.

Gentlemen:

The referenced letter informed you of our intentions to purchase and install pulsation dampeners to limit vibration caused by the operation of the charging pumps. As discussed in a recent telephone conversation with our NRC project manager, this letter is being submitted to provide you with the latest information on the details of our scheduled modifications and the timetable for their accomplishment.

Suction Side Modifications

The CVCS piping between the suction inlet of the charging pumps and the first suction isolation valve will be changed from Schedule 10 stainless steel to Schedule 40 stainless steel. All socket welded fittings to the branch connections in this portion of piping will be replaced with butt welded fittings. In addition, suction stabilizers will be installed in this piping. These stabilizers are five gallon capacity, designed and manufactured by Greer Hydraulics, Inc. (Part No. 844633). They are sized to reduce pressure fluctuations in the suction lines caused by cavitation/bubble collapse to within $\pm 5\%$ of the mean absolute line pressure. It has been ascertained through measurements that suction line pressure fluctuations are affected by static suction head, which is supplied by the pressure in the Volume Control Tank (VCT), and that pressure fluctuations are minimal when VCT pressure is about 40 psig. The fluctuation amplitude increases as VCT (suction) pressure decreases. The peak to peak pressure fluctuation noted at a suction pressure of 12 psig and a discharge pressure of 2460 psig was 60 psi. It is expected that the suction stabilizer will reduce this fluctuation to about 6 psi. Since we intend to maintain VCT pressure closer to 40 psig, it is expected that the stabilizers will reduce pressure fluctuations to below 5 psi.

952129

7909170 217

Discharge Side Modifications

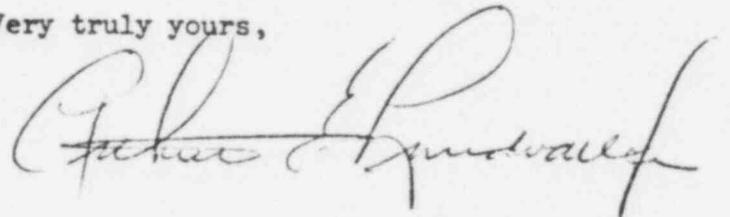
The discharge side of the charging pumps presently contains 2½ gallon capacity pulsation dampeners designed and manufactured by Greer Hydraulics, Inc. The bladder precharge pressure in these units is 1600 psi (nitrogen). However, the units are of insufficient size to prevent pressure pulsations when system pressure drops below 1600 psi. Therefore, it has been necessary for the operator to bleed off the nitrogen pressure. To correct this situation, we intend to modify the presently installed 2½ gallon Pulse-Tone unit by replacing the shell, bag and gas valve assembly with the corresponding 5 gallon parts designed and manufactured by Greer. This modification will make the dampeners effective for pump discharge pressure over the range of 460 psi to 3000 psi, limiting the pulsations to 1½% of discharge pressure.

Schedule

All engineering work associated with the above modifications will be completed by December, 1979. Delivery for all equipment is expected by mid-January, 1980. Modifications to Unit No. 1 are scheduled for the Spring 1980 refueling outage, and Unit No. 2 for the Fall 1980 refueling outage. The necessary piping fittings and dampeners will not be delivered in time to accomplish any modifications to Unit No. 2 during the upcoming Fall 1979 refueling outage. The pulsation dampening equipment is designed to ASME Boiler and Pressure Vessel Code Section III, Nuclear Class II, and the piping is Nuclear Class III. In the interim until the above modifications are made, close monitoring of VCT pressure and charging system discharge pressure is expected to minimize the possibility of charging pump pressure fluctuations.

We hope that this information is sufficient to aid you in conducting your safety evaluation of this issue on the Calvert Cliffs dockets. If you have any additional questions, please do not hesitate to call.

Very truly yours,



cc: J. A. Biddison, Esquire
G. F. Trowbridge, Esquire
Mr. E. L. Conner, Jr. - NRC

952130