



**Consumers
Power**

**POWERING
MICHIGAN'S PROGRESS**

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0550

June 22, 1990

Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT -
NRC INSPECTION REPORT 255/90005; ENVIRONMENTAL QUALIFICATION OF STEAM
GENERATOR PRESSURE CIRCUIT PT-0752D

This report is submitted to provide additional information regarding environmental qualification of the instrument circuit associated with steam generator pressure channel PT-0752D. We responded to previous questions regarding environmental qualification of containment electrical penetration connectors in this circuit via our letters dated February 7, February 16, March 1 and April 23, 1990. Consumers Power Company has recently identified that circuit PT-0752D was installed with wiring terminations on a terminal block that was enclosed in a junction box. The affected portion of this circuit is located inside containment, and is required to be available under harsh environmental conditions. The effects of the terminal block wiring configuration on instrument loop accuracy was not considered in previous error analyses. The other three redundant pressure channels for steam generators "A" or "B" do not have a terminal block wiring configurations. The existence of terminal block wiring terminations in circuit PT-0752D was first identified when the instrument cable for PT-0752D was physically traced to the terminal block during scheduled replacement of the potted electrical connector with an environmentally qualified connector. Although the terminal block and wiring terminations have only recently been identified, the unmarked junction box which enclosed the terminal block was identified as unmarked in 1981 during electrical equipment qualification program walkdowns which were performed by Bechtel. We are unable to determine why resolution of the unmarked junction box was not pursued at that time. However, as a result of this oversight, neither the junction box nor the terminal block were referenced on Plant drawings; and it is indeterminate when the unmarked junction box, terminal block, and wiring terminations were installed.

An evaluation of all the circuits connected to the terminal block identified three potentially affected circuits. Of these three circuits, only one is required to be environmentally qualified, and it is the one connected to steam generator pressure channel PT-0752D. This circuit provides one of four redundant channels for steam generator "B" pressure indication and safeguards

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protection. An evaluation of the effects that harsh environmental conditions would have on the actuation and indication functions associated with circuit PT-0752D was provided in our letter dated February 7, 1990, and was submitted in response to concerns cited in NRC Inspection Report 50-255/90005, dated March 22, 1990.

As stated in the February 7, 1990 evaluation, circuit PT-0752D provides an input on low steam generator "B" pressure to the pressure indicating controllers which are a part of the Main Steam Isolation Valve (MSIV) closure logic, and also provides input to the reactor trip units. Both of these actuation functions are typically initiated in the early stages of an accident, and would therefore be expected to be complete before environmental conditions could degrade circuit PT-0752D significantly enough to prevent accomplishment of its safety function. Further assurance of availability for the automatic actuation functions associated with the steam generator "B" pressure channels was provided by the three remaining, unaffected steam generator "B" pressure channels. Technical Specifications allow unrestricted Plant operation with three operable pressure channels per steam generator, and allow operation with as few as two pressure channels per steam generator on a conditional basis.

The indication feature provided by the steam generator pressure instruments is primarily used for trending purposes. Although the information provided by the steam generator pressure indicators is used by operators to evaluate Plant conditions and initiate actions, the indication function provided by PT-0752D is also provided by three other redundant channels. Additionally, operators are cautioned in the Emergency Operating Procedures not to rely on any single instrument reading as a basis for action initiation. Based on the availability of redundant instrument channels for circuit PT-0752D, the actuation and indication functions associated with the steam generator "B" pressure instrumentation is considered to have been operable during prior operations when the terminal block wiring termination and junction box configuration were unidentified.

As corrective action, we have performed a review of Bechtel walkdown sheets from our 1981 Palisades EQ walkdown in order to determine if other unmarked junction box installations exist. Additionally, a walkdown of containment spaces in the immediate vicinity of the containment electrical penetrations has been performed. No other unmarked junction boxes were identified as a result of these efforts. Based on the results of these reviews we believe that the condition described in this report is an isolated occurrence. The circuits which were found to have wiring terminations on the terminal block which was located in the unmarked junction box have been removed from the junction box and spliced directly to the pigtail from the electrical penetration connector. The unmarked junction box is scheduled for removal during the

Nuclear Regulatory Commission
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Fall Refueling outage. The Fall Refueling outage is currently expected to begin on September 15, 1990.



Brian D Johnson
Staff Licensing Engineer

CC Administrator, Region III, USNRC
NRC Resident Inspector - Palisades