ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DIESEL GENERATOR TURBOCHARGER LUBRICATION
NCR MEB 79-27
10 CFR 50.55(e)
SECOND INTERIM REPORT

Description of Deficiency

This deficiency was reported by the diesel manufacturer, Electro-Motive Division (EMD) of General Motors, to TVA's contractor for the emergency diesel generators, Power Systems a division of Morris-Knudsen. Power Systems subsequently reported this deficiency to TVA. This deficiency was also reported to the NRC, which issued IE circular No. 79-12. The deficiency occurs when the diesel generator has been operated long enough for the lube oil to reach operating temperature, shutdown, then restarted between 15 minutes and 3 hours. During this period, if a restart is attempted, damage to the diesel engine turbocharger thrust bearing may occur. This could lead to failure of the turbocharger and the emergency diesel generator.

The cause of this deficiency appears to be related to the "soakback" pump which is designed to supply lubrication to the turbocharger bearings during standby conditions and to keep the accessory lubricating oil system primed to support a fast start. Following operation of the diesel generator the viscosity of the lubricating oil is such that the accessory lubricating oil system does not receive any oil, therefore repeated restarts during the period of 15 minutes to 3 hours following a hot shutdown of the diesel generator can cause engine damage due to lack of prime oil system pressure. Occasional instances of restart during these periods are inconsequential. However, repeated unneccessary restarts for purposes of testing or machinery exercise during the period of 15 minutes to 3 hours after shutdown needlessly accelerates wear and detracts from total engine life.

TVA considers this deficiency reportable because it could lead to reduced reliability and availability of the emergency onsite power source which is required to ensure that the plant can reach and maintain a safe shutdown under all conditions.

Corrective Action

Operating instructions at Watts Bar Nuclear Plant have been revised to state that the diesel generators shall not be unnecessarily started between 15 minutes and 3 hours following shutdown from a previous run in which the engine has reached full operating temperature.

In addition, EMD, Power Systems, and TVA employees have inspected two of the Watts Bar diesel generator turbochargers and have found no thrust bearing damage. The other two Watts Bar diesel generator turbochargers are presently undergoing the same inspection, the results of which will be reported in a later report.

EMD is developing a lubricating oil system modification which will preclude the restriction on test starting during the period of 15 minutes and 3 hours after a hot shutdown of the diesel generator. Power Systems is expected to make a recommmendation to TVA for installation of this modification in the emergency diesel generators at Sequoyah and Watts Bar Nuclear Plants at some future date.

If no turbocharger thrust bearing damage is found on the Watts Bar diesel generator units, TVA intends to place them in service with the restriction on test starting in the period from 15 minutes to 3 hours after a shutdown of the diesel generator from hot conditions. Operation with this restriction will not detract from the diesel generators' ability to perform their intended safety function because there will be no restriction on diesel generator starting in response to an emergency start signal. Turbocharger thrust bearing damage of sufficient severity to cause diesel generator failure would only result from repeated starts of the diesel generator following shutdown from operating temperature. For these reasons, TVA believes that the emergency diesel generators can perform their intended safety function with the testing restriction in effect.