

Iowa Electric Light and Power Company

November 8, 1979
LDR-79-286

LARRY D. ROOT
ASSISTANT VICE PRESIDENT
NUCLEAR GENERATION

50-331

Mr. James G. Keppler, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Potential Failure of Emergency Diesel
Generator Field Exciter Transformer
Reference: IE Bulletin No. 79-23
File: A-101a

Dear Mr. Keppler:

Please find attached our response to IE Bulletin 79-23.
We trust this submittal completely addresses your concerns.

Very truly yours,

Larry D. Root

Larry D. Root
Assistant Vice President
Nuclear Generation

LDR/JCZ/ms
Attach.

cc: U.S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D.C. 20555

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DUANE ARNOLD ENERGY CENTER
Response to NRC IE Bulletin No. 79-23

Item No. 1

Determine whether or not connections have been made between low KVA rated transformers and high KVA rated EDGs without adequate limitations on the flow of circulating currents. If applicable, provide a description of the corrective action being taken to address this problem.

Response

The excitation system of the Fairbanks-Morse diesel generator at the DAEC utilizes an ungrounded open Delta excitation primary side potential transformer configuration. The generator is a grounded "wye" configured source. There is no circuit connecting the generator ground and the exciter primary transformer. By design, this system will only pass low frequencies from phase to phase, which in turn will cancel each other out. Therefore, low frequency harmonics present in the system will cancel without producing undesirable high circulating currents that could damage the exciter primary transformer.

Item No. 2

Provide a schedule for the completion of a sustained full-load operation test of the EDG's for a duration of not less than 24 hours, or provide the results of the similar long duration, full-load test which has already been completed on the EDGs installed at your facility. The test should demonstrate full-load carrying capability for an interval of not less than 24 hours, of which 22 hours should be at a load equivalent to the continuous rating of the diesel generator and 2 hours at a load equivalent to the 2 hour rating of the diesel generator. The test should also verify that voltage and frequency requirements are maintained and that the cooling system functions within design limits.

Response

DAEC Special Test Procedure No. 58, Rev. 0, "Standby Diesel Generator 24 Hour Continuous Operational Testing", was performed to verify the full-load carrying capability of both EDGs. Testing was conducted for one EDG at a time. Each EDG was continuously loaded for 24 hours; 22 hours at a load equivalent to the continuous rating of the generator (2850 KW), and 2 hours at a load equivalent to the 2 hour rating of the generator (3135 KW). The following parameters were monitored on a hourly basis throughout the test runs:

- Load
- Current
- Frequency
- Voltage
- Coolant Casing Temperature
- Power Factor

Special Test Procedure No. 58 was completed on 11-3-79. All acceptance criteria were met. No abnormalities in any of the above parameters were observed. Therefore, it is concluded that the DAEC Emergency Diesel Generators are capable of performing their intended design function.