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SUBJECT: Special rept: on 910626, failure of 2B emergency diesel generator during post-maint testing following implementation of plant mod. Caused by failed relay. Relay R1X1 replaced.

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P.O. Box 128, Ft. Pierce, FL 34954-0128

July 26, 1991

L-91-203
10 CFR 50.36

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

Gentlemen:

Re: St. Lucie Unit 2
Docket No. 50-389
Special Report
Date of Event: June 26, 1991
2B Emergency Diesel Generator Failure

The attached Special Report is being transmitted pursuant to the requirement of St. Lucie Unit 2 Technical Specifications 4.8.1.1.3 and 6.9.2. The report provides notification of a 2B Emergency Diesel Generator failure during post maintenance testing following implementation of a plant modification.

Should there be any questions on this information, please contact us.

Very truly yours,

D A SAGER

By H.G. Emery
D. A. Sager
Vice President
St. Lucie Plant

DAS/JJB/kw

Attachment

cc: Stewart D. Ebnetter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, St. Lucie Plant

DAS/PSL #479-91

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NRC SPECIAL REPORT

VALID FAILURE OF THE 2B DIESEL GENERATOR

At 1100 hours on June 26, 1991, the St. Lucie Unit 2 2B Emergency Diesel Generator (EDG) was idle started for post-maintenance testing following implementation of a plant modification which involved work with alarm relay setpoints. During the test, after reaching full speed, the generator voltage and frequency did not appear in the control room for approximately sixty seconds. The 2B EDG was stopped and declared inoperable and the 2A DG was started to ensure operability. To confirm the suspected cause of the failure as being a defective relay, a second start of the Diesel was initiated at 1538 that same day. The same situation reoccurred, with the exception that there was no indication of generator voltage or frequency in the control room.

Investigation into this problem revealed that the R1X1 relay, which is used to provide the reset function for the EDG voltage regulator, was not picked up upon receiving the start signal. With it not being picked up, the starting circuit carried the last signal it received (shutdown). This prevented the field flash function of the voltage regulator and rapid build up of generator voltage. Because the electric governor is normally powered from generator output, it was in a failed state causing each engine to operate on their mechanical governors.

The failed R1X1 relay was found to have an open coil and was replaced. A successful run of the 2B Emergency Diesel Generator was performed at 1842 and the 2B EDG was declared back in service at 2110 on June 26, 1991.

In accordance with NRC Regulatory Guide 1.108 C.2.e.1, this event was evaluated as being a valid failure as the 2B Diesel Generator did not generate rated voltage.

Corrective actions included replacing the failed R1X1 relay and successfully starting the 2B EDG. This was the first time this type of failure has occurred. The Electrical Maintenance Department will perform a detailed analysis of the relay failure to determine the root cause of the opened coil.

Failure Summary:

The last valid failure of the 2B EDG occurred on January 16, 1991. Since this was the second failure in the last twenty consecutive tests, the surveillance frequency was increased to at least once per seven days to conform with the St. Lucie Unit 2 Technical Specification Surveillance Requirement 4.8.1.1.2.a, Table 4.8-1 "Diesel Generator Test Schedule." This test frequency remained in effect until seven consecutive failure free demands were performed and the number of failures in the last twenty valid demands were reduced to one or less.