

Log # TXX-92087
File # 10111
Ref. # 10CFR21.21

TU ELECTRIC

February 28, 1992

William J. Cahill, Jr.
Group Vice President

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
SWING ARMS FOR BORG WARNER CHECK VALVES
10CFR21 REPORT P21R-92-001

REF: 1) Facsimile transmission and telephone conversation between
NRC Operations Center and TU Electric on January 14, 1992.

Gentlemen:

The NRC was notified of a reportable condition regarding a difference between installed and replacement swing arms for Borg Warner check valves by reference 1. A request for an extension to February 28, 1992, for submittal of the final report to allow additional evaluation on the subject issue was granted by Mr. L. A. Yandell of NRC Region IV.

Attached is the written report which satisfies the reporting requirements of 10CFR21. The report has been formatted in a manner that corresponds to the specific information requested by subparts (i) through (viii) of paragraph 21.21 (c)(4) of the regulation. This is exclusive of that portion of subpart (vi) regarding names and locations of other facilities which may be affected, as this information is not known to TU Electric, and subpart (viii) in its entirety regarding the advice that has been or will be given to other facilities. Such advice would be dependent on the facility specific use and operating/maintenance history of the subject components.

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A copy of this report will be sent to BW/IP Inc.

Sincerely,

William J. Cahill, Jr.

William J. Cahill, Jr.

By: *Roger D. Walker*

Roger D. Walker
Manager of
Nuclear Licensing

OB/tg

c - Mr. R. D. Martin, Region IV
Mr. L. A. Vandell, Region IV
Mr. T. A. Bergman, NRR
Mr. M. B. Fields, NRR
BW/IP Inc.
Resident Inspectors, CPSES (2)

10CFR21 REPORTABLE CONDITION INVOLVING
SWING ARMS
FOR BORG WARNER CHECK VALVES

(i) Information supplied by:

William J. Cahill, Jr.
TU Electric
400 North Olive Street, L. B. 81
Dallas, Texas 75201

(ii) The facility is Comanche Peak Steam Electric Station Units 1 and 2. The basic components are swing arms on Borg Warner check valves model number 75510 which are not completely interchangeable with the original parts.

(iii) The swing arms stated in (ii) above were qualified and supplied to TU Electric by BW/IP Inc. previously known as Borg Warner/Industrial Product, Inc.

(iv) Description

The swing arm is a machined steel casting attached via clevis and pivot pin to the valve bonnet (see sketch on Page 4). The bonnet provides a mounting point for the clevis. The valve disc is attached to the swing arm via a disc stud and a disc nut. A ball bushing is located at the point where the disc stud passes through the swing arm. The check valve is in the open or closed position depending on direction of flow through the valve body. When fully open, the arc of the swing arm and disc assembly is limited by contact between the disc stud and a stop block mounted on the valve bonnet. The disc is maintained in the open position when flow is in the required direction. The disc is activated to the closed position when flow is in the other than the required direction. The swing arm is part number 72543 on BW/IP valve model number 75510. This valve is a 3" - 900# swing check valve.

Site Specific Summary

On November 10, 1991 during outage related inspection activities the internal of a 3" - 900# BW/IP swing check valve were removed and the old swing arm was replaced with the new swing arm as part of a valve upgrade.

An engineering evaluation prior to reinstallation of the reworked bonnet assembly with the new swing arm revealed several concerns regarding the operability of the check valve with the new swing arm installed. When the new swing arm is in the up position:

- a) An increase in the maximum arc length of the disc stud increases the possibility of contact with the valve neck which could possibly contribute to valve hang-up or valve damage.
- b) The disc may impact the swing arm which could lead to valve damage, and
- c) The disc stud makes contact closer to the far edge of the stop block resulting in a possible hang-up location.

TU Electric had previously performed the following modifications to the valves which may have contributed to the observed problems:

- a) A modification was made in 1983 to replace tack welds which hold the disc stud to the disc with a full fillet weld. This modification was made because of the potential for valve internals to come apart during operation, and as a result of a recommendation by BW/IP Inc.
- b) The ball bushings were modified, as specified by BW/IP Inc., to compensate for the fillet weld size and/or the axial clearance.
- c) The 3/8 inch by 5/8 inch stepped disc stud was replaced, in Unit 1 only, with a 5/8 inch stud.

