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SUBJECT: Special rept: on 890406, 2A emergency diesel generator failure.

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U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: St. Lucie Unit 2
Docket No. 50-389
Date of Event: April 6, 1989
Special Report on Diesel Generator Failure

The attached Special Report is being transmitted pursuant to the requirements of Technical Specification 4.8.1.1.3 to provide notification of a 2A Emergency Diesel Generator failure.

Very truly yours,

C. O. Woody
For

C. O. Woody
Acting Senior Vice President - Nuclear

COW/GRM/gp

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

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SPECIAL REPORT
DIESEL GENERATOR FAILURES

2A DIESEL GENERATOR FAILURE:

In accordance with NRC Regulatory Guide 1.108, Section C.2.e, this event is considered to be a valid diesel generator failure.

At 1640 on April 6, 1989, the 2A diesel (D/G) was started and loaded for a one hour surveillance run before declaring the D/G back in service after maintenance. Approximately 55 minutes into the run, a utility operator stationed at the D/G noticed sparks coming from the south cooling fan due to contact with its shroud housing on the 16 cylinder engine. The D/G was immediately stopped.

The cause of the cooling fan axial displacement and contact against its shroud was due to a thrust bearing failure on the fan shaft. The root cause of the thrust bearing failure was due to excessive clearance between the bearing collar and the fan shaft. The small clearance measured was sufficient to permit movement between the bearing collar and the fan shaft which lead to fatigue failure of the collar. The bearing collar is held onto the shaft with set screws. The design tolerance was never specified in any plant drawing, and therefore was not considered critical or required to be measured.

The failure of the 2A D/G was the third failure in the past 100 valid tests. The current 2A D/G test frequency is once per 31 days.

The following corrective actions were implemented:

- 1) The cooling fan blades and shroud were repaired.
- 2) The thrust bearing was replaced and the new clearance between the shaft and bearing collar was determined to be satisfactory by the bearing manufacturer.
- 3) Other D/G fan shaft bearings susceptible to this failure mechanism were inspected on both the 2A and 2B D/G's. A total of 40 bearings were inspected which included fan shaft, idler shaft, and drive shaft bearings. Five thrust bearings and two floating bearings were replaced. Maintenance procedures will be revised to require periodic inspection of the D/G fan shaft bearings.
- 4) The south fan on the 2A 12 cylinder engine was found to have a damaged shaft due to excessive shaft to collar clearance. A new fan shaft was manufactured for the 2A D/G and installed with satisfactory shaft to bearing collar clearance. A similar condition was found on a fan drive shaft for the 2B D/G. A new shaft was manufactured and installed on the 2B D/G.
- 5) A surveillance run was performed and the 2A D/G was declared back in service on April 11, 1989.