

PART 21 IDENTIFICATION NO. 81-395-000 COMPANY NAME TVA

DATE OF LETTER 3/27/81 DOCKET NO. 50-328

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ACTION:

PRELIMINARY EVALUATION OF THE ATTACHED REPORT INDICATES LEAD RESPONSIBILITY FOR FOLLOWUP AS SHOWN BELOW:

IE

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OTHER

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8104100 222

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

81-395-000

400 Chestnut Street Tower II

March 27, 1981

SQRD-50-328/81-11

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

SEQUOYAH NUCLEAR PLANT UNIT 2 - STRESS CORROSION CRACKING IN TUBING
ON THE REACTOR COOLANT PUMP OIL COOLERS - SQRD-50-328/81-11 -
FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. W. Wright on December 2, 1980, in accordance with 10 CFR 50.55(e) as NCR SQN NEB 8028. Interim reports were submitted on January 2 and February 3, 1981. Enclosed is our final report. We consider 10 CFR 21 applicable to this deficiency.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Jr., Director (Enclosure) ✓
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

ENCLOSURE
SEQUOYAH NUCLEAR PLANT UNIT 2
STRESS CORROSION CRACKING IN TUBING
ON THE REACTOR COOLANT PUMP MOTOR OIL COOLERS
SQRD-50-328/81-11
10 CFR 50.55(e)
FINAL REPORT

Description

The Sequoyah unit 1 reactor coolant pump motor lubricating oil coolers developed excessive tube leakage during the hot functional test due to stress corrosion cracking (SCC) in the tube material. Examination of the tube material removed from one such heat exchanger revealed that the tubes were of admiralty brass which has been found to be susceptible to stress corrosion cracking in this application. The cracking is due to the presence of ammonia, which in conjunction with residual and operating stresses, causes the stress corrosion cracking. The ammonia present is apparently a product of the decomposition of hydrazine from the component cooling system water treatment.

Implications to Sequoyah unit 2 were investigated, and it was determined that these heat exchanger tubes were also made of admiralty brass.

Safety Implications

Tube leakage which could have resulted from SCC would allow water to mix with the lubricating oil for the reactor coolant pump motor bearings. Water coming in contact with the bearings could possibly cause them to seize. This could reduce the pumps' coastdown time during a reactor trip, which could adversely affect the safety of the plant. Continued forced circulation of reactor coolant is required in the short term after reactor trip to remove the initial decay heat load. Although all four reactor coolant pumps are not required for uniform reactor coolant system cooldown, this condition is conservatively assumed to be a degradation in safety.

Corrective Action

Although it has been determined that the unit 2 reactor coolant pump motor heat exchangers have not leaked, TVA has performed an eddy current test on the tubing. A small number of tubes (approximately 3 out of 354 per heat exchanger) had indications of cracks extending 20 percent or greater through the wall thickness. In accordance with Westinghouse recommendations, TVA has plugged these tubes.

The component cooling system has been flushed and the ammonia removed. The hydrazine, which apparently decomposed and produced the ammonia, was intended to be used only on an interim basis and will not be reintroduced into the system. Therefore, tubing made of admiralty brass will not be susceptible to further stress corrosion cracking.