



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

BBS Ltr. #724-75

Dresden Nuclear Power Station
R.R. #1
Morris, IL 60450
October 28, 1975

Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operation - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

SUBJECT: FOLLOW-UP REPORT TO LETTER DATED JUNE 20, 1974, CONCERNING
BERGEN-PATERSON SHOCK SUPPRESSOR FAILURES

- References: 1) Letter from B.B. Stephenson to J.F. O'Leary dated June 20, 1974
2) Letter from B.B. Stephenson to J.G. Keppler dated August 30, 1974 (report no. 50-237/74-42)
3) Letter from B.B. Stephenson to J.G. Keppler dated October 31, 1974 (report no. 50-237/74-53)

Dear Mr. Keppler:

As reported in B.B. Stephenson's letter of June 20, 1974, six Bergen-Paterson shock suppressors with ethylene-propylene seal material were found to be inoperable during a Unit-2 drywell snubber inspection conducted on June 8, 1974. The mode of failure could not be determined at that time, and the six failed suppressors were replaced with new, similar Bergen-Paterson units which also contained ethylene-propylene seals.

During the following Unit-2 drywell snubber inspection conducted on August 24, 1974 (see report no. 50-237/74-42), three of the replacement suppressors were found to be visibly leaking, although not inoperable. The leaking suppressors were replaced once again.

As a result of these recurring suppressor failures, a meeting was convened to determine probable modes of failure. The meeting was attended by representatives from Bergen-Paterson and Rexnord Co. (the manufacturer of the suppressor components), as well as Commonwealth Edison metallurgists. During the meeting, a piston and main cylinder component from snubber #28 (which had been removed in June, 1974) were visually examined by these representatives and CECO metallurgists. It was generally agreed that the snubber appeared to have experienced vibration perpendicular to the suppressor stroke, resulting in severe binding between the main piston head and cylinder walls.

Following this discussion, the meeting reconvened in the maintenance shop where the three leaking snubbers from the August inspection were being disassembled.

The disassembly of snubber #26 revealed that the accumulator piston seal cup had been installed in reverse, providing a leakage path. The

October 28, 1975

main piston and cylinder walls exhibited circumferential and longitudinal scratches resulting from piston/cylinder binding.

Upon disassembling snubber #25, it was found that an "O"ring had been improperly installed in the piston rod seal cup, producing another leakage path. The general condition of the suppressor's internal components was good, however, showing only normal piston/cylinder wear.

Snubber #28 (which had been installed in June, 1974) was dismantled, revealing axial scratches in the shaft seal which were providing a leakage path. Severe binding between the piston and cylinder walls apparently produced steel filings in the oil media. These abrasive particles eventually caused the shaft seal leakage.

As a result of these examinations, the following corrective actions were taken:

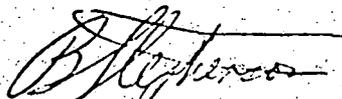
1. Because two suppressor failures were directly attributable to improper seal installation, the suppressor assembly maintenance procedure was revised to fully explain and illustrate the reassembly orientation of all seals; and
2. Sargent & Lundy was contacted to review the design loadings and fixed angles of the suppressors as installed in the feedwater line. (Note: Suppressors #26 and #28 are located within a few feet of each other on the feedwater line.)

The subsequent study performed by Sargent & Lundy revealed that both snubbers #26 and #28 were being physically restricted in movement once the feedwater line had reached its normal operating temperature. Suppressor #26 was found to be binding at the ball joint connection. The suppressor part of the joint was ground approximately 1/8" to allow the snubber to operate freely. The amount of material removed by grinding was too small to affect the strength of the connection.

The operation of suppressor #28 was found to be hindered by a steel plate running vertically between grating sections. The plate apparently was installed during construction to assist in positioning of the grating. Since the plate served no structural function, a portion of it was removed to allow unhampered operation of the snubber.

A snubber inspection conducted on September 26, 1975 revealed that snubbers #25, #26, and #28 were experiencing no discernible oil leakage. The other snubber failures noted during the June, 1974 inspection have not recurred; consequently, the suppressor problems associated with that inspection are considered to be resolved.

Sincerely,



B.B. Stephenson
Superintendent
Dresden Nuclear Power Station