

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

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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:

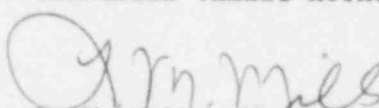
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - WATER FOUND IN ROCK ANCHOR TENDON  
HEAD PROTECTIVE GREASE CANS - NCR 1005 - SEVENTH INTERIM REPORT

On May 23, 1979, R. W. Wright, NRC-OIE Region II, was informed that the subject nonconformance was determined to be reportable in accordance with 10 CFR 50.55(e). This was followed by our interim reports dated June 22 and November 23, 1979; March 21 and September 24, 1980; August 24, 1981; and January 21, 1982. Enclosed is our seventh interim report. We expect to submit our next report by November 22, 1982.

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 Regulation and Safety

Enclosure

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

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ENCLOSURE  
BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2  
WATER FOUND IN ROCK ANCHOR TENDON HEAD PROTECTIVE GREASE CANS  
NCR 1005  
10 CFR 50.55(e)  
SEVENTH INTERIM REPORT

Description of Deficiency

Inspection of approximately 20 (10 randomly chosen on each unit) rock anchor tendon head protective grease cans indicates ground water is infiltrating up along the grouted tendon through the grout hole in the shim stack and into the grease cans. The grease cans are filled with grease to protect the tendons and anchorheads from corrosion. Any water entering the grease cans has the potential for causing corrosion problems. No other TVA plants have a prestressed containment system.

Interim Progress

Pumping of water from the 23 dewatering holes located in the unit 1 tendon gallery floor is continuing. The unit 2 vertical tendons have been greased and the 90-day monitoring program has begun. If monitoring of the unit 2 membranes indicates that no water is infiltrating into the grease cans, drilling of the dewatering holes may not be necessary.

Corrosion testing of the rock anchor components is continuing. A discussion of additional test results is given below.

Preliminary results of test 1 reported in the sixth interim report indicated that the general corrosion rate of steels depends largely on the amount of dissolved oxygen present in the ground water. Investigations have recently been completed which indicate that the dissolved oxygen content of the ground water in the vicinity of the rock anchor tendons is essentially 0; therefore, the corrosion potential of the rock anchor components is lowered.

An interim inspection of three of the test 5 samples indicates that the pH of the ground water in these samples has increased to approximately 12. This pH of 12 is a significant increase from the original pH's in all three instances and can be assumed to approximate the stabilized long-term pH of any ground water that may infiltrate into the grease can. Because the pH of the ground water increases in a grease/grout environment, the corrosion potential of the rock anchor components inside the grease can is lowered. Based on this finding, tests 1, 3, and 4 have been expanded to include tests at pH's of 12.

Because of this extra testing, the attached schedule has been revised. Results of all tests will be provided in the final report.

ATTACHMENT

CORROSION TESTING PROGRAM - TIMETABLE

<u>Test</u>	<u>Completion Date</u>
1. General corrosion rate of AISI 4140 (anchorhead material) and ASTM A421 (tendon wire material) steels using electrochemical methods	April 30, 1982
2. Effect of tendon wire grease on the pH of neutral ground water	November 20, 1981
3. Stress-corrosion cracking of stressed AISI 4140 steel	June 25, 1982
4. General corrosion rate of AISI 4140 and ASTM A421 steels by immersion in a ground water environment	July 12, 1982
5. Stress-corrosion cracking of stressed ASTM A421 steel	September 30, 1982