



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



Gentlemen:

The enclosed circular is forwarded for your appropriate action. No written response to this circular is required. If you have any questions related to this matter, please contact this office.

Sincerely,

James P. O'Reilly
Director

Enclosures:

1. IE Circular No. 81-12
2. List of Recently Issued IE Circulars

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Distribution for IE Circular No. 81-12

(ACTION)

July 22, 1981

Addresses

In Reference To

- | | |
|--|--|
| 1. Alabama Power Company
Attn: R. P. McDonald
Vice President-Nuclear Generation
Post Office Box 2641
Birmingham, AL 35291 | 50-348 Farley Unit 1
50-364 Farley Unit 2 |
| 2. Carolina Power and Light Company
Attn: J. A. Jones
Senior Executive Vice President
and Chief Operating Officer
411 Fayetteville Street
Raleigh, NC 27602 | 50-325 Brunswick Unit 1
50-324 Brunswick Unit 2
50-400 Harris Unit 1
50-401 Harris Unit 2
50-402 Harris Unit 3
50-403 Harris Unit 4
50-261 Robinson Unit 2 |
| 3. Duke Power Company
Attn: L. C. Dail, Vice President
Design Engineering
P. O. Box 33189
Charlotte, NC 28242 | 50-491 Cherokee Unit 1
50-492 Cherokee Unit 2
50-493 Cherokee Unit 3
50-488 Perkins Unit 1
50-489 Perkins Unit 2
50-490 Perkins Unit 3 |
| 4. Duke Power Company
Attn: W. O. Parker, Jr.
Vice President, Steam Production
P. O. Box 2178
Charlotte, NC 28242 | 50-369 McGuire Unit 1
50-370 McGuire Unit 2
50-269 Oconee Unit 1
50-270 Oconee Unit 2
50-287 Oconee Unit 3
50-413 Catawba Unit 1
50-414 Catawba Unit 2 |
| 5. Florida Power and Light Company
Attn: R. E. Uhrig, Vice President
Advanced Systems and Technology
P. O. Box 529100
Miami, FL 33152 | 50-335 St. Lucie Unit 1
50-389 St. Lucie Unit 2
50-250 Turkey Point Unit 3
50-251 Turkey Point Unit 4 |
| 6. Florida Power Corporation
Attn: J. A. Hancock, Assistant
Vice President Nuclear Operations
P. O. Box 14042, Mail Stop C-4
St. Petersburg, FL 33733 | 50-302 Crystal River Unit 3 |

Addresses

In Reference To

- | | |
|---|--|
| 7. Georgia Power Company
Attn: J. H. Miller, Jr.
Executive Vice President
270 Peachtree Street
Atlanta, GA 30303 | 50-321 Hatch Unit 1
50-366 Hatch Unit 2
50-424 Vogtle Unit 1
50-425 Vogtle Unit 2 |
| 8. Mississippi Power and Light Company
Attn: N. L. Stampley
Vice President of Production
P. O. Box 1640
Jackson, MS 39205 | 50-416 Grand Gulf Unit 1
50-417 Grand Gulf Unit 2 |
| 9. Offshore Power Systems
Attn: A. R. Collier, President
P. O. Box 8000
Jacksonville, FL 32211 | 50-437 FNP 1-8 |
| 10. South Carolina Electric and Gas Company
Attn: T. C. Nichols, Jr., Vice President
Power Production and System
Operations
P. O. Box 764
Columbia, SC 29218 | 50-395 Summer Unit 1 |
| 11. Tennessee Valley Authority
Attn: H. G. Parris
Manager of Power
500A Chestnut Street Tower II
Chattanooga, TN 37401 | 50-438 Bellefonte Unit 1
50-439 Bellefonte Unit 2
50-259 Browns Ferry Unit 1
50-260 Browns Ferry Unit 2
50-296 Browns Ferry Unit 3
50-518 Hartsville Unit 1
50-519 Hartsville Unit 2
50-520 Hartsville Unit 3
50-521 Hartsville Unit 4
50-553 Phipps Bend Unit 1
50-554 Phipps Bend Unit 2
50-327 Sequoyah Unit 1
50-328 Sequoyah Unit 2
50-390 Watts Bar Unit 1
50-391 Watts Bar Unit 2
50-566 Yellow Creek Unit 1
50-567 Yellow Creek Unit 2 |
| 12. Virginia Electric and Power Company
Attn: J. H. Ferguson
Executive Vice President-Power
P. O. Box 26666
Richmond, VA 23261 | 50-338 North Anna Unit 1
50-339 North Anna Unit 2
50-404 North Anna Unit 3
50-280 Surry Unit 1
50-281 Surry Unit 2 |

IE Circular No. 31-12
July 22, 1981

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(ACTION)

