

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

August 11, 1982

BLRD-50-438/81-71

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

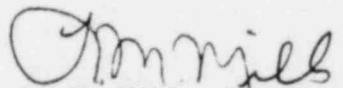
BELLEFONTE NUCLEAR PLANT UNIT 1 - SCORE MARKS ON COMPONENT COOLING WATER  
PUMP SHAFT - BLRD-50-438/81-71 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
R. V. Crlenjak on October 27, 1981 in accordance with 10 CFR 50.55(e) as  
NCR 1621. This was followed by our first interim report dated November 25,  
1981 and our final report dated February 8, 1982. Enclosed is our revised  
final report. We consider 10 CFR Part 21 applicable to this deficiency.

If you have any questions concerning this matter, please get in touch with  
R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

  
L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

OFFICIAL COPY

IE 27

8208160533 820811  
PDR ADOCK 05000438  
S PDR

ENCLOSURE  
BELLEFONTE NUCLEAR PLANT UNIT 1  
SCORE MARKS ON COMPONENT COOLING WATER PUMP SHAFT  
NCR 1621  
BLRD-50-438/81-71  
10 CFR 50.55(e)  
REVISED FINAL REPORT

Description of Deficiency

During a routine inspection after installation, the CCW pump shaft (1A) was found to exhibit circumferential grooves on the thrust bearing end of the shaft under the journal bearing. These grooves are two to four mils deep and two to four mils wide and are approximately one inch apart. The apparent cause of the deficiency is a lathe operator error. The pump shaft was supplied by Hayward-Tyler of Burlington, Vermont.

Safety Implications

Score marks on the thrust bearing end of the shaft under the journal bearing could precipitate the premature failure of the CCW pump (i.e., the shaft could seize). These marks are in an area where properly machined parts are critical. The CCW pumps provide coolant for heat loads from many safety-related components during normal operation. During emergency operation of the unit (LOCA), the CCW pumps will be required to provide coolant to remove heat from the reactor building sump water recirculation via the decay heat removal coolers. The condition, therefore, could have reduced the safety margin of the CCW System and thereby jeopardized the safe operation of the plant had it remained uncorrected.

Corrective Action

An onsite vendor representative was consulted, and he immediately recommended replacement of the shaft. The pump was disassembled, and the deficient shaft was removed. The shaft was sent back to the vendor (Hayward-Tyler pump manufacturers of Burlington, Vermont) for replacement. (Note that B&W of Canada, Limited, Ontario, was the original supplier; however, they were sold to Hayward-Tyler Pump manufacturers since the issuance of the contract.) The replacement shaft arrived onsite and was inspected on October 26, 1981.

The replacement pump shaft supplied by Hayward-Tyler was unacceptable (NCR 1749), and disposition of this NCR by repair of the original pump shaft was reviewed by B&W. B&W recommended that the sharp edges of the grooves be broken by mounting the shaft in a lathe and, at a low speed, hand buff the edges with fine emery cloth. TVA performed the repairs recommended by B&W. Acceptance criteria for this buff was that no sharp edges be felt by hand. The journal bearing surface area removed by the two grooves is inconsequential relative to the 3-3/4" wide bearing area.

The wrong wear rings were supplied with the replacement pump shaft. Since the original wear rings cannot be used, reinstallation of the repaired original shaft must await receipt of the correct wear rings. The corrective action on these matters will be completed by December 1, 1982.

Since the deficiency degrades a critical element of the subject pump, the vendor's quality control program should have rejected the affected shaft per NDE (visual) inspection. Based on TVA's review of records on other equipment supplied by Hayward-Tyler, TVA considers this deficiency to be an isolated occurrence; and, therefore, no action to prevent recurrence is planned.