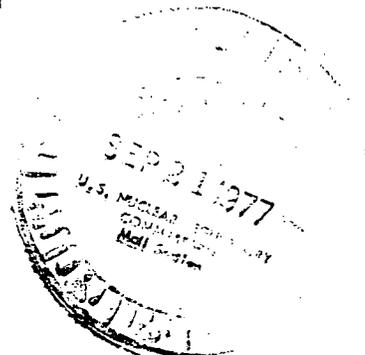


TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

AUG 26 1977



Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 1217
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - REPORTABLE DEFICIENCY -
SIS PUMP MOTOR 1A-1 SHORTED AND OVERHEATED HEATER WINDINGS -
WESTINGHOUSE ELECTRIC CORPORATION - NCR 753E

The subject deficiency was initially reported to NRC-OIE Region II,
Inspector V. L. Browlee, on April 7, 1977, in accordance with
10 CFR 50.55(e). Our first interim report was transmitted on
May 6, 1977. Enclosed is our final report on this deficiency.

Very truly yours,

J. E. Gilleland
Assistant Manager of Power

Enclosure

cc: Dr. Ernst Volgonau, Director (Enclosure) ✓
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

FINAL REPORT

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 WESTINGHOUSE SAFETY INJECTION SYSTEM PUMP MOTOR SHORTED AND OVERHEATED HEATER WINDINGS

Description of the Deficiency

The safety injection system pump motor 1A-1 heater windings shorted and overheated on March 28, 1977. The insulation has been completely burned on all visible heating wire. The motor was mounted in its permanent location with 115-Vac temporary power, fused with a 30-ampere fuse, applied to the heater. The insulation resistance of the motor winding to ground and winding to heater reads infinity. The heater to ground reads infinity, lead to lead reads 30 megohms indicating an open circuit.

The nameplate data for the subject motor is as follows:

Westinghouse model HSDP, serial No. 1S-76, 400 hp, 6600 volts, 3 phase, F.L. current 31 amperes, 3554 rpm, type LAC, frame 5808-11, insulation class B, service factor 1.0, 40° C temperature rise. Equipped with space heater H1 and H2 rated 120 volts and 1.99 amperes.

Analysis of Safety Implications

The function of the safety injection pumps is to provide a portion of the high-pressure injection cooling water to the reactor vessel during a LOCA. There are two safety injection pumps per reactor unit, one per train. The deficiency is an isolated event which affects train A pump on unit 1. At this time, the extent of the pump motor damage is not known. Thus all possibilities of pump failure must be examined for their implications to safety.

The first possibility would be that the damage was sufficient enough to render the pump motor inoperative. If this condition existed, it would most likely have been discovered and corrected during the preoperational testing of the system.

A second possibility would be that the damage would be to an extent such that the pump would be operative initially but would fail if called upon to help mitigate the consequences of a LOCA some time in the plant's future. Again, the preoperational testing of the system would most likely identify the damage to the motor.

In either case, it must be assumed that an inoperative or degraded safety injection pump motor is placed in service and might be called upon to help mitigate the consequences of a LOCA. In this event, if the pump failed to start or provide adequate flow, the redundant train B safety injection pump would be capable of providing the required flow to the vessel. However, in this configuration, a single failure of the train B equipment could render the unit 1 safety injection system inoperative and high-pressure cooling water could not be injected into the vessel at flow rates sufficient to ensure cooling of the core assumed in the plant safety analysis. Only with this remote combination of events would the safe shutdown of the reactor be jeopardized.

Corrective Action Taken

Westinghouse Electric Corporation was notified of the above and because of warranty restrictions the motor could not be disassembled for a full assessment of the damage without the vendor's concurrence. Westinghouse subsequently notified the Watts Bar site project manager that the motor was to be returned to their Apparatus Service Plant in Atlanta, Georgia, for repair. Watts Bar Nonconformance Report 753R disposition was completed by the return of the motor to Westinghouse on August 5, 1977.

830 Power Building
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

August 26, 1977

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 1217
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND ② - REPORTABLE DEFICIENCY -
SIS PUMP MOTOR 1A-1 SHORTED AND OVERHEATED HEATER WINDINGS -
WESTINGHOUSE ELECTRIC CORPORATION - NCR 753R

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Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

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