



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA ST., N.W., SUITE 3100  
ATLANTA, GEORGIA 30303

SEP 12 1979

In Reply Refer To:

RII:JPO

50-348

50-364

Alabama Power Company  
Attn: F. L. Clayton  
Senior Vice President  
Post Office Box 2641  
Birmingham, Alabama 35291

Gentlemen:

Enclosed is IE Bulletin 79-23 which requires action by you with regard to your power reactor facility(ies) with an operating license or a construction permit.

Should you have questions regarding this Bulletin or the actions required of you, please contact this office.

Sincerely,

James P. O'Reilly  
Regional Director

Enclosures:

1. IE Bulletin No. 79-23
2. List of IE Bulletins  
Issued in the Last  
Six Months

1050 087

7909270 120

Alabama Power Company

-2-

cc w/encl:

A. R. Barton  
Executive Vice President  
Post Office Box 2641  
Birmingham, Alabama 35291

J. T. Young  
Vice President-Production  
Post Office Box 2641  
Birmingham, Alabama 35291

C. Biddinger, Jr.  
Manager-Corporate Quality Assurance  
Post Office Box 2641  
Birmingham, Alabama 35291

H. O. Thrash  
Manager-Nuclear Generation  
Post Office Box 2641  
Birmingham, Alabama 35291

H. G. Hairston, III  
Plant Manager  
Drawer 470  
Ashford, Alabama 36312

R. E. Hollands, Jr.  
QA Supervisor  
Post Office Box U  
Ashford, Alabama 36312

1050 088

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

September 12, 1979

IE Bulletin No. 79-23

POTENTIAL FAILURE OF EMERGENCY DIESEL GENERATOR FIELD EXCITER TRANSFORMER

Description of Circumstances:

Florida Power and Light Company recently reported a problem encountered during a 24-hour full load test of the emergency diesel generators (EDG) at their Turkey Point facility. Approximately 10 hours into the test, the A-EDG tripped due to a differential-relay lockout on B and C phases; the B-EDG was manually stopped, thus interrupting the test at that point in time.

Subsequent investigation and testing by the licensee revealed a design error on both the A and B EDGs which resulted in overheating of the Exciter Power Transformers (EPTs) at sustained high load operation.

The following nameplate data applies to the equipment installed at Turkey Point:

Emergency Diesel Generator

General Motors (Electro-Motive Division)  
Model EMD-999-20  
Engine-turbocharged, 2 cycle,  
EMD design 20-645E4  
Generator-EMD-design Model A-20

Exciter Power Transformer

GE-single phase  
Model-9T24Y1004  
Serial-MD  
Cycles-60  
KVA 15  
Insulation-4160 V

The manufacturer's findings and recommendations regarding the above problem are described below:

"A potential problem can exist if the neutral of the generator and the neutral of the primary windings of the excitation power transformer (EPT) (sometimes referred to as the control power transformer (CPT)) are connected. A direct connection

SEP 12 1979

Mississippi Power and  
Light Company

-2-

cc w/encl:  
C. K. McCoy  
Plant Manager  
Post Office Box 756  
Port Gibson, Mississippi 39150

1050 090

between the neutrals, or a connection through common grounding of both neutrals, are equally undesirable conditions. Whenever either of these undesirable conditions exist, high circulating currents can be induced by harmonics. These currents may exceed transformer ratings and result in transformer damage or failure.

The connection between the neutrals, either direct or through common grounding, may have been designated in the original wiring design, or may have been subsequently added by a contractor or by power plant personnel to balance excitation transformer voltages relative to the generator. No significant benefit is obtained by balancing the primary voltage of the excitation transformer by means of these connections."

According to the manufacturer, "to avoid this potential transformer damage or failure, the circuitry of each installation should be examined to determine if a circuit exists between the neutral of the primary windings of the EPT or CPI and the generator neutral. If the condition exists, the neutral circuit should be disconnected, and the transformer primary neutral allowed to float."

Licenseses may utilize Regulatory Guide 1.108, Revision 1, as a reference for the periodic testing of diesel generator units used as on-site electric power systems at nuclear power plants.

#### Action to be Taken by Licensees:

For all power reactor facilities with an operating license or a construction permit:

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.
2. Provide a schedule for the completion of a sustained full-load operation test of the EDGs 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.
3. Provide a written report of the above actions within 45 days of the receipt of this Bulletin.

Reports should be submitted to the Director of the appropriate NRC Regional Office. A copy of your report should be sent to the U. S. Nuclear Regulatory Commission, Office of Inspection and Enforcement, Division of Reactor Operations Inspection, Washington, D.C. 20555.

Approved by GAO, B180225 (R0072); clearance expires 7/31/80. Approval was given under a blanket clearance specifically for identified generic problems.

