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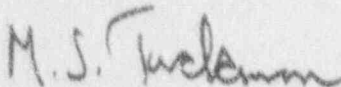
September 9, 1992

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Catawba Nuclear Station, Unit 1
Docket No. 50-413
Special Report
Invalid Failures of Diesel Generator 1A

Pursuant to Technical Specification 4.8.1.1.3 and 6.9.2, find attached a Special Report concerning the two Unit 1 Diesel Generator A (D/G 1A) invalid failures that occurred on August 10 and 11, 1992.

Very truly yours,


M. S. Tuckman

CRL/SR99921A.DG

Attachment

xc: S. D. Ebnetter
Regional Administrator, Region II

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Senior Resident Inspector

R. E. Martin, ONRR

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SPECIAL REPORT

CATAWBA NUCLEAR STATION DIESEL GENERATOR 1A INVALID FAILURES DUE TO VIBRATION TRIP SENSOR MOUNTING DISCREPANCY

Two invalid failures of Diesel Generator (D/G) 1A occurred on August 10 and 11, 1992 due to the improper mounting of the turbocharger vibration sensors. These failures occurred during Unit 1's 1EOC6 refueling outage while the unit was in "No Mode." The initial failure occurred during the eight hour "Break-in" run, and a subsequent failure occurred during Operation's Operability Periodic Test (PT). D/G 1A was on a monthly testing frequency prior to entering the outage. There have been 0 valid failures in the last 20 valid tests and 0 valid failures in the last 100 valid tests. D/G 1A remains on a monthly operability test schedule in accordance with Technical Specification 4.8.1.1.2 Table 4.8-1. There is no unavailability time associated with these failures since the Technical Specifications only require one D/G during "No Mode" conditions. Since D/G 1B was operable, D/G 1A was not required.

Modification number CN-11149 was performed during 1EOC6 outage to replace the non-emergency pneumatic trip instrumentation with electronic trip instrumentation. As part of this modification, the four pneumatic vibration sensors were replaced with Robert Shaw Model 366 Vibraswitches. Two of these switches are mounted on the engine and the other two are mounted on the turbochargers. The setup of these switches requires that the engine be run so that the point of 0.5 g above normal vibration can be set. The switches were set during one of the first breakin runs when there was no load on the engine.

On August 10, 1992, the engine was started for the eight hour breakin run (start # 942) and load was applied to the engine. After running for approximately 1 hour, the engine tripped on High Vibration. The engine was running fine with no vibration observed when this trip occurred. The Instrumentation and Electrical Group (IAE) was called to investigate. The vibration trip signal was isolated and IAE attempted to set the sensors with full load on the engine. The ambient vibration with full load on the engine was too excessive for the previous setting. It was observed that the mounting configuration for the turbocharger vibration sensors caused the level of vibration to be amplified significantly. The sensors were mounted on a bracket that extended several inches past the back of the turbochargers. Also, the sensor was mounted on a channel that placed it approximately an inch off the bracket. With full load on the engine there was a great deal of difficulty in setting these switches due to the increased vibration level caused by the mounting scheme. The switches were set as accurately as possible and the eight hour run was completed.

The following day, the Operability PT was started (start # 949) and a second invalid failure occurred when the engine tripped once more on high vibration at 2323 hours. Operations initiated a work request for IAE to investigate and repair the cause of the trip. Once more, no abnormal vibration was seen on the engine. It was concluded that the cause of the trip was again the mounting configuration of the turbocharger vibration switches. IAE

readjusted the switches to a less sensitive setting. The Operability PT was completed successfully and D/G 1A was declared operable.

It was recognized that the present mounting configuration is inadequate. Design engineering was involved and they concurred that the sensor was picking up mechanical resonances due to the free end of the mounting bracket not being securely mounted to the turbocharger. Exempt Change CE-3830 was initiated to reconfigure the mounting bracket for D/G 1A so that the plate is smaller and not susceptible to resonant vibration frequencies. This change is scheduled to be performed during an appropriate window in this outage, 1EOC6. This change has already been incorporated into the modification for D/G 1B per Variation Notice # CP-0807. There were no problems encountered when setting any of the vibration switches on D/G 1B during its break-in runs and testing.

The vibration trips for the D/Gs are part of the non-emergency circuitry. On an emergency start signal due to a LOCA or Blackout, these trips would be bypassed and the engine would continue to run.

Unit 2 D/Gs will be modified during 2EOC5 to install the electronic non-emergency trip system which will include the new vibration sensors along with the correct mounting scheme.