

WOLF CREEK

NUCLEAR OPERATING CORPORATION

Bart D. Withers
President and
Chief Executive Officer

May 27, 1988

WM 88-0135

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

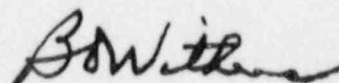
Subject: Docket No. 50-482: Special Report 87-015-01

Gentlemen:

The attached Special Report is being submitted pursuant to Technical Specifications 4.8.1.1.3 and 6.9.2. This report concerns a failure of Emergency Diesel Generator "A" which occurred when a cracked lube oil line fitting caused excessive leakage and forced the diesel generator to be shut down.

If you have any questions concerning this matter, please contact me or Mr. O. L. Maynard of my staff.

Very truly yours,



Bart D. Withers
President and
Chief Executive Officer

BDW/jad

Attachment

cc: B. L. Bartlett (NRC), w/a
R. D. Martin (NRC), w/a
P. W. O'Connor (NRC), w/a (2)

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WOLF CREEK GENERATING STATION
SPECIAL REPORT 87-015-01

DIESEL GENERATOR 'A' FAILURE

On December 11, 1987, a failure of Emergency Diesel Generator (D/G) 'A' occurred when a cracked lube oil line fitting caused excessive leakage and forced the D/G to be shut down. This Special Report is being submitted pursuant to Technical Specifications 4.8.1.1.3 and 6.9.2.

The D/G was approximately 10 hours into the yearly 24 hour run when the lube oil leak was reported by Operations personnel. Maintenance was notified to try and tighten the fitting. Upon tightening, the fitting began leaking worse. Control Room personnel were notified and the D/G was secured at approximately 1246 CST until the fitting could be replaced. The screw type fitting was on a 1/4 inch continuous vent line on top of the lube oil filter tank. The fitting was replaced and retested for leakage satisfactorily at approximately 1610 CST on December 12. The fitting was found to be cracked. The cause of the cracking could not be determined. Other similar connections on the 'A' and 'B' D/Gs were inspected. No cracking was found on any similar fittings.

The shutdown was initiated due to a condition that could ultimately have resulted in D/G damage or failure by causing excessive lube oil to leak from the D/G. This event is therefore considered to be a valid test and failure in accordance with Regulatory Position C.2.e(6) of Regulatory Guide 1.108, Revision 1.

While the engine was out of service for fitting replacement, further investigation of a previous mechanical governor problem was conducted.

During this investigation, it was discovered that a pin had sheared on the speed setting shaft on the governor. The governor was replaced with a new spare governor from the warehouse stock. This governor failed after about 20 minutes in operation. Another new governor was obtained from the Callaway plant and installed. This governor also failed after being in service for about the same amount of time. A Woodward governor Field Engineer was called in to help resolve the problem. A third new governor was procured through the Colt Company. Because the original governor had been in service for at least two years and the pin failure was not the same type of failure that had been experienced on the two new governors, it was decided to rebuild the original governor using good parts from the two governors rather than installing the third new spare governor. The repair was successfully accomplished and the 24 hour continuous run completed on December 18 at approximately 1930 CST.

The two failed governors along with the third new one were sent to the Woodward governor factory for a complete rework and an analysis of the failures. Woodward's analysis of the failed replacement governors concludes that excessive loading of the drive shaft of the actuator initiated the problem. Woodward recommended that during installation of the actuator, the engine be barred over five or six times before tightening the mounting bolts to allow the engine drive to align the governor, and that a heavier grade oil be used to optimize lubrication under operating conditions.

A procedure change is being made that will require the use of the vendor recommended heavier grade oil. Also, a technical letter from Woodward regarding the side loading will be used to write the work instructions when the governor is removed in the future.

Woodward also discussed the initial failure of the sheared pin. The evaluation revealed that there was no sign of fretting damage in the pin hole of the pinion or its associated shaft gear. (The pin had been discarded before it could be analyzed.) The judgement of the vendor's Metallurgy department is that the pin sheared because the speed setting knob was physically forced past the high speed stop. There is evidence of this in that the stop has displaced metal in the region where it contacts the pin. The pin and stop also showed signs of fretting but this fretting did not contribute to the failure of the roll pin.

An investigation was conducted to attempt to determine who had physically forced the speed setting knob and to determine when this had happened. The investigation was unsuccessful in determining who had forced the speed setting knob. It is believed, however, that it had been forced quite some time (possibly several months) before discovery. The procedure for resetting the speed control knob requires loosening the locking screws prior to moving the speed adjusting knob.

As of January 5, 1988, there had been forty-six (46) valid successful tests of D/G 'A'. This was the second valid failure of D/G 'A' in the last 20 valid tests and therefore increased the testing frequency to once per seven days as required by Technical Specification (T/S) Table 4.8-1. The previous valid failure occurred on December 1, 1986, and is reported in Special Report 86-011. The December 1 fracture was caused by a failure of the Synchro Start Electric Speed Switch.

As of May 12, 1988, there have been fifty-five (55) valid successful tests of D/G 'A'. The testing frequency was moved back to monthly on February 4, 1988 as allowed by T/S Table 4.8-1.