



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION, UNIT NO. 1

DOCKET NO. 50-338

Introduction:

During the current North Anna Power Station, Unit No. 1 (NA-1) refueling outage (January to March, 1981), Ultrasonic Testing (UT) of the Low Pressure (LP) turbine rotors revealed two small disc cracks in the LP turbine rotor No. 2. Based on the results of the UT testing, the Virginia Electric and Power Company (the licensee) made a decision in January, 1981 to replace the cracked NA-1 LP turbine rotor No. 2 with the compatible Three Mile Island, Unit No. 2 (TMI-2) turbine rotor No. 2.

Discussion:

The stress corrosion cracking problem in Westinghouse turbines first came to the attention of the NRC staff (the staff) in November, 1979. Since then, the staff and Westinghouse have continued to investigate this problem and have identified major contributing factors. Also, the timing of inspection intervals for the affected turbines has been adjusted to accommodate additional information received based on actual service experience with Westinghouse turbines which have undergone ultrasonic inspection.

By letter dated February 12, 1981, the licensee submitted Westinghouse UT test data for the NA-1 LP rotor No. 1 and the TMI-2 LP rotor No. 2. Also, the licensee provided the results of the Westinghouse calculations for the reinspection of the NA-1 LP rotor No. 1 and the TMI-2 LP rotor No. 2. The limiting rotor in question was the NA-1 LP rotor No. 1 with a minimum inspection interval of 21.8 months.

Evaluation:

The staff has evaluated the test data and information supplied by the licensee as applicable to the above mentioned turbine rotors. Based on the staff's independent calculations for crack growth rate and critical crack size, the staff concludes that the NA-1 turbine may be safely operated by using the original NA-1 LP turbine rotor No. 1 and the TMI-2 LP rotor No. 2 until the next scheduled refueling outage at NA-1. While this conclusion is subject to revision as additional actual turbine service experience is received and evaluated by the staff, it is not now expected to change significantly. In the event that it does, the staff will take appropriate action. Accordingly, the staff recommends that the NA-1 turbine discs be reinspected at the next refueling outage.

Date: MAR 13 1981

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