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December 21, 1995

U.S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
Valid Failure of Emergency Diesel Generator 11 Due to a Overspeed Trip (Special Report 95/005)

GNRO-95/00141

Gentlemen:

On November 27, 1995, a valid failure of Division 1 Emergency Diesel Generator (EDG) occurred. The EDG was started in preparation for a routine monthly functional surveillance and tripped on overspeed seconds later prior to becoming stable. The EDG overspeed trip annunciator was sealed in and both overspeed trip levers were in the tripped position, confirming that an overspeed condition had occurred. The exact sequence of events could not be determined. Data from GETARS was not retrievable due to a computer fault. Also, the extremely short duration of the start sequence did not allow time for other sources to gather useful data.

The EDG vendor, a governor service representative, as well as other on and offsite personnel participated in the investigation of the EDG trip. The investigation looked at the engine governor system, the fuel racks, and generator field flashing. No malfunctions were discovered with any of these components. However, the motor operated potentiometer in the governor system and a relay in the field flashing circuit were replaced. During examination of EDG controls in the control room, it was discovered that the EDG governor raise/lower handswitch was sticking. Interviews of operators revealed that the handswitch was taken to the lower position 9 hours prior to the EDG start. The handswitch sticking in the lowered position would not result in the overspeed, however, it would hamper the EDG from reaching proper load. Therefore the EDG was declared inoperable during the period of time that the handswitch was lowered to the time the EDG was returned to operability. Efforts to reproduce this failure were unsuccessful. Engine starts and runs conducted during troubleshooting were without malfunction.

Information from Cooper Energy Services, (the vendor), indicates that the calculated speed for this event could have been as high as 552 rpm (GGNS estimated that the EDG tripped at approximately 495 rpm). Cooper's analysis determined that damage to the engine should not occur until about 625 rpm. As a result of the overspeed, Cooper recommended visual inspection of the crankcase and a check for freedom of movement of the fuel racks. Both these inspections were done with no abnormalities discovered.

GGNS believes that the cause of the overspeed on the Division 1 EDG was fixed either by parts replacement or other processes during troubleshooting or that it was a non-repeatable occurrence. However, GGNS will take the conservative position by increasing the start frequency of Division 1 EDG until 7 successful starts are achieved. In the event a undiscovered deficiency does exist, it is expected that it will be discovered and resolved in a more timely manner with the increased frequency testing. Also, chart recorders and monitors used on the engine during testing will be set up in a manner to gather as much useful engine information as possible. An engineering evaluation has been initiated to review this event and the corrective actions taken thus far. This evaluation will determine if additional actions are warranted.

The overspeed trip is not bypassed in an emergency. The EDG would not have performed its design function during an emergency. Therefore, the overspeed trip of the Division 1 Emergency Diesel Generator System is a valid failure. This failure of the Division 1 EDG represents 1 failure in the last 25 valid tests and 4 failures in the last 100 valid tests. The EDG was unavailable for approximately 54 hours as a result of this event. This Special Report on the valid failure of EDG 11 is submitted in accordance with requirements contained in the Grand Gulf Technical Requirements Manual section 7.7.2.2.

Yours truly,

CRH/JEO/
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