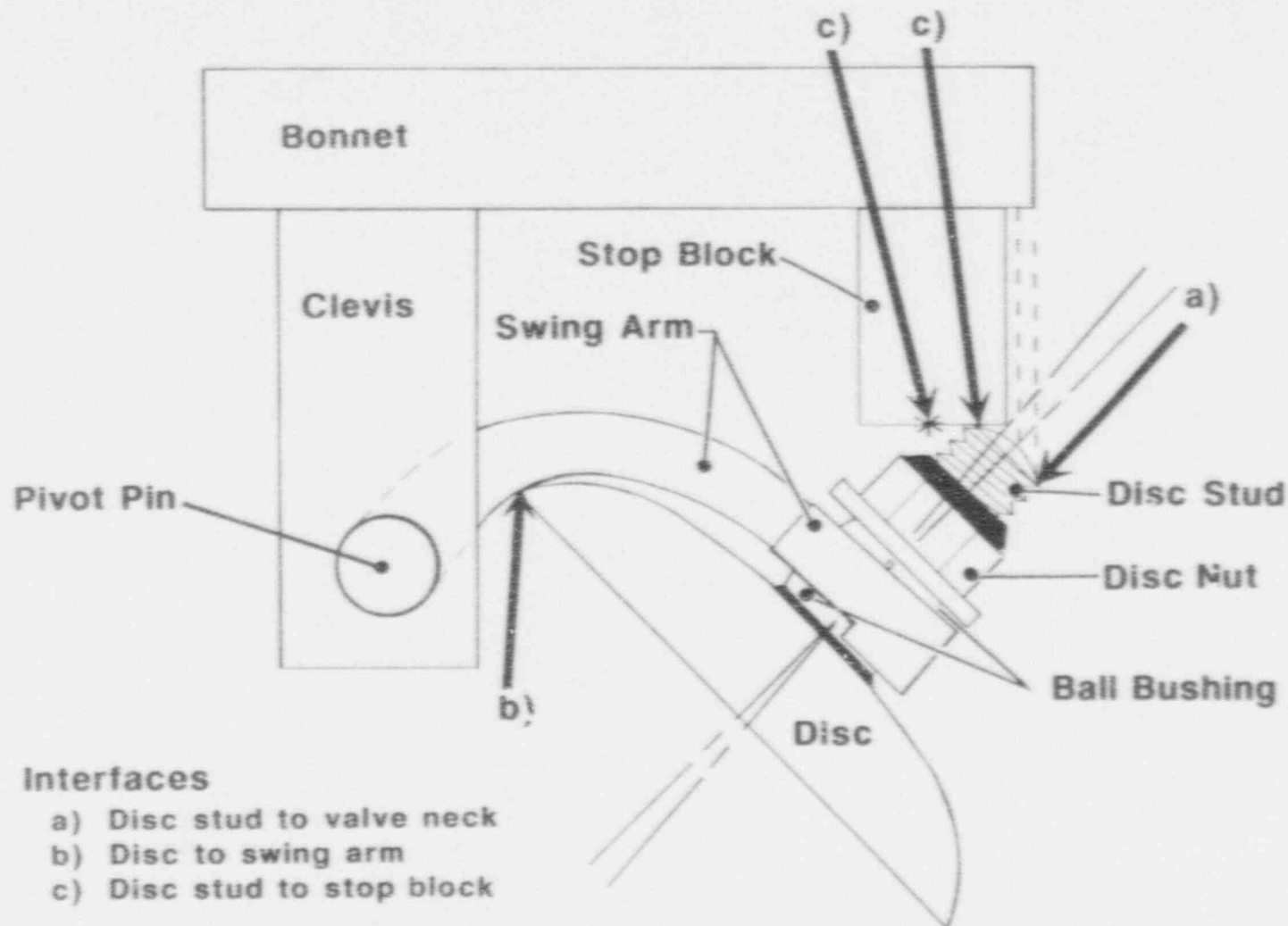
Based on the above, TU Electric has concluded that the replacement swing arms supplied and certified as like for like items, i.e., fit, form and function, are not interchangeable with the original swing arms in the valves modified by TU Electric. Use of the revised part as interchangeable with the original could provide a potential for failure of the valve to close, e.g., lodging open when the disc assembly is forced into an adverse configuration. Backleakage through the valve could lead to degradation or inoperability of associated safety related equipment or systems. This condition is considered a defect.

Site Specific Implications

The auxiliary feedwater system was not in service when this defect was discovered. The 3" - 900# class pressure-seal bonnet BW/IP check valve swing arm design is a unique design unlike that in any other sizes or pressure classes of BW/IP check valves installed at CPSES. This specific size/class of valve was only used in the Auxiliary Feedwater Pump miniflow recirculation lines downstream of the associated breakdown orifice. There are three such valves per unit. The miniflow lines from all three pumps are connected by a common return line to the Condensate Storage Tank. The consequences of a postulated backflow incident involving any one of these check valves would be substantially mitigated by the flow restriction from the breakdown orifice.

The design basis of the system also assumes a single active failure which would encompass any one of these valves failing to close for any reason. A TU Electric engineering report prepared in 1989 considered the potential for a common mode failure-to-close of multiple check valves and determined that, for the subject 3" valves, there was no safety significance. Therefore, if the bonnet assembly containing the new swing arm had been installed, and if the valve did fail to close, no safety significant consequences would have resulted. However, no restriction had been placed on using the subject valves in other safety related applications. Consequently, even though the specific application did not result in a significant adverse condition, the potential for such condition did exist.

- (v) Information of the defect was obtained from the TU Electric evaluation which concluded on January 14, 1992, that the deficiency was a defect.
- (vi) As discussed in (vi) above TU Electric has a total of six (6) 3" - 900# class pressure seal bonnet BW/IP check valves.
- (vii) TU Electric reinstalled the old swing arm. A successful backflow test was performed on the subject valve. TU Electric is evaluating the need to modify the valve to facilitate use of the replacement arms supplied by BW/IP Inc. in order to assure acceptable operation.
- (viii) Not applicable.



BORG-WARNER CHECK VALVE INTERNALS