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December 20, 1985

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Dr. J. Nelson Grace
Regional Administrator
U.S. Nuclear Regulatory Commission
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

SUBJECT: Virgil C. Summer Nuclear Station
Decret No. 50/395
Operating License No. NPF-12
Special Report (SPR 85-017)

Dear Dr. Grace:

Attached is a Special Report for the Virgil C. Summer Nuclear Station. This Special Report is submitted pursuant to the requirements of Section 6 of the Technical Specifications.

Should there be any questions, please call us at your convenience.

Very truly yours,


D. A. Nauman

RJB:OWD/dwf
Attachment

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EVENT DESCRIPTION

On November 24, 1985, at 1927 hours, Diesel Generator (D/G) "A" (XEG001A) was started and loaded to 4735 kw in accordance with Surveillance Test Procedure (STP-125.008), "'A' Diesel Generator Refueling Operability Test." One hour and forty-eight minutes into the test the D/G unit tripped off the line. Initial investigation identified that the trip was due to High Crankcase Pressure as a result of a crankcase explosion as evidenced by lube oil leaking from the crankcase inspection ports on one side of the D/G unit. Subsequent investigation revealed that number 8 piston and liner were severely galled.

CAUSE AND CORRECTIVE ACTION

To determine the cause of the failure, Engineering requested that the following be performed and the results be submitted for evaluation:

- (1) The as found fuel rack setting be recorded.
- (2) PT inspection of cylinder liner and head.
- (3) A chemical and ferrography analysis of the lubricating oil.
- (4) A check of lubricant passage in the piston and cylinder head.
- (5) Dimensions of piston and liner.
- (6) Hydro test of the injector.

All data was reviewed by Engineering and was found to be acceptable with the exception of the fuel rack setting and the lube oil ferrography. The fuel rack settings were found to have a maximum of 6 millimeter difference between the lowest setting (49) and the highest (55). A fuel rack adjustment was made in accordance with manufacturer's recommendation in an attempt to achieve a maximum differential of plus or minus two millimeters. All settings were made within this range with the exception of one which was plus two and a half millimeters.

The results of the lube oil analysis and the ferrography were that the oil retained its lubricating properties but the ferrography identified a heavy concentration of severe wear particles (aluminum). The lube oil was drained and the system was flushed clean. The filters were removed and steam cleaned.

The piston and cylinder were replaced, and the unit was tested at various speeds and loads per the recommendation of the manufacturer. The unit was subsequently declared operable at 0700 hours on December 1, 1985.

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CAUSE AND CORRECTIVE ACTION -- Continued

No direct cause of the failure can be identified. Three items were identified that could have possibly contributed to the failure. The major contributor to the failure is believed to be the multiple fast loading of the unit to 110% from a standby condition. Imbalance of the fuel rack setting and the fuel rack boost on initial start could have also contributed to the failure.

The Licensee has submitted a Technical Specification change on the testing of the Diesel Generators as recommended in Generic Letter 84-15. Included in the change is the deletion of the requirement to load the unit to greater than or equal to 4676 kw for the first two hours of the twenty-four hour test. This change will allow the two hour overload test to be performed at any time during the twenty-four hour test run.

The diesel maintenance procedure is being revised to require adjustment of the fuel rack setting within a tolerance of plus or minus 1.5 millimeters and adjustment of the fuel rack boost if required. Verification of the injection pump timing will also be addressed in the procedure revision. The revised maintenance procedure will be performed on both Diesel Generators no later than February 15, 1986.

COMMENTS

Diesel Generator "A" was inoperable for six days, eight and one half hours. The failure of Diesel Generator "A" is a valid test failure per the requirement of Regulatory Guide 1.108. This is the third failure in the last 100 valid tests. As required by Technical Specification and Regulatory Guide 1.108, the diesel generators are presently being tested every seven days on a staggered basis. The preceeding failures were on May 8, 1985, and June 9, 1985, as reported in Special Report #85-004 and Special Report #85-009 respectively.