

ENCLOSURE

SEQUOYAH NUCLEAR PLANT UNITS 1 AND 2 DIESEL GENERATOR RELAY TACHOMETER FAILURES NCR 5P FIRST INTERIM REPORT

Description

During periodic testing and, in one case, during preoperational testing, one relay tachometer on each of three diesel generator sets failed to operate properly. Trouble shooting revealed that three zener diodes in the voltage regulation circuit of the relay tachometer had burned and opened. This failure did not prevent the diesel generator sets from operating because there are two identical relay tachometers connected in parallel on each set and both must fail to prevent operation of that diesel generator. After the second failure, all remaining relay tachometers were inspected, and it was discovered that the three zener diodes in the voltage regulation (power supply) circuit of all relay tachometers were discolored from excessive heat. However, operating currents and temperatures of the zener diodes were checked and found to be within specifications for those diodes.

The relay tachometers are used to detect speed and to control diesel support functions, isolate the air start motors, flash the generator field, and close the generator output breaker. A failure of both relay tachometers on one set could prevent the circuit breaker to the shutdown board from closing.

The cause of these failures is still under investigation. However, there are indications that the voltage regulation (power supply) circuits in these relay tachometers may have been incorrectly designed for the system voltage.

Safety Implications

Multiple failures of relay tachometers could prevent closure of the circuit breaker to the shutdown board. Failure of this circuit breaker to close would prevent utilization of the output from the emergency diesel generator which could have been detrimental to the safety of the plant.

Corrective Action

The zener diodes in the relay tachometers have been replaced with spare diodes. The diesel generator vendor and the relay tachometer manufacturer have been contacted for their recommendations for correction of this problem.

Further corrective actions will be detailed in a subsequent report after the cause of this deficiency has been determined.

The diesel generator sets at Watts Bar Nuclear Plant (WBNP) are similar to those at Sequoyah Nuclear Plant (SNP). The WBNP sets, however, have not been operated and also contain a different model relay tachometer. When the actual cause for the failures at SNP is determined, any corrections or modifications required will be applied to the WBNP diesel generators.

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