ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
AFW MOTOR DRIVEN PUMP LUBE OIL COOLING
NCR MEB 79-34
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

This deficiency was discovered by Ingersoll-Rand, the manufacturer of the motor driven auxiliary feedwater (AFW) pumps, during a review of the Watts Bar AFW pump installation. The deficiency is that a first stage discharge connection for the AFW pump motor cooling source was not provided by Ingersoll-Rand in accordance with the design drawings. In addition, the source of cooling water for lube oil cooling to the motor driven AFW pump motors was incorrectly connected to the pump's first stage suction rather than the first stage discharge. This deficiency is considered reportable because the motor bearings of the motor driven AFW pumps could have overheated because of insufficient lube oil cooling, leading to loss of these pumps. In certain situations, the motor driven pumps are required to ensure a safe shutdown of the plant.

The cause of this deficiency was a failure by manufacturing employees at Ingersoll-Rand to provide a first-stage discharge connection on the motor driven AFW pumps in accordance with design drawings. This deficiency was not detected by QA employees at the manufacturing plant or by TVA construction forces who assembled the pumping units at the plant site.

There have not been similar deficiencies identified by TVA on other nuclear projects to date. However, TVA is investigating other Ingersoll-Rand motor driven pump installations to ensure that similar deficiencies do not exist.

Safety Implications

If this deficiency had remained uncorrected, it is possible that, during operation of the motor driven AFW pumps, the pump motor bearings could have overheated due to insufficient cooling water. This could have led to loss of the motor driven pumps which would have jeopardized the safety of the plant because these pumps are utilized in accident mitigation.

Corrective Action

Ingersoll-Rand, the manufacturer of the motor driven AFW pumps, has provided TVA with the appropriate drawings and instructions to modify the cooling system for the motor bearings to obtain the lube oil cooling water from the pump first stage discharge.

This modification will be completed before preoperational testing so that verification of proper operation of the lube oil cooling for the motor driven AFW pump motors can be made before plant operation.

The verification described above, which was formulated before discovery of this problem, would have identified this deficiency before unit fuel loading.

The manufacturer of the AFW motor driven pumps has been requested to more clearly identify on design drawings the pump connections for supplying motor lube oil cooling.