Addresses

In Reference To

13. Institute of Nuclear Power Operation
Attn: R. W. Pack
Lakeside Complex
1820 Waterplace
Atlanta, GA 30339
14. Southern Company Services, Inc.
ATTN: O. Batum, Manager
Nuclear Safety & Licensing
Department
P. O. Box 2625
Birmingham, AL 35202
15. Department of Energy
Clinch River Breeder Reactor
Plant Project Office
ATTN: Chief, Quality Improvement
P. O. Box U
Oak Ridge, TN 37830
16. EDS, Nuclear, Inc.
ATTN: E. H. Verdery
330 Technology Park/Atlanta
Norcross, GA 30092

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Accession No.:
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IEC 81-12

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

July 22, 1981

IE Circular No. 81-12: INADEQUATE PERIODIC TEST PROCEDURE OF PWR PROTECTION SYSTEM

Description of Circumstances:

On November 30, 1980, ground isolation procedures were being carried out to locate an electrical ground in the 125V dc bus No. 1 at the St. Lucie Nuclear Power Plant. Part of the procedure requires deenergizing the dc control power to the reactor trip circuit breakers (TCBs). These breakers are designed to trip (fail-safe mode) on undervoltage upon loss of dc control power. Referring to Figure 1, the four TCBs (TCB 1,3,5, and 7) that are supplied control power from dc bus No. 1 did not trip immediately (because of binding) on undervoltage when control power was deenergized. The operators did verify that the shunt trip for each of the four TCBs was functioning. Operators also verified that the redundant TCBs from dc bus No. 2 (TCB 2,4,6, and 8) tripped on similar undervoltage conditions, and, in fact, inadvertently caused a plant trip while testing. Investigation into the problem by the licensee identified the cause of failure as an out-of-adjustment condition in the linkage mechanism of the undervoltage trip device. This adjustment problem, together with the lack of cleaning and periodic relubricating of the trip shaft mechanism, is the subject of IE Bulletin 79-09 which was issued April 17, 1979. While shutdown, the undervoltage trip mechanism on each of the above four faulty TCBs was adjusted and verified to operate satisfactorily.

Investigation by the licensee revealed that the reactor protection system (RPS) periodic test procedure in use at the time did not verify the trip function of the undervoltage trip coil independent of the shunt trip coil. Referring to Figure 1, it can be seen that during a reactor trip test at this facility, these coils operate simultaneously causing the trip opening of the associated TCBs. This arrangement of the RPS and the trip test procedure may be similar for other PWRs.

BWRs may use similar circuit breakers in safety systems; therefore, similar inadequacies in their circuit breaker test procedures may exist.

Following adjustment of the linkage mechanism of the undervoltage trip device the licensee instituted a revised surveillance test procedure to check the undervoltage and shunt trip devices independently and to insure proper breaker operation. Although not shown in Figure 1, the undervoltage trip coil and the shunt trip coil are separately fused so that test procedure changes resolved the problem at St. Lucie.

Recommended Action for Holders of Operating Licenses and Construction Permits:

It is recommended that holders of operating licenses and construction permits review for applicability the specific items presented in the "Description of Circumstances." It is further recommended that the procedure for surveillance testing of trip circuit breakers be reviewed and revised as necessary to provide independent testing of each trip function, including position verification to ensure that the breaker actually trips.

If the trip circuit breakers do not have provisions for independent testing of each trip function, including position verification, then appropriate modifications should be made to include such features (e.g., local pushbuttons for the shunt and undervoltage trip coils, separately fused circuits for the shunt and undervoltage trip coils, etc).

No written response to this circular is required. If you need additional information with regard to this subject, please contact the director of the appropriate NRC Regional Office.

Attachments:

1. Figure 1
2. Recently issued IE Circulars

RECENTLY ISSUED
IE CIRCULARS

Circular No.	Subject	Date of Issue	Issued to
81-11	Inadequate Decay Heat Removal	7/23/81	All BWR facilities with OL or CP
81-10	Steam Voiding in the Reactor Coolant System During Decay Heat Removal Cooldown	7/2/81	All power reactor facilities with an OL and CP
81-08	Foundation Materials	5/29/81	All power reactor facilities with an OL or CP
81-07	Control of Radioactively Contaminated Material	5/14/81	All power reactor facilities with an OL or CP
81-06	Potential Deficiency Affecting Certain Foxboro 20 to 50 Milliampere Transmitters	4/14/81	All power reactor facilities with an OL or CP
81-05	Self-Aligning Rod End Bushings for Pipe Supports	3/31/81	All power reactor facilities with an OL or CP
81-04	The Role of Shift Technical Advisors and Importance of Reporting Operational Events	4/30/81	All power reactor facilities with an OL or near-term OL
81-03	Inoperable Seismic Monitoring Instrumentation	3/2/81	All power reactor facilities with an OL or CP
81-02	Performance of NRC-Licensed Individuals While on Duty	2/9/81	All power reactor facilities (research & test) with an OL or CP
81-01	Design Problems Involving Indicating Pushbutton Switches Manufactured by Honeywell Incorporated	1/23/81	All power reactor facilities with an OL or CP

