

JUL 22 1981

Illinois Department of
Nuclear Safety
ATTN: Mr. Gary N. Wright
Deputy Director
1035 Outer Park Drive, 5th Floor
Springfield, IL 62704

Gentlemen:

The enclosed IE Circular No. 81-12 titled "Inadequate Periodic Test Procedure of PWR Protection System" was sent to the licensees listed below on July 22, 1981:

American Electric Power Service Corporation
Indiana and Michigan Power Company
D. C. Cook 1, 2 (50-315, 50-316)

Cincinnati Gas and Electric Company
Zimmer (50-358)

Cleveland Electric Illuminating Company
Perry 1, 2 (50-440, 50-441)

Commonwealth Edison Company
Braidwood 1, 2 (50-456, 50-457)
Byron 1, 2 (50-454, 50-455)
Dresden 1, 2, 3 (50-10, 50-237, 50-249)
LaSalle 1, 2 (50-373, 50-374)
Quad-Cities 1, 2 (50-254, 50-265)
Zion 1, 2 (50-295, 50-304)

Consumers Power Company
Big Rock Point (50-155)
Palisades (50-255)
Midland 1, 2 (50-329, 50-330)

Dairyland Power Cooperative
LACBWR (50-409)

Detroit Edison Company
Fermi 2 (50-341)



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Nuclear Safety

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Illinois Power Company
Clinton 1, 2 (50-461, 50-462)

Iowa Electric Light & Power Company
Duane Arnold (50-331)

Northern Indiana Public Service Company
Bailly (50-367)

Northern States Power Company
Monticello (50-263)
Prairie Island 1, 2 (50-282, 50-306)

Public Service of Indiana
Marble Hill 1, 2 (50-546, 50-547)

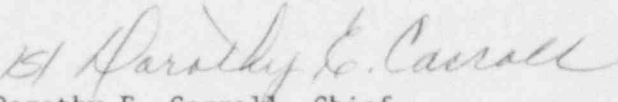
Toledo Edison Company
Davis-Besse 1 (50-346)

Union Electric Company
Callaway 1, 2 (50-483, 50-486)

Wisconsin Electric Power Company
Point Beach 1, 2 (50-266, 50-301)

Wisconsin Public Service Corporation
Kewaunee (50-305)

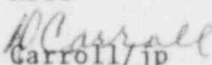
Sincerely,


Dorothy E. Carroll, Chief
Word Processing and Document
Control Section

Enclosure: IE Circular
No. 81-12

cc w/encl:
Mr. D. W. Kane,
Sargent & Lundy
J. G. Keppler, RIII
Acting Division Directors, RIII
P. R. Wohld, RIII

RIII


Carroll/jp
7/22/81

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.

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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

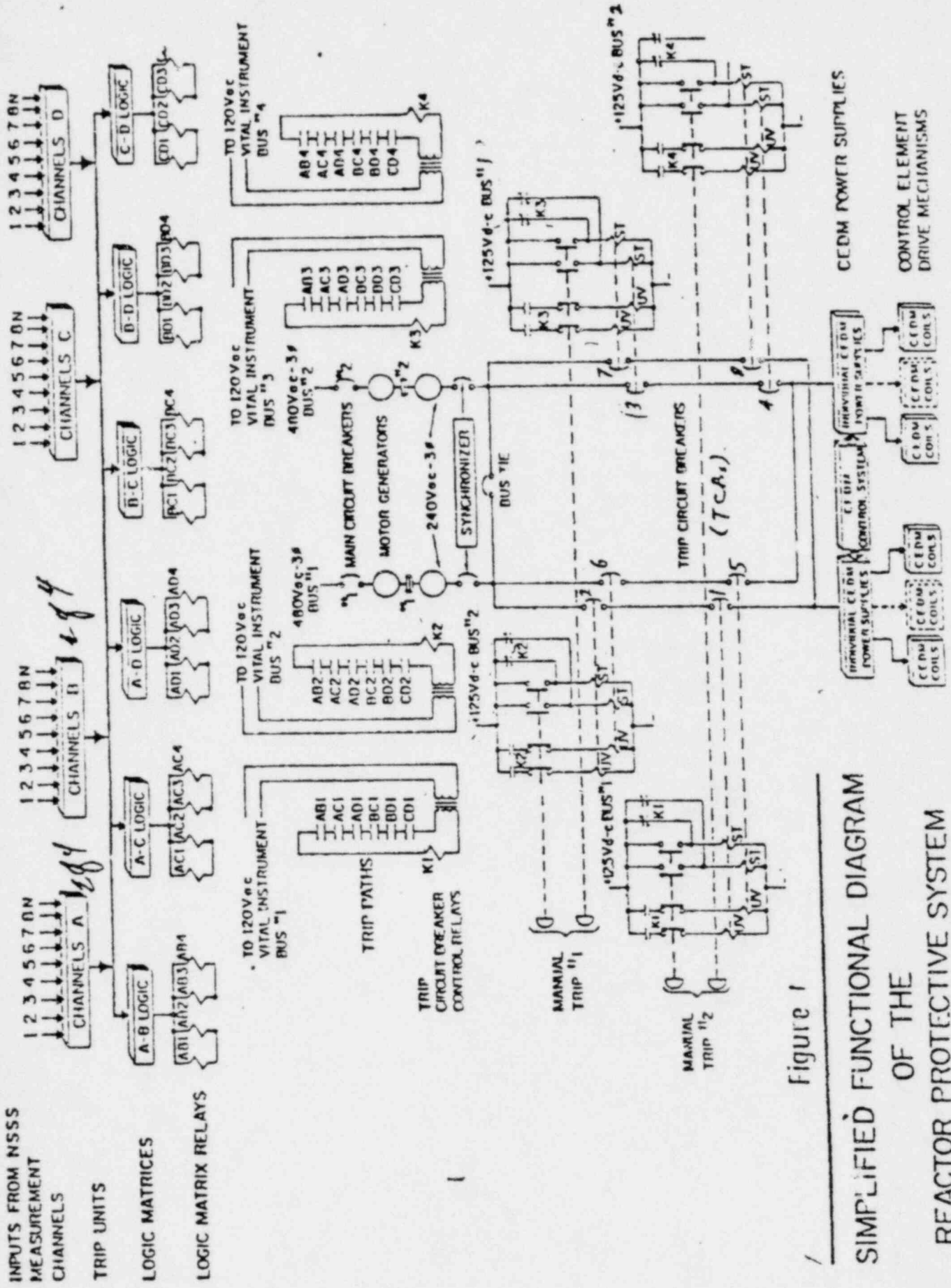


Figure 1

SIMPLIFIED FUNCTIONAL DIAGRAM
OF THE
REACTOR PROTECTIVE SYSTEM

RECENTLY ISSUED
IE CIRCULARS

Circular No.	Subject	Date of Issue	Issued to
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
81-09	Containment Effluent Water That Bypasses Radioactivity Monitor	7/10/81	All power reactor facilities with an OL or 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

OL = Operating Licenses
CP = Construction Permit