

Duke Power Company
Nuclear Production Dept.
P.O. Box 1007
Charlotte, N.C. 28204-1007

M.S. TUCKMAN
Vice President
Nuclear Operations
(704) 373-3551



DUKE POWER

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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 (D/G 1A) invalid failure that occurred on June 25, 1991.

Very truly yours,

M. S. Tuckman

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CRL/SR71691

Attachment

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

W. T. Orders
Senior Resident Inspector

R. E. Martin, ONRR

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PDR ADOCK 05000413
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SPECIAL REPORT

CATAWBA NUCLEAR STATION

DIESEL GENERATOR 1A INVALID FAILURE DUE TO FAILURE OF PNEUMATIC COMPONENTS

An invalid failure occurred on diesel generator (D/G) 1A on June 25, 1991 during the investigation of an intermittent actuation of non-emergency trip annunciators E-7 (high pressure crank case) and E-8 (vibration). At the time of the invalid failure, start No. 906, Unit 1 was in a plant status of Mode 1. The invalid failure occurred during Maintenance testing. D/G 1A was on a monthly operability test schedule at the time of this invalid failure. There have been 0 valid failures in the past 20 valid starts and 0 valid failures in the past 100 valid starts for D/G 1A. Diesel generator 1A was unavailable for approximately 7 hours.

While completing the functional run after maintenance, several non-emergency trip annunciators alarmed and immediately cleared. A work request was written to investigate the sporadic annunciator actuations.

Temporary instrumentation was installed to observe various pneumatic pressures and a troubleshooting start (#906) was conducted. The test indicated that the pneumatic control devices were not fully charging. Approximately 1 minute into the start, the diesel generator shut down when control air pressure was not established at the normal value of 60 psi.

IAE inspected and tested the non-emergency pneumatic shutdown sensors in search of a possible fault that would have caused the engine to shutdown. They found the No. 4 main bearing sensor slowly leaking. The engine mounted left bank vibration sensor was also found slowly leaking. These leaking sensors prevented the system from pressurizing because they were continually venting.

No other abnormal system configurations were found.

The No. 4 main bearing sensor was inspected. It had not tripped but it had drifted and was causing the air to leak out to atmosphere. A new bearing sensor was drawn from spares, tested and installed into the main bearing.

Because of previous bearing sensor problems with creep (drifting) caused by aging and temperature, and some factory mis-set sensors, all Unit 1 and Unit 2 main bearing sensors were changed out with new sensors during 1EOC4 and 2EOC3. All new sensors were tested by IAE prior to their installation. This replacement of all main bearing sensors was done to provide better availability and reliability for non-emergency operations. During an emergency operation or demand, these sensors are bypassed and the diesel generator will support all Tech Spec required loads.

The engine mounted left bank vibration sensor was replaced with a new one from spares. The replaced sensor was inspected and evidence of internal debris was present. This was an original installation sensor having more than 900 start pressure cycles and more than 1530 operating hours. The leakage is attributed to internal contamination with foreign debris. The vibration sensor trips are also bypassed on an emergency start.

After maintenance, the diesel generator was started for testing and successfully completed the test run.

Operations then performed the Operability PT and declared the diesel generator "Operable".

During 1EOC6 and 2EOC5 the non-emergency trip functions will be replaced with an electronic system.