



Commonwealth Edison

One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

P

October 24, 1978

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

Subject: Zion Station Units 1 and 2
Pulsation Dampeners at
Positive Displacement Pumps
NRC Docket Nos. 50-295 and 50-304

Reference (a): August 31, 1978 letter from A. Schwencer
to Cordell Reed titled "Pipe Cracks in
Chemical Volume Control Due to Excessive
Charging Pump Vibrations"

Dear Sir:

Per Enclosure 1 of Reference (a), the NRC Staff requested Commonwealth Edison Company to provide additional information if pulsation dampeners or other mechanical devices are used at the positive displacement pump to reduce vibratory loads transmitted to the pipe systems. Since Zion Station uses pulsation dampeners on its positive displacement charging pumps, the following information is being provided by Commonwealth Edison in response to the NRC request of Reference (a).

Zion Station has two pulsation dampeners, one for each unit. These pulsation dampeners were installed as a result of a field study made by Southwest Research Institute of San Antonio, Texas to determine the cause of vibrations in the piping of each of the positive displacement charging pumps on Zion Units 1 and 2. The Unit 1 positive displacement charging pump, Pump 1c, has a pulsation dampener on its discharge side which was installed in October 1977. The Unit 2 pump, Pump 2c, has a similarly located pulsation dampener that was installed in March 1978.

Each of the two pulsation dampeners is a Greer Hydraulic, Inc., 2 1/2 gallon pulse-tone discharge pulsation bladder dampener with a maximum working pressure of 2800 psi. There are no pulsation dampeners employed on the suction side of either positive displacement charging pumps.

A001
S/P

7810300097

Director of Nuclear Reactor Regulation
October 24, 1978
Page 2

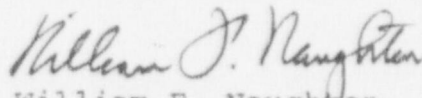
Before the installation of the Greer pulsation dampeners, Southwest Research Institute's field study found that pulsations in the discharge line of Pump 1c ranged from a maximum of 920 psi, peak to peak, at 49 Hz to a minimum of 200 psi, peak to peak, at 54 Hz. The suction line pulsations ranged from 16 psi, peak to peak, at 3 Hz to 1 psi, peak to peak, at 40 Hz. Pump 2c discharge pulsations ranged from 370 psi, peak to peak, at 39 Hz to 180 psi, peak to peak, at 14 Hz. The suction pulsations ranged from 8 psi, peak to peak, at 1 Hz to 6 psi, peak to peak, at 3 Hz.

The Greer pulsation dampeners are designed to provide $\pm 2\%$ attenuation at normal operating pressures near 2500 psi and in flow ranges of 45 gal/min. to 100 gal/min. These are designed to reduce the pulsations to about 100 psi peak to peak amplitude for a 2450 to 2550 psi range of operation. Neither of the positive displacement pumps has been operated at its full operating pressure because of problems with packing leaks. As a result, data is not yet available on the effectiveness of these dampeners in their present configuration. However, this data will be obtained in the very near future.

Please address any additional questions that you may have concerning this matter to this office.

One (1) signed original and thirty-nine (39) copies of this letter are provided for your use.

Very truly yours,



William F. Naughton
Nuclear Licensing Administrator
Pressurized Water Reactors