



UNITED STATES  
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October 21, 1974

Wisconsin Public Service Corporation  
ATTN: Mr. E. W. James, Senior Vice President  
Power Generation and Engineering  
P. O. Box 1200  
Green Bay, Wisconsin 54305

Docket No. 50-305

Gentlemen:

The enclosed RO Bulletin requests actions by you with regard to your Westinghouse - supplied pressurized water reactor (PWR) facility with an operating license.

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

Sincerely,

James G. Keppler  
Regional Director

Enclosure:  
RO Bulletin No. 74-11

bcc: DR Central Files  
RO Files  
PDR  
Local PDR

*DR Central Files*

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## IMPROPER WIRING OF SAFETY INJECTION LOGIC AT ZION 1 & 2

A recent abnormal occurrence report by the Commonwealth Edison Company described a design error in the wiring of the safety injection logic circuitry at the Zion Generating Station. The licensee's evaluation revealed serious inadequacies in the implementation of the quality assurance programs for both construction and preoperational testing.

### A. Description of Circumstances:

During a hot shutdown of Zion Unit 1, reactor Coolant Loop B was isolated, reactor coolant pump 1B was secured and the B main steam isolation valve (MSIV) was subsequently closed due to inoperability of the MSIV closure circuit. The complete isolation of the steam generator allowed the steam pressure to drop as the isolated loop cooled.

As the pressure in the isolated loop (B) dropped the differential pressure between this loop and the three other Loops (A, C, & D) reached a value causing bistables in the safety injection (SI) logic to trip. The logic trips, however, resulted in "half trips" in the 2/3 logic on Loops A, C, & D rather than an SI trip on Loop B which should have occurred.

Investigation by Commonwealth Edison personnel revealed that the input signals to the dual comparators (514A/B, 534A/B, 515A/B, 525A/B, 516C/D and 526C/D) were reversed, thus rendering this portion of the SI initiation circuitry inoperable. The wiring error had existed from the time of plant construction, and had gone undetected during functional testing by the supplier, Westinghouse, and preoperational testing by the licensee. The Zion Unit 2 was found to have a similar wiring discrepancy.

The licensee found that the preoperational testing procedures were inadequate to detect the miswiring because the logic testing was done in parts similar to the component test done at the factory. A test that includes the entire logic train from process sensor inputs to final logic output was not performed. Westinghouse agreed to provide guidelines from which the licensee could establish a more meaningful and comprehensive functional test to check systems following installation.

Corrective actions by the licensee included revising the applicable circuit drawings, modifying the circuit wiring, and functionally testing the modified circuits at both Units 1 & 2. The functional

testing included bistable actuation, status light verification and simulated differential pressure conditions for safety injection. Other similar circuits at the Zion station were examined and no other deficiencies were identified.

B. Action Requested of Licensees:

It is requested that you examine the safeguard logic and the methods employed to verify that the as-built safeguard circuitry is in agreement with the safeguard logic design at your Westinghouse - supplied PWR facilities with operating license to determine if similar circumstances or the potential for circumstances similar to those described above exist at your facilities, and provide to this office in writing within 30 days the following:

1. If your findings indicate that circumstances or the potential for circumstances similar to those described above exist at your facilities, describe the corrective actions which you have taken or plan to take, together with the date these actions were or will be completed.
2. If your findings indicate that circumstances or the potential for circumstances similar to those described above do not exist at your facilities, a report stating this finding is requested.