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William J. Cahill, Jr.
Executive Vice President

March 22, 1991

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSEG)
DOCKET NOS. 50-445 AND 50-446
AUXILIARY FEEDWATER SYSTEM CHECK VALVES
SDAR CP-89-015 (SUPPLEMENTAL REPORT)

- 1) TU Electric Letter logged TXX-90172 from William J. Cahill, Jr. to NRC dated April 27, 1990.
- 2) TU Electric Letter logged TXX-90188 from William J. Cahill, Jr. to NRC dated May 18, 1990.
- 3) TU Electric Letter logged TXX-90215 from William J. Cahill, Jr. to NRC dated June 18, 1990.

Gentlemen:

On June 19, 1989, TU Electric notified you by letter, logged TXX-89424, of a deficiency involving backleakage through check valves which caused overheating in the Auxiliary Feedwater System (AFW) System. In the letters referenced above, TU Electric discussed corrective action for the check valve backleakage. TU Electric has been implementing changes as stated in the referenced letters and has identified additional corrective actions based on further evaluation.

On February 5, 1991, J. Clifford, W. Johnson and D. Graves of the NRC reviewed the corrective actions to date and the additional corrective actions. As requested by J. Clifford, this letter provides an update concerning completed and planned actions.

The overheating of the AFW System was the result of backleakage caused by inadequate seating of the disc due to misalignment of the valve internals during maintenance and by lack of positive seating of the disc on the valve seat under low differential pressure conditions. To correct these problems, design modifications were proposed by TU Electric and approved by Borg Warner/International Pump, Inc. (BWIP) which alleviate the possibility of misalignment during maintenance and overcome the disc seating problem at low differential pressures.

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The misalignment of the valve internals during maintenance was caused by incorrect reassembly instructions provided by BWIP. BWIP revised their Operation and Maintenance Instructions to correct this deficiency. The instructions now include a method to determine the elevation of the disc so that it is properly aligned vertically with the seat. Each BWIP pressure seal check valve has been adjusted using this guidance. The CPSES maintenance procedure has been revised to ensure when the valves are disassembled and reassembled, the elevation of the disc is returned to its proper setting. The procedure also provides instructions for axially aligning the disc to the seat.

To simplify the reassembly process, a modification will be made to the BWIP pressure seal check valves. This modification consists of an internal spacer ring and an external alignment device (see enclosed drawings). The internal spacer ring positions the bonnet assembly at the height required for correct disc contact on the seat. Each valve is measured, a spacer ring is machined to the required dimensions, and the spacer ring is welded in place.

The external alignment device consists of an alignment block welded to the top of the valve body and an alignment bar welded to the valve bonnet (see enclosed drawings). When the valve is reassembled, the alignment bar fits into the alignment block, preventing axial misalignment of the disc.

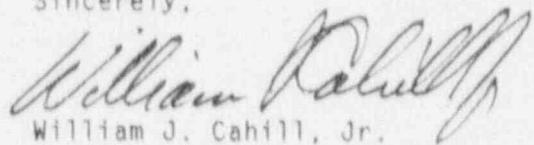
To correct the disc seating problem at low differential pressures, an eight ounce counterweight was added to the disc stud of the eight affected AFW System check valves. This modification has proven successful and no elevated piping temperature conditions have been experienced since modification implementation. Additionally, during the last three plant startups, no upstream venting of the check valves has been performed. This confirms the capability of the counterweight to positively seat the valve disc. Some minor backleakage has been experienced through check valve 1AF-0098 (turbine-driven pump train), but this backleakage has not been sufficient to elevate piping temperatures. This valve is known to have a worn seat and is scheduled to be replaced during the upcoming Unit 1 mid-cycle outage.

The maintenance enhancement modifications will be made to the twenty-eight Unit 1 BWIP pressure seal check valves when other maintenance is performed on the individual valves and sufficient outage time is available. Since the check valves have been adjusted and are functioning properly, there is no urgent need to modify the valves. The majority of the pressure seal valves in Unit 1 are tentatively scheduled for modification by the end of the first refueling outage. The check valves in Unit 2 are currently scheduled to be modified by hot functional testing and tested during pre-operational testing.

