Consumers Power

POWERING MICHIGAN'S PROGRESS

Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

David W. Rogers
Plant Safety and Licensing Director

August 19, 1994

Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT - REPLY TO NOTICE OF VIOLATION - INSPECTION REPORT 94008 - FAILURE TO PROPERLY TEST THE SPENT FUEL POOL CRANE INTERLOCK BYPASS KEYS.

NRC Inspection Report No. 94008, dated July 20, 1994, documented the results of a routine safety inspection conducted from May 10, 1994 to June 30, 1994. The inspection report identified an apparent violation involving the failure to properly test the spent fuel pool crane interlock bypass keys. The post-modification testing following a recent modification to the crane failed to detect incorrectly wired interlock bypass circuits. The wiring error was discovered and subsequently corrected during pre-operational testing for the dry fuel storage project. Our reply to the Notice of Violation is provided as an Attachment to this letter.

In addition, the inspection report identified an unresolved item pertaining to an ineffective containment closeout process. As discussed with the inspection team, our reply to the unresolved item (94008-02), will be provided by September 18, 1994 in a later submittal.

David W. Rogers
Plant Safety and Licensing Director

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

Attachment

JE01

CONSUMERS POWER COMPANY

To the best of my knowledge, information and belief, the contents of this submittal are truthful and complete.

By _____
Robert A. Fenech, Vice President
Nuclear Operations

Sworn and subscribed to before me this 19 day of August 1994.

_____
LeAnn Morse, Notary Public
Berrien County, Michigan
(Acting in Van Buren County, Michigan)
My commission expires February 4, 1997

[SEAL]

ATTACHMENT 1

Consumers Power Company
Palisades Plant
Docket 50-255

REPLY TO NOTICE OF VIOLATION

NRC INSPECTION REPORT No. 94008

August 19, 1994

3 Pages

REPLY TO NOTICE OF VIOLATION

Violation

10 CFR 50, Appendix B, Criterion XI, " Test Control," requires that pre-operational tests of structures, systems, and components be performed, which incorporate requirements and acceptance limits contained in applicable design documents, to assure that the structures, systems, and components will perform satisfactorily in service.

Contrary to the above, on May 6, 1994, the license failed to adequately test spent fuel pool crane L-3, including the control box override keys, following a design modification.

CPCo Response

Consumers Power Company agrees that the spent fuel pool area and cask loading area radio control box switches were not fully tested following the design modification to the L-3 crane control boxes. However, the remaining functions of the spent fuel pool L-3 crane were adequately tested and documented using detailed test instructions following the design modification.

REASON FOR VIOLATION

The reason for the violation is that intended post modification testing was not made sufficiently clear to ensure that the field personnel would complete the scope of the desired testing. A contributor to the event was the existence of an undocumented wiring configuration change associated with the crane interlock bypass circuit, but located outside of the actual modification boundary. The post modification testing that was completed did provide proper test of the actual modification boundary, however the existing wiring discrepancy in the unmodified circuitry was not identified during the post modification test. During subsequent movement of a Multi-Assembly Transfer Cask it was discovered that the spent fuel pool area and cask loading area bypass/interlock switches were reversed on the radio control box. In this case, Technical Specification requirements for heavy loads controls were properly implemented. Also the safety significance of the event was minor, since at no time was a heavy load moved over or in danger of being moved over fuel stored in the spent fuel pool.

Phase I of the spent fuel pool crane modification, specification change SC-93-094, replaced the existing analog radio crane control boxes with a more up-to-date digital model. This was a "functionally equivalent substitution" where the overall input/output and outer physical characteristics (including the switches) of the new radio control boxes were built to original radio control box specifications. Phase I post modification testing included two bypass/interlock switch tests; (1) a verification that the two control box switches (spent fuel pool area and cask loading area) initiated the proper relays in the control subpanel on the crane; and, (2) the performance of the existing maintenance work instruction WI-MSE-E-07, "Overhead Crane Electrical

Inspection." The first verification tested the affected system out to the first component beyond the boundary of the modification and would have been sufficient for post modification testing. For further confirmation the existing maintenance work instruction was included as part of the post modification testing.

The two verifications were determined by a multi-discipline modification review group to provide sufficient verification of the bypass/interlock switch for the modification to replace the crane radio control box. However, the testing scope in the maintenance work instruction was not clearly interpreted by both engineering and maintenance and the total functionality of the switches was not specifically required in the overall testing work instruction. This lack of detailed test requirements would not have occurred if specific testing steps had been written into the modification test instruction instead of relying on an existing maintenance work instruction. Also, the presence of a knowledgeable project or test engineer during the performance of the maintenance work instruction could have identified that the intended functional testing was not completed as anticipated. Due to the fact that the maintenance work instruction is routinely performed at least quarterly, it was incorrectly determined that no direct testing oversight was needed. Engineering oversight of a majority of the testing of the L-3 crane modification was provided by either the NECO Testing Supervisor, the Supervisor of Electrical Projects, or the designated responsible engineer.

Phase II of the L-3 crane modification replaced the main hoist motor and control system with a variable frequency drive system. Detailed test instructions were used to complete Phase II post-modification testing with direct project engineering oversight.

Subsequent to completion of the modifications, dry fuel storage pre-operational testing began and during a test movement the load unexpectedly stopped at the edge of the spent fuel pool. Troubleshooting of the problem revealed that the recently replaced radio control box wiring configuration contained switches with reversed wiring. This wiring change was apparently done during the original radio control box installation in 1986 and was performed to compensate for wiring discrepancies in the radio control relay panel located on the crane. The problem back then was corrected by reversing the function of the switches in the control boxes rather than correcting the problem in the relay control panel. At that time no design change was implemented, no drawing updates were performed, and the vendor was not informed of the changes. When the new "functionally equivalent" digital control boxes were ordered as part of the L-3 modification, they were configured to be identical to the original control box design. Consequently, upon use of the new radio control box the switches operated in a reverse fashion.

The time frame in which the original modification error occurred was 1986. Recent guidelines have been developed to clearly define the boundaries between allowed maintenance work and the modification process. These recent efforts will ensure that physical changes to plant equipment will be controlled and documented as modifications. These actions will be sufficient in this area to prevent recurrence.

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

The following corrective actions have been taken as a result of the event:

1. A design change was issued and implemented which corrected the miswiring in the relay control panel. This restored the new L-3 control box switches to their proper configuration and function. The design change was verified with detailed test instructions which fully tested the bypass/interlock functions of the radio control box switches.

2. Prior to heat up, electrical modification packages performed during the 1994 forced outage were reviewed for post modification testing where similar over-reliance on existing maintenance procedures or tech spec surveillance procedures may have been used to confirm critical design functions/features of a design modification. A total of three design packages met this criteria and they were reviewed with no problems found.

3. A lessons learned letter was issued to engineering which reviewed the event and the consequences of over-reliance on existing maintenance or Technical Specification surveillance procedures to test the critical functions/features of a design modification.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

Corrective actions to be taken to avoid further noncompliance are:

1. A review of other post modification tests from modifications in the last two years where reliance was placed on existing maintenance work instructions/procedures or Technical Specification procedures. This review will determine if the post modification testing sufficiently verified the modification's critical design function/features.

   Target Date: 12/1/94

2. Convert maintenance work instruction WI-MSE-E-07 into a maintenance procedure that contains detailed instructions regarding verification of radio control box interlock bypass functions.

   Target Date: 9/15/94

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved.