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DUKE POWER

October 1, 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 Failure of Diesel Generator 1A

Pursuant to Technical Specification 4.8.1.1.3 and 6.9.2, find attached a Special Report concerning the Unit 1 Diesel Generator A (DG 1A) invalid failure that occurred on September 4, 1992.

Very truly yours,

*M. S. Tuckman*

M. S. Tuckman

CRL/SRDG1A10.192

Attachment

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

W. T. Orders  
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 SETTING PROBLEM

An invalid failure of Diesel Generator (DG) 1A occurred on September 4, 1992 due to a left front turbocharger vibration trip. This was caused by difficulties in setting the newly installed vibration sensors. This failure occurred during Unit 1's 1EOC6 refueling outage while the unit was in Mode 5. The failure occurred during Operation's Operability Periodic Test (PT) following maintenance on the engine. DG 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. DG 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 DG during Mode 5. Since DG 1B was operable, DG 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. On August 10, 1992, following the initial installation of these vibration switches on DG 1A, problems were encountered during the setting of these switches that resulted in two invalid failures. The problem seen at that time was excessive vibration at the turbocharger sensors due to the inadequacy of the mounting configuration. An exempt change was initiated to take DG 1A out of service at a later time in the outage and reconfigure the mounting bracket so that the plate was smaller and not susceptible to resonant vibration frequencies. DG 1A was taken out of service on September 3, 1992 to perform this work. Following the completion of this work, the DG was run at full load to set the switches. All the switches were set to trip at 0.5 g's above the normal vibration level. The engine was run for several more minutes without any problems and then was shutdown. Operation's then restarted (start 956) the DG for the Operability PT and the engine ran fine for approximately 45 minutes. It was at that point, at 1633 hours on September 4, 1992, that the engine tripped on high vibration. No abnormal vibration was seen on the engine at that time. Instrumentation and Electrical Group personnel were called in to investigate the cause of the trip and discovered that the left front turbocharger vibration switch had actuated. The switch was adjusted to a less sensitive setting. The proper function of the switch was tested by pinging an area adjacent to the switch and verifying it tripped as required. The operability PT was repeated without any problems and the engine was declared operable.

No vibration related problems have been seen since then. Ambient vibration levels are expected to be higher on the turbocharger than on the engine block due to the nature of the turbocharger mounting. Therefore, the turbocharger sensor setting needs to be less sensitive than the engine block sensor setting.

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The vibration trips for the DGs 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.