TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE
37401

October 25, 1974

Mr. Edson G. Case
Acting Director of Licensing
Office of Regulation
U.S. Atomic Energy Commission
Washington, DC 20545

Dear Mr. Case:

TENNESSEE VALLEY AUTHORITY - BROWNS FERRY NUCLEAR PLANT UNIT 2 - DOCKET NO. 50-260 - FACILITY OPERATING LICENSE DPR-52 - ABNORMAL OCCURRENCE REPORT BFAO-50-260/7420W

The enclosed report is to provide details concerning one Grinnell shock and sway arrestor which was found on the recirculation system with an empty reservoir on October 12, 1974, and ten Bergen-Paterson hydraulic shock and sway arrestors which were found with an unacceptably low amount of oil present in the unit on October 17, 1974. This report is submitted in accordance with Appendix A to Regulatory Guide 1.16, Revision 1, October 1973. This event occurred on Browns Ferry Nuclear Plant unit 2 on October 17, 1974.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

for E. F. Thomas
Director of Power Production

Enclosure
CC (Enclosure):
Mr. Norman C. Moseley, Director
Region II Regulatory Operations Office, USAEC
230 Peachtree Street, NW., Suite 818
Atlanta, Georgia 30303

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ABNORMAL OCCURRENCE REPORT

Report No.: BFAO-50-260/7420W
Report Date: October 25, 1974
Occurrence Date: October 17, 1974
Facility: Browns Ferry Nuclear Plant unit 2

Identification of Occurrence

During a planned inspection of hydraulic piping restraints, one Grinnell shock and sway arrestor was found on the recirculation system with an empty reservoir on October 12, 1974; and the following Bergen-Paterson hydraulic shock and sway arrestors were found with an unacceptably low amount of oil present in the unit on October 17, 1974:

1. Three arrestors on feedwater riser lines inside the drywell.

2. One arrestor on a main steamline inside the drywell.

3. One arrestor on a control rod drive line inside the drywell.

4. Two arrestors on the residual heat removal lines outside the drywell.

5. One arrestor on the HPCI line outside the drywell.

6. One arrestor on the RCIC line outside the drywell.

7. One arrestor on the condensate line outside the drywell.

Conditions Prior to Occurrence

The reactor was in the cold shutdown mode during an outage.

Description of Occurrence

The depleted oil condition in the arrestors was found during an inspection of Grinnell and Bergen-Paterson arrestors.

Designation of Apparent Cause of Occurrence

The apparent cause of loss of oil in the Grinnell shock arrestor was from nicks on two of the four Chevron-type seals, which could have been a result of burrs found on the piston rod end. The apparent cause of loss of oil in the Bergen-Paterson arrestors is twofold. The first cause can be attributed to the quality of workmanship during a recent rebuild program in which all software parts were replaced with ethylene-propylene software parts. In the reassembly phase of the rebuild program, the control valve assembly was improperly aligned with the main cylinder, permitting the oil to continuously leak out of the arrestor unit. The second cause can be attributed to a poor design of the piston rod packing ring. This packing ring contains an O-ring in a U-cup. This O-ring stiffens the packing ring to such a degree that during the installation and operation of the packing

Designation of Apparent Cause of Occurrence (continued)

ring, the inner lip of the U-cup is subject to tearing permitting oil to leak out of the arrestor unit. The packing ring must be installed blind, preventing detection of any tears on the inner lip of the packing ring until the arrestor unit is placed in service.

Analysis of Occurrence

No damage to systems, components, or structures was caused; no personnel injuries or exposures were involved; and no radioactive materials were released as a result of loss of oil in these arrestor units.

Corrective Action

On the Grinnell shock arrestor, the two nicked Chevron-type seals were replaced with ITT Grinnell-furnished U-cup, O-ring seals; and the burrs were stoned off the piston rod. The Bergen-Paterson arrestor units that lost oil because of misaligned valve assemblies were properly aligned and reinstalled. Those units that lost oil because of tears on the packing ring lip were disassembled and new packing rings installed and reassembled. These units were then returned to service. All the remaining arrestors were inspected and found to be in good condition. All arrestor units which had misaligned valve assemblies have been corrected, and this condition should not recur.

Failure Data

This is the first inspection performed on the Bergen-Paterson and Grinnell arrestors since nuclear heatup of this unit.

The Grinnell arrestors were rebuilt and tested by the factory during February 1974 and installed in unit 2 during June 1974. The Bergen-Paterson arrestors were rebuilt during July 1974 using new seal material as a result of RO Bulletins No. 73-3 and 73-4.

Arrestors in unit 1 were inspected on April 8, 1974, and necessary corrections were made to assure proper operation.