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Norman W. Curtis
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January 11, 1982

Mr. R. C. Haynes
Director, Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

50-387

SUSQUEHANNA STEAM ELECTRIC STATION
FINAL REPORT ON A DEFICIENCY INVOLVING
DIESEL GENERATOR LUBE OIL PUMP FAILURE
ERs 100450/100508 FILE NOS. 821-10/840-4
PLA-994

Reference: PLA-906 dated August 14, 1981

Dear Mr. Haynes:

This letter serves to provide the Commission with a final report on the deficiency involving the failure of a diesel generator lube oil pump.

This deficiency was originally reported by telephone to Mr. R. Gallo of NRC Region I by Mr. A. Sabol of PP&L on June 17, 1981. The referenced letter provided the Commission with a report on the subject deficiency.

The attachment to this letter contains a description of the problem, its cause, safety implications, and corrective action taken and planned. This information is provided pursuant to the provisions of 10 CFR 50.55(e).

Since the details of this report provide information relevant to the reporting requirements of 10 CFR 21, this correspondence is considered to also discharge any formal responsibility PP&L may have in compliance thereto.

We trust the Commission will find this report to be satisfactory.

Very truly yours,

N. W. Curtis

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Vice President-Engineering & Construction-Nuclear

JS:sab

Attachment

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cc: Mr. Richard C. DeYoung (15)
Director-Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. G. McDonald, Director
Office of Management Information & Program Control
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Mr. Gary Rhoads
U. S. Nuclear Regulatory Commission
P.O. Box 52
Shickshinny, PA 18655

Subject

Emergency Diesel Generator lube oil pump

Description of Deficiency

During an initial run of Diesel Generator 'D' prior to its preoperational test, the engine driven lube oil pump experienced a catastrophic failure. It is presumed that this failure, which was initially noted as an explosion in the diesel engine crankcase, was due to lube oil pump seizure and overheated bearings.

Cause

An investigation was conducted to establish the cause of this deficiency. The investigation revealed that, in addition to the particulate matter contamination in the lube oil system as reported in PLA-906, the pump was misaligned.

The particulate matter in the lube oil system, in excess of the manufacturer's recommended limits, and/or the pump misalignment may have resulted in the pump bearing heatup and seizure and the subsequent pump destruction.

Following the event, the failed pump was returned to the pump manufacturer, Roper Pump Company, subvendor of Cooper Bessemer, for examination to determine the cause of failure. Roper's report indicated that the cause or the failure could not be determined because of extensive damage to the internal parts; therefore, the manufacturer's failure analysis was deemed inconclusive.

The lube oil cleanliness deficiencies found in all four diesels indicated that the procedures in place to assure the cleanliness of the lube oil system were not adequate to meet the manufacturer's recommended limits for operation of the diesels.

Analysis of Safety Implications

The excessive particulate matter and/or the misalignment are potential causes for lube oil pump failure. Loss of the lube oil pump would lead to failure of the diesel to operate. The diesels are required for safe shutdown or other modes of operation of the plant. If this deficiency were to have remained uncorrected, it could have adversely affected the safe operation of the Susquehanna Steam Electric Station at any time through the life of the plant PP&L has, therefore, concluded that the condition is reportable under the provisions of 10 CFR 50.55(e). A consequence of the inoperable diesel generator is the potential unavailability of Emergency AC power.

Corrective Action

The failed lube oil pump was replaced with a new pump. The lube oil system of each diesel engine was restored to the required cleanliness level by cleaning strainers and installing new filter elements. Portions of piping were dismantled and hand cleaned. Strainers, filters, and portions of lube oil piping were reflushed and the systems were refilled with new oil which was filtered through each system's strainers and filters. The chemical analyses of oil samples indicated that the particulate matter in the lube oil systems was within limits of the manufacturer's recommendations and, therefore, acceptable for use. The engine driven pumps were inspected for coupling clearances and corrected for proper alignment. The second initial run of all diesels has been completed successfully.

The PP&L preventive maintenance program is now in effect for the diesel generators. This program contains procedures which assure that the prescribed oil system cleanliness levels are maintained and that proper pump alignment is achieved. In response to an FSAR commitment, this program also requires periodic laboratory testing of the lube oil quality.

The corrective action stated above is considered adequate to prevent recurrence of the lube oil pump failure.