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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
Special Report 96-002
Valid Failure of Division 2 Emergency Diesel Generator Due
to a Trip From Loss of Excitation

GNRO-96/00125

Gentlemen:

On October 10, 1996, a valid failure of the Division 2 Emergency Diesel Generator (EDG) occurred. The EDG tripped 2 minutes after reaching 5600 kW. Total run time for the EDG was approximately half an hour.

During the initial investigation following the trip, it was believed that the failure was the result of the barring device. The barring device pivot bolt was discovered to be loose and was corrected by tightening and staking the bolt. The Division 1 EDG was checked to see if its barring device pivot bolt was also loose. No problem was found with the Division 1 barring device, however, its barring device was also staked. It was suggested that the barring device support ears may have "opened" due to the loose barring device pivot bolt causing the barring device interlock pin to retract from the switch. This failure would cause a unit shutdown and loss of excitation which occurred during the failure. However, subsequent investigation determined that due to the size of the mounting ear plates (approximately 1" thick metal) that the ears would not have separated enough to have caused an inadvertent barring device interlock trip. Also the barring device engaged alarm did not annunciate which should have annunciated had the barring device interlock switch caused the failure.

Other components considered as possible causes of the trip were the pneumatic logic control board and the self-excitation circuit. The pneumatic logic board appeared not to be functioning properly when tested while installed in the EDG control panel and was replaced. However, subsequent testing of this board in the Instrumentation

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and Controls shop demonstrated that this board was functioning properly. Tests conducted on the EDG subsequent to the failure identified that the self-excitation bridge and voltage regulator were not operating properly. Swapping the bridge and replacement of the voltage regulator restored the EDG to proper operation. The EDG was then re-tested and declared operational on October 13, 1996.

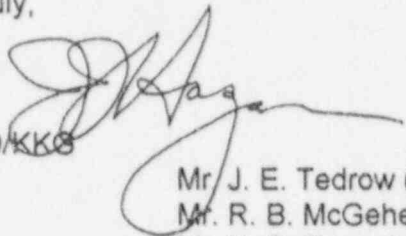
In addition to corrective actions already taken, a root cause evaluation is being conducted. If this evaluation concludes that further actions are required, those actions will be handled in accordance with Grand Gulf Nuclear Station's Corrective Action Program.

The loss of excitation trip is bypassed in an emergency, however, the components that caused the trip would have prevented the EDG from fulfilling its safety function. Therefore, this event was classified as a valid failure. The failure numbers for the Division 2 EDG are 2 failures in the last 25 valid test and 2 failures in the last 100 valid test. The Division 2 EDG was unavailable for 5 hours and 26 minutes due to testing and replacement of components. This special report on the valid failure of the Division 2 EDG is submitted in accordance with commitments contained in the Grand Gulf Technical Requirements Manual section 7.7.2.2.

Yours truly,

J.IH/JEO/KKS

cc:



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