OL = Operating Licenses
CP = Construction Permit

INPUTS FROM NSSS
MEASUREMENT
CHANNELS

TRIP UNITS

LOGIC MATRICES

LOGIC MATRIX RELAYS

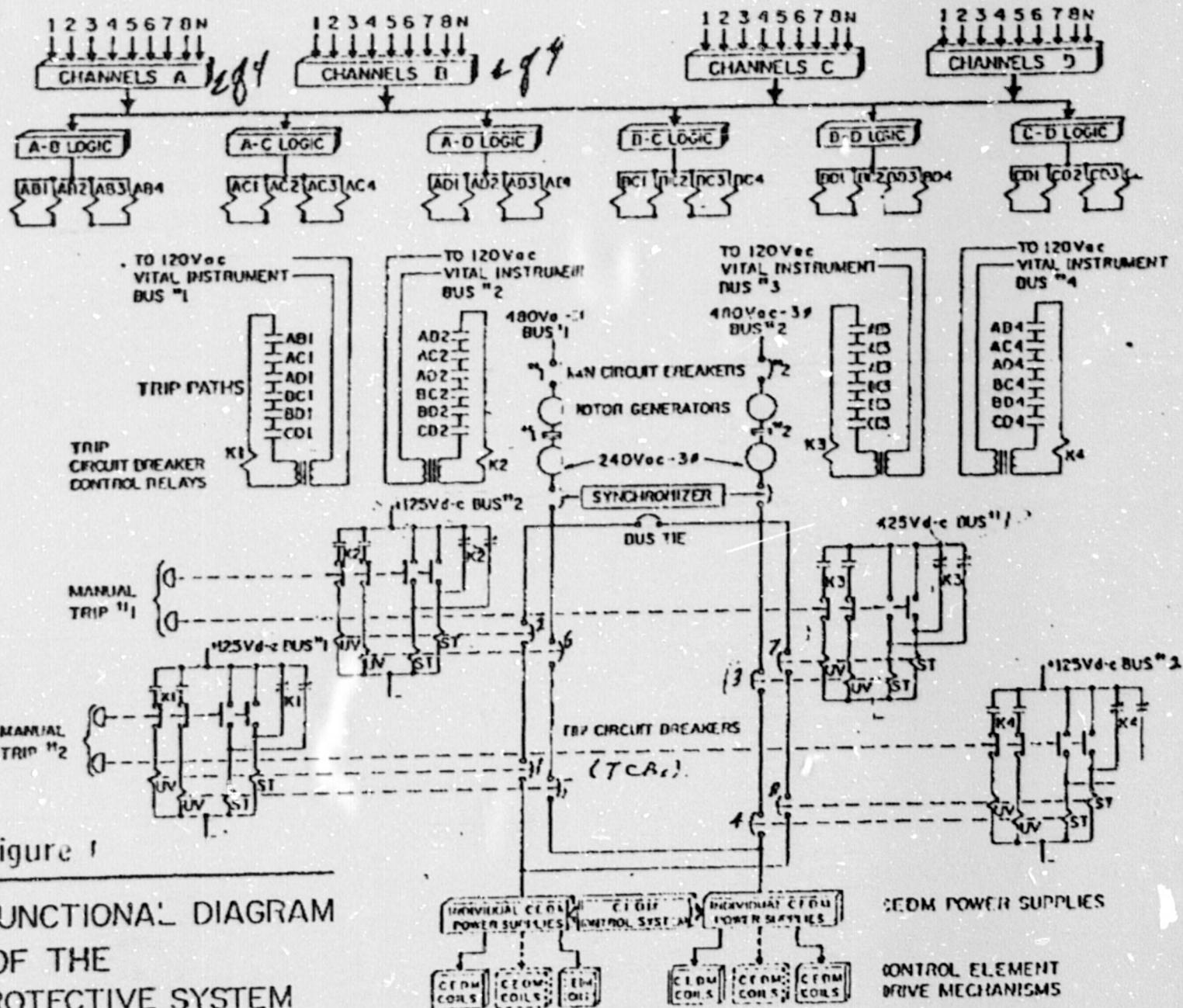


Figure 1

SIMPLIFIED FUNCTIONAL DIAGRAM
OF THE
REACTOR PROTECTIVE SYSTEM

CFDM POWER SUPPLIES

CONTROL ELEMENT
DRIVE MECHANISMS