LISTING OF IE BULLETINS  
ISSUED IN LAST SIX MONTHS

Bulletin No.	Subject	Date Issued	Issued To
79-23	Potential Failure of Emergency Diesel Generator Field Exciter Transformer	9/12/79	All Power Reactor Facilities with an OL or a CP
79-22	Possible Leakage of Tubes of Tritium Gas Used in Timepieces for Luminosity	9/5/79	Each Licensee who Receives Tubes of Tritium Gas in Timepieces for Luminosity
79-21	Temperature Effects on Level Measurements	8/13/79	All PWRs with an operating license
79-20	Packaging Low-Level Radioactive Waste for Transport and Burial	8/10/79	All Materials Licensees who did not receive Bulletin No. 79-19
79-19	Packaging Low-Level Radioactive Waste for Transport and Burial	8/10/79	All Power and Research Reactors with OLs, fuel facilities except uranium mills, and certain materials licensees
79-18	Audibility Problems Encountered on Evacuation of Personnel from High-Noise Areas	8/7/79	All OL's for action All CP's for information
79-17	Pipe Cracks in Stagnant Borated Water Systems at PWR Plants	7/26/79	All PWR's with operating license
79-16	Vital Area Access Controls	7/26/79	All Holders of and applicants for Power Reactor Operating Licenses who anticipate loading fuel prior to 1981
79-15 (Supp. 1)	Deep Draft Pump Deficiencies	7/18/79	All Power Reactor Licensees with a CP and/or OL
79-15	Deep Draft Pump Deficiencies	7/11/79	All Power Reactor Licensees with a CP and/or OL

1050 093

LISTING OF IE BULLETINS  
ISSUED IN LAST SIX MONTHS

Bulletin No.	Subject	Date Issued	Issued To
79-14 (Correc- tion)	Seismic Analyses for As-Built Safety-Related Piping System	7/27/79	All Power Reactor Facilities with an OL or a CP
79-14 (Supp. 2)	Seismic Analyses for As-Built Safety-Related Piping System	9/7/79	All Power Reactor facilities with an OL or a CP
79-14 (Rev. 1)	Seismic Analyses for As-Built Safety-Related Piping System	7/18/79	All Power Reactor Facilities with an OL or a CP
79-14	Seismic Analyses for As-Built Safety-Related Piping System	7/2/79	All Power Reactor facilities with an OL or a CP
79-13 (Rev. 1)	Cracking in Feedwater System Piping	8/30/79	All PWR's with an operating license
79-13	Cracking in Feedwater System Piping	6/25/79	All PWRs with an OL for action. All BWRs with a CP for information
79-12	Short Period Scrams at BWR Facilities	5/31/79	All GE BWR Facilities with an OL
79-11	Faulty Overcurrent Trip Device in Circuit Breakers for Engineered Safety Systems	5/22/79	All Power Reactor Facilities with an OL or a CP
79-10	Requalification Training Program Statistics	5/11/79	All Power Reactor Facilities with an OL
79-09	Failures of GE Type AK-2 Circuit Breaker in Safety Related Systems	4/17/79	All Power Reactor Facilities with an OL or CP
79-08	Events Relevant to BWR Reactors Identified During Three Mile Island Incident	4/14/79	All BWR Power Reactor Facilities with an OL
79-07	Seismic Stress Analysis of Safety-Related Piping	4/14/79	All Power Reactor Facilities with an OL or CP



LISTING OF IE BULLETINS  
ISSUED IN LAST SIX MONTHS

Bulletin No.	Subject	Date Issued	Issued To
79-06C	Nuclear Incident at Three Mile Island - Supplement	7/26/79	To all PWR Power Reactor Facilities with an OL
79-06B	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/14/79	All Combustion Engineering Designed Pressurized Water Power Reactor Facilities with an Operating License
79-06A (Rev. 1)	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/18/79	All Pressurized Water Power Reactor Facilities of Westinghouse Design with an OL
79-06A	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/14/79	All Pressurized Water Power Reactor Facilities of Westinghouse Design with an OL
79-06	Review of Operational Errors and System Misalignments Identified During the Three Mile Island Incident	4/11/79	All Pressurized Water Power Reactors with an OL except B&W facilities
79-05C	Nuclear Incident at Three Mile Island - Supplement	7/26/79	To all PWR Power Reactor Facilities with an OL
79-05B	Nuclear Incident at Three Mile Island	4/21/79	All B&W Power Reactor Facilities with an OL
79-05A	Nuclear Incident at Three Mile Island	4/5/79	All B&W Power Reactor Facilities with an OL
79-05	Nuclear Incident at Three Mile Island	4/1/79	All Power Reactor Facilities with an OL and CP

LISTING OF IE BULLETINS  
ISSUED IN LAST SIX MONTHS

Bulletin No.	Subject	Date Issued	Issued To
79-02 (Rev. 1) (Supp. 1)	Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts	8/20/79	All Power Reactor Facilities with an OL or a CP
79-02 (Rev. 1)	Pipe Support Base Plate Designs Using Concrete Expansion Anchor Bolts	6/21/79	All Power Reactor Facilities with an OL or a CP
79-01A	Environmental Qualification of Class 1E Equipment (Deficiencies in the Envi- ronmental Qualification of ASCO Solenoid Valves)	6/6/79	All Power Reactor Facilities with an OL or CP

1050 096