Consumers Power
POWERING MICHIGAN'S PROGRESS
Palisades Nuclear Plant: 27780 Blue Star Memorial Highway, Covert, MI 49043

**Kurt M. Haas**
*Plant Safety and Licensing Director*

January 11, 1995

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

DOCKET 50-255 - LICENSE DPR-20 - PALISADES PLANT
REPLY TO NOTICE OF VIOLATION - FAILURE TO PREVENT DEGRADED PERFORMANCE OF EMERGENCY DIESEL GENERATORS

NRC Inspection Report No. 94017, dated October 27, 1994, documented the results of an inspection that reviewed the inability of both Emergency Diesel Generators (EDGs) to supply the maximum design basis accident electrical loads. The inspection report identified three apparent violations which involved: (1) failure to perform adequate post-maintenance testing to verify that EDG 1-1 remained capable of supplying the maximum design basis accident loads on June 2, 1981, February 4, 1982, and July 29, 1994; (2) failure to perform the manufacturer's recommended maintenance on the EDGs from at least January 1, 1974 to present; and (3) failure to perform a 10 CFR 50.59 safety evaluation when changing EDG load profiles on July 9, 1990, April 29, 1994 and May 9, 1994. An enforcement conference was held at Region III headquarters on November 1, 1994, where we presented our initial assessment of the causes that allowed the violation to occur, and our immediate and proposed long term actions to address the issues the NRC had raised.

NRC letter dated December 13, 1994, forwarded a Notice Of Violation and Proposed Imposition of Civil Penalty (Notice). By letter dated January 6, 1995, payment of the civil penalty was made by Consumers Power Company (CPCo) as directed in the Notice. Attachment 1 provides our response to the Notice of Violation.

SUMMARY OF COMMITMENTS

This reply contains two new commitments. This reply also contains five existing commitments that were documented under Licensee Event Reports LER 94-017-01 and LER 94-018, both dated 11/22/94.





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New Commitments:

1. Complete the inspections, component reconditioning, and component replacements deemed necessary for both EDGs during the 1995 and 1997 Refueling Outages to maximize component reliability, and also to determine the cause for the slightly reduced maximum output for EDG 1-1. Revise RM-63 and its basis document based on the findings of these inspections.

2. Provide a briefing to plant engineering staff pertaining to this event and the enhancements made to Administrative Procedure 9.11, "Engineering Analysis."

Existing Commitments:

1. Perform a detailed assessment of safety system testing to ensure plant design basis requirements are being properly verified. The order in which the safety systems are being assessed is in accordance with their PRA ranking. This engineering review will be completed by 4/30/95.

2. Establish administrative controls to ensure that changes made to the plant design basis that occur through analysis are properly controlled and evaluated for potential verification testing.

3. Complete a revision to Technical Specification Test RM-63,"Diesel Generator Inspection," and its basis document to incorporate the necessary changes that will result from the review of the manufacturer's recommended inspections.

4. Continue the present effort of evaluating and optimizing preventive maintenance practices for the critical risk significant systems, structures, and components identified during Maintenance Rule, 10CFR50.65, scoping. The product of this action will be maintenance basis documents that contain a documented rationale for the resultant preventive maintenance practices. The development of the maintenance basis documents will include an evaluation of manufacturer recommendations contained in existing equipment files.

5. Revise Palisades Administrative Procedure, 9.45, " Vendor Manual Control", to clarify the process for dispositioning manufacturer's recommended maintenance and inspections. The process shall include a formal approval of all exceptions to manufacturer's recommendations.

Kurt M. Haas
Plant Safety and Licensing Director

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

Attachment

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
Robert A. Fenech, Vice President
Nuclear Operations

Sworn and subscribed to before me this 9th day of January 1995.

Alora M. Davis
Alora M. Davis, Notary Public
Berrien County, Michigan
(Acting in Van Buren County, Michigan)
My commission expires August 26, 1999

[SEAL]

ATTACHMENT 1

Consumers Power Company
Palisades Plant
Docket 50-255

# REPLY TO NOTICE OF VIOLATION

# NRC INSPECTION REPORT 94017

6 Pages

# REPLY TO NOTICE OF VIOLATION

## VIOLATION

A. *10 CFR Part 50, Appendix B, Criterion XI, "Test Control," requires that a test program be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents.*

*Contrary to the above, on June 2, 1981, February 4, 1982, and July 29, 1994, the licensee performed governor linkage adjustment and other maintenance on the EDG 1-1 governors without performing adequate post-maintenance tests to verify that EDG 1-1 remained capable of supplying the maximum design basis accident loads in accordance with the requirements and acceptance limits contained in applicable design documents. (01013)*

## CPCO RESPONSE

Consumers Power Company agrees that we failed to implement proper operability testing following the identified maintenance and minor modifications to the EDGs.

## REASON FOR THE VIOLATION

The reason for the inadequate post-maintenance testing was a misconception that the monthly Technical Specification Testing, at a load of 2400 KW plus or minus 100 KW, provided adequate assurance of EDG operability. This operability testing philosophy was adequate until 1986, when the analyzed peak accident loads surpassed the continuous EDG load rating of 2500 KW, (during the first thirty minutes following a large break loss of coolant accident). At that time the implications of the higher peak loading values were evaluated and load testing above the continuous rating of the engine was considered potentially damaging to the engines. Also, pre-operational testing on-site in 1971 had verified load carrying capabilities above 2700 KW with additional fuel rack travel still available for both EDGs. It is now apparent that this evