Duke Power Company
Nuclear Production Dept.
P.O. Box 1007
Charlotte, N.C. 28201-1007

M.S. TUCKMAN
Vice President
Nuclear Operations
(704)373-3851

DUKE POWER

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

Subject: Catawba Nuclear Station, Unit 2
Docket No. 50-414
Special Report
Invalid Failure Diesel Generator 2B

Pursuant to Technical Specification 4.8.1.1.3 and 6.9.2, find attached a Special Report concerning Unit 2B Diesel Generator Invalid Failure on January 15, 1991.

Very truly yours,

M. S. Tuckman

CRL20/td

Attachment

cc: Mr. S. D. Ebneter
Regional Administrator, Region, II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, GA 30323

Mr. R. E. Martin
Office of Nuclear Reactor Regulations
U. S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 9H3
Washington, DC 20555

Mr. W. T. Orders
NRC Resident Inspector
Catawba Nuclear Station

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SPECIAL REPORT

CATAWBA NUCLEAR STATION

DIESEL GENERATOR 2B INVALID FAILURE DUE TO FAILURE OF PNUEMATIC COMPONENTS

An invalid failure of Diesel Generator (D/G) 2B occurred on January 15, 1991, at 1400 hours. D/G 2B was on a monthly test schedule at the time of this invalid failure. There has been 1 valid failure in the last 20 valid tests and 3 valid failures in the last 100 tests on D/G 2B. D/G 2B was unavailable for approximately 8 hours during this incident.

On January 15, 1991, Operations (OPS) began preparations to perform the monthly test on D/G 2B. Per procedure, the Instrumentation and Electrical Group (IAE) was contacted to place a jumper in the circuitry to initiate an emergency start. This was performed and the engine started and came up to speed as required. Two minutes into the run, the non-emergency trips were reinstated and soon thereafter the following annunciators were received: Low Turbo Oil Pressure Trip, High Jacket Water Temperature Trip, and High Vibration Trip. However, the engine continued to run. It was noted that control air pressure was dropping from its normal setting of 60 psig. Operations manually tripped the engine and initiated Work Request (W/R) 479940PS for IAE to investigate and repair the problem.

IAE requested that OPS restart D/G 2B for their troubleshooting purposes. The engine was started and once again control air pressure began to slowly decrease. IAE investigated the Engine Control Panel for leaks and found that there was a substantial leak coming from the body of the pneumatic logic board three way valve (P2). It was also noted that the non-emergency trip enable sensor (P3) in the cabinet was venting air through its vent port. Various non-emergency trip annunciators were received on this run as well. IAE requested that Operations shutdown the engine so that repairs could be made. IAE replaced the P2 three way valve and, as an added measure, the P3 sensor. After repairs were made, OPS restarted the engine with no problems encountered.

The loss of air pressure due to the leak from P2 caused the trip annunciators to alarm. If the engine would have been allowed to continue to run with the non-emergency trips in service, it would have eventually tripped itself. The setpoints for the annunciators are derived from pressure switches that have a higher setpoint than the pneumatic trip devices. As demonstrated by the initial run, no failure would have occurred if the engine had been called upon during an emergency situation. Nuclear Station Modification (NSM) CN-20486, which was implemented during 2EOC2 to replace the emergency pneumatic trip functions with electrical devices, was designed to prevent a pneumatic malfunction from causing a valid failure. Since the time that this modification was installed on both units, no valid failures have been attributed to a pneumatic failure. During 1EOC6 and 2EOC5 outages, the non-emergency trip functions will be replaced with an electronic system per NSMs CN-11149 (unit 1) and CN-20528 (unit 2).

The P2 three way valve found leaking during this incident is a Humphrey Products Model No. 250A. The Nuclear Plant Reliability Data System (NPRDS) indicates no failures of this particular part. The P2 sensor is a Calcon Model no. B4400B. This particular model of sensor has been revised by the manufacturer due to problems identified in the past (reference IIRs C88-054-1, -055-1, and -060-1). It has functioned satisfactorily since then. The venting of the P3 sensor could have been indirectly caused by the failure of the P2 valve, which would have caused a reduction of air pressure at the sensing port of the P3. It was felt that the replacement of the P3 sensor was a conservative approach. No other abnormalities with P3 were seen at the time.