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April 21, 1988

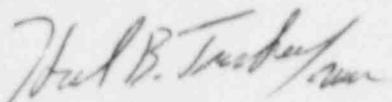
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Unit 1
Docket No. 50-413
Special Report

Gentlemen:

Pursuant to Technical Specification 3/4.8.1.1.3, please find attached a Special Report concerning a Diesel Generator 1A valid failure to start on March 22, 1988.

Very truly yours,



Hal B. Tucker

JGT/7/sbn

Attachment

xc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
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Mr. P. K. Van Doorn
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SPECIAL REPORT
CATAWBA NUCLEAR STATION, UNIT 1
DIESEL GENERATOR 1A FAILURE TO START
ON MARCH 22, 1988
DUE TO FAULTY PNEUMATIC LOGIC COMPONENTS

A Valid Failure of Diesel Generator (D/G) 1A occurred on March 22, 1988, while the Unit was in Mode 1, Power Operation, at 98% power. This was the third Valid Failure within the last 100 Valid Starts of D/G 1A and the second within the last 20 starts. Consequently, the current testing interval is seven days, which is in accordance with Technical Specification Surveillance 4.8.1.1.2.

At 0243 hours, while performing a D/G 1A Operability Periodic Test (PT), D/G 1A was started locally at the D/G 1A control panel (start no. 631). The D/G accelerated to rated speed in the proper time and all engine parameters were normal. After approximately 45 seconds, alarms for low lube oil pressure, low low lube oil pressure, low turbocharger lube oil pressure, high crankcase pressure, high jacket water temperature, and high vibration were activated. Each alarm, except the low and low low lube oil pressure alarms, cleared before the D/G tripped approximately one minute into the run. Because the low low lube oil pressure trip is not bypassed in the emergency mode of operation, the trip was classified as a Valid Failure and the D/G was declared inoperable.

At 0327 hours, a second start attempt (start no. 632) was conducted. This attempt was successful and the D/G 1A PT completed. The D/G was declared operable at 0443 hours. The D/G was inoperable for 44 minutes.

At approximately 0930 hours, and again at 0945 hours, Operations personnel started D/G 1A to determine if the problem would recur; it did not. Work Request 227352 OPS was written by Operations personnel for Instrumentation and Electrical (IAE) personnel to troubleshoot the D/G. The D/G was again declared inoperable at 1540 hours, while IAE technicians inspected several pneumatic logic control elements. The inspection revealed a slight cut in the diaphragm of the OR 5 logic element. The element was replaced.

Twelve subsequent start attempts were all successful, including a simulated emergency start. The D/G 1A PT was again completed and the D/G declared operable at 0330 hours, on March 23, 1988. The D/G was inoperable for 8 hours, 20 minutes.

On March 29, 1988, Work Request 27412 OPS was written by Operations personnel to investigate the cause of further spurious alarms on D/G 1A. IAE personnel discovered that a timer which inhibits the actuation of alarms until a 60 second time delay has passed was faulty and allowed alarms to prematurely activate. The timer was replaced. The D/G was inoperable for 1 hour, 15 minutes.

On April 12, 1988, while performing D/G 1A Operability Periodic Test, D/G 1A tripped during a start attempt (start no. 652) at 0352 hours (a Special Report concerning this event will be submitted on May 12, 1988). Work Request 27513 OPS was written by Operations for IAE to troubleshoot D/G 1A and the D/G was declared inoperable at 0400 hours. Investigation by IAE revealed that one of the three low low lube oil pressure pneumatic trip valves was faulty. It would periodically fail to close as oil pressure was applied to the valve. This caused the D/G to trip, and apparently caused the previous trip on March 23, (as the symptoms were identical). The other two trip valves were disassembled and showed signs of corrosion. All three of these trip valves were replaced.

Three subsequent D/G 1A start attempts were successful and the D/G was declared operable at 0025 hours on April 13, 1988. The D/G was inoperable for 20 hours, 25 minutes. The total time of D/G 1A inoperability during these repairs was 30 hours and 44 minutes.

In order to minimize the potential for recurrence, Operations personnel have increased the blowdown frequency of the D/G Starting Air System (VG) air compressor aftercoolers from once to twice per shift. This is intended to reduce the amount of carryover moisture entering the air dryers, which is the suspected cause of the valve corrosion problem. Operations personnel have requested the Maintenance group to double the frequency of performing Preventive Maintenance (PM) on the VG air dryers, from semi-annually to quarterly.

Operations personnel will initiate work requests to inspect the internals of all pneumatic trip valves on all remaining Unit 1 and Unit 2 D/Gs during scheduled maintenance periods over the next six months.

Performance personnel are planning to increase their frequency of testing Dew Point of the air in the VG receivers from semi-annually to monthly.

Long term solutions to the D/G pneumatic trip problems are currently being investigated by Operations, Projects, and IAE personnel.

Operations personnel are pursuing modifications to install additional desiccant filters in each main instrument air line to the D/Gs. They are also pursuing the installation of automatic drains on the D/G Air Compressor aftercoolers.

IAE and Operations personnel are continuing the investigating of the cause of the corrosion of the low low lube oil pressure trip valves.

Projects and General Office personnel are evaluating alternative electric D/G trip systems for the Emergency Mode trips.

Operations personnel are to submit a Station Problem Report which will further evaluate the replacement of the non-emergency mode trips with an electronic system.

Offsite power and the alternate train D/G were verified to be operable during this period of D/G 1A inoperability, as required by Technical Specifications.