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Surry Power Station, Unit 1  
Docket No. 50-280  
Report No. 79-017/01T-0  
Event Date: 05-02-79

1. Description of Event:

Electro-Motive Division of General Motors Corporation notified Vepco by letter, that as a result of extensive testing, they had found that under certain repeat start operating modes there is a possibility that the emergency diesel generator turbocharger thrust bearing could be damaged. An auto start with the oil temperature at approximately 200°F and the oil drained out of the lube oil filter and lube oil cooler could result in the engine reaching 900 RPM prior to sufficient oil pressure being established to the turbocharger thrust bearing. This may cause some smearing of the bearing metal so that cumulative damage from several similar starts would result in a turbocharger failure. This is reportable in accordance with Technical Specification 6.6.2.a.(9).

2. Probable Consequences/Status of Redundant Systems:

The conditions necessary to initiate turbocharger bearing damage are restrictive and probably never have occurred at Surry. Verbal information received from EMD of G.M. indicates in excess of 10-15 starts, under the condition specified, would be required for a turbocharger bearing failure. Therefore, the possibility of bearing failure at Surry is remote. The health and safety of the public were not affected.

3. Cause:

This is an engineering design problem which is only evident in this engine under the specified conditions.

4. Immediate Corrective Actions:

The periodic test procedure used to test the emergency diesel generator at refueling will be modified to ensure engine oil temperature is below 160°F prior to engine start. All other PT's and OP's start the engine at idle speed (450 RPM) which is not detrimental to the bearing regardless of oil temperature.

5. Scheduled Corrective Actions:

EMD stated in their letter that they were working on the development of an improved lube oil system. The modification package will be available for field installation in about six months, at which time it will be evaluated.

6. Actions Taken to Prevent Recurrence:

Not applicable.

7. Generic Implications:

This problem would be generic to all engines of this model which are utilized in a rapid start mode.

sj:W/NRC/C2