As part of the evaluation of the BWIP check valves, TU Electric investigated replacing the check valves. The investigation included consideration of alternate system design configurations, presentations by other check valve vendors, review of vendor bid packages, and review of industry feedback.

including NRC Bulletins, Information Notices, and the Nuclear Plant Reliability Data System (NPRDS). Although other check valves have some advantages over BWIP check valves, disadvantages are also apparent. Based on the design evaluation of other vendors' check valves, the success of installed modifications and the proposed modifications described below, TU Electric has concluded that the modified BWIP check valves are acceptable for long term use at CPSES and need not be replaced.

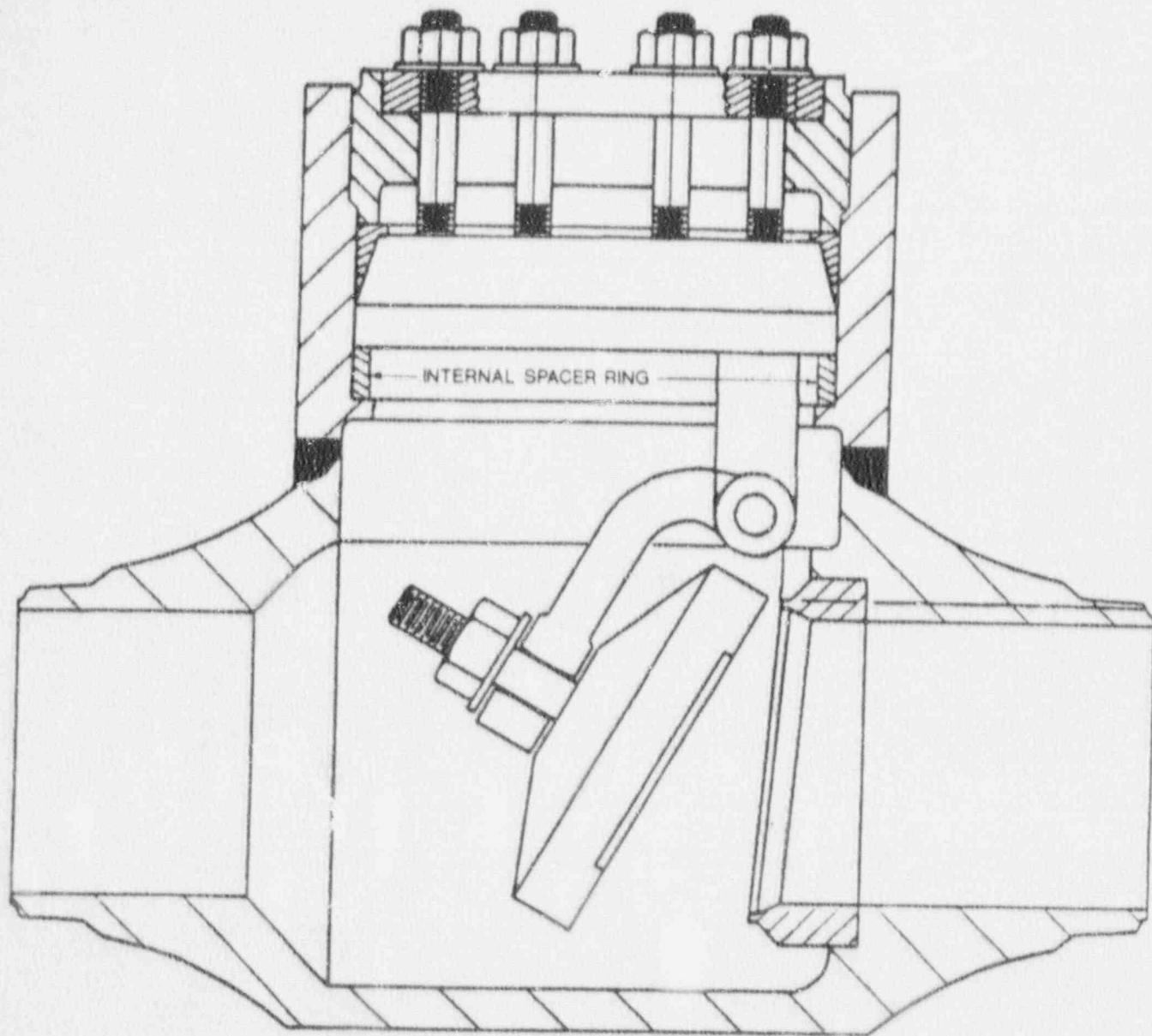
Sincerely,



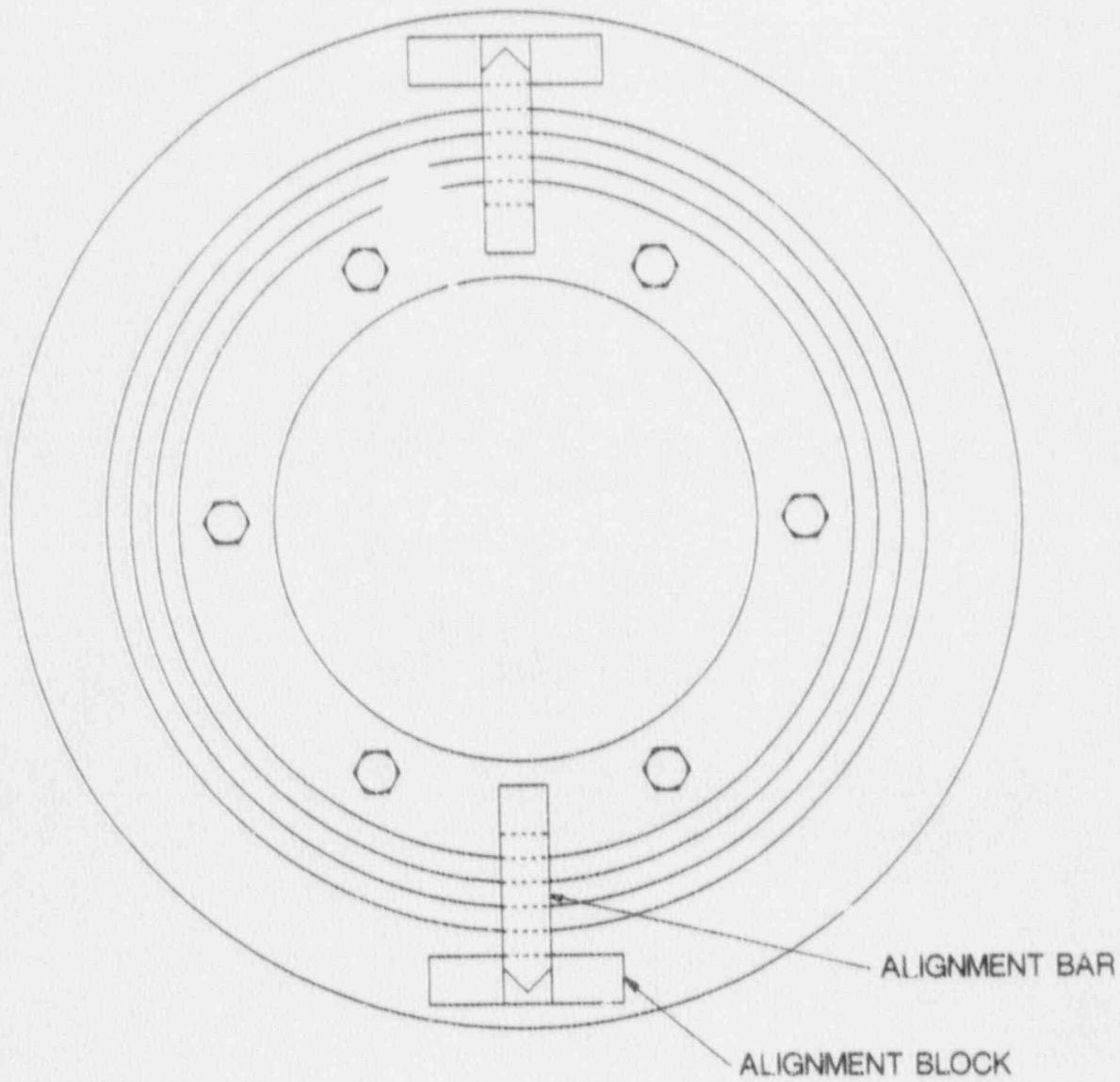
William J. Cahill, Jr.

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Enclosure

c - Mr. R. D. Martin, Region IV
Resident Inspectors, CPSES (3)
Mr. J. W. Clifford, NRR
Mr. M. B. Fields, NRR



SIDE VIEW OF BWIP CHECK VALVE



TOP VIEW OF BWIP CHECK VALVE