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**DUKE POWER**

April 13, 1994

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 1B

Pursuant to Technical Specification 4.8.1.1.3 and 6.9.2, find attached a Special Report concerning the Unit 1 Diesel Generator (DG 1B) invalid failures which occurred on March 14, 1994.

Very truly yours,

*Mark E. Patrick for*

DL Rehn

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Attachment

xc: SD Ebnetter, Regional Administrator  
RJ Freudenberger, SRI  
RE Martin, ONRR

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SPECIAL REPORT

CATAWBA NUCLEAR STATION  
DOCKET NO. 50-413  
DIESEL GENERATOR 1B INVALID FAILURE  
DUE TO OVERCURRENT BREAKER TRIP DURING GOVERNOR CAL  
PIP 1-C94-0324

An invalid failure of Diesel Generator 1B (DG 1B) occurred on 03/14/94 due to the output breaker (1ETB18) tripping during the calibration of its electronic governor. Unit 1 was in Mode 1 (power operation) at 100% power at the time this failure occurred. There have been 0 valid failures in the last 20 valid tests and 0 valid failure in the last 100 valid tests of DG 1B. DG 1B remains on a monthly operability test schedule in accordance with Technical Specification (TS) 4.8.1.1.2 Table 4.8-1. No unavailability time is associated with this failure.

On 03/14/94, Instrument and Electrical (IAE) technicians tuned the electrical governor for DG 1B per work order 94018807-01 in order to obtain a better response on an engine start. Following the tuning operation per IP/O/A/3680/14 (Procedure for Tuning Diesel Engine Governor), the DG was started (Start #1046) and was fully loaded to 5750 kW. During the time the engine was being tuned, a Simpson analog voltage meter was connected to the output to the electric governor as directed by the procedure to monitor the output to the actuator located on the engine. During the full run load, the IAE technician monitoring the voltmeter changed its range switch from the 2.5 volt scale to the 10 volt scale. At the instant this was performed, the output to the actuator from the electronic governor was lost and the DG breaker tripped on overcurrent. The engine continued to run as designed at a higher speed, 460 rpm, as controlled by the mechanical backup governor. The engine was then manually shutdown.

After concluding that the change in range setting was the cause of the problem, the engine was restarted and the test was successfully completed. The meter range switch was not changed during the remainder of this testing.

The operation of changing the range setting of the analog voltmeter theoretically should not have cause any problems during this work activity. Between the range settings on the meter, there should be an open circuit. This was verified after the breaker trip. However, if there was a short circuit momentarily induced when the knob was turned, the output signal to the mechanical actuator would be lost. This would cause the engine to speed up to the setting for the mechanical governor and induce the overcurrent breaker trip that was seen.

The voltmeter used during this testing was evaluated by the IAE Test Equipment section. Woodward Governor Company was also contacted. Woodward did not recall any similar problems with a range setting change for a meter causing the output to be lost, but they confirmed that a momentary short loss across terminals 17 and 18 on the EGA would cause the output to be lost.

The overcurrent breaker trip is not an emergency trip function and would not have affected the engine had it been needed for a design basis event. Also, this incident was the result of manual action during the functional for the governor cal. Therefore, it is classified as an **invalid failure**. The cal procedure for the governor will be revised to add a cautionary statement to prohibit operation of the range select switch on the test equipment while it is connected to the governor to avoid recurrence of a similar incident.

On 03/15/94 at 1120, DG 1B was started (Start #1050) per procedure. This start attempt was declared a valid success and DG 1B was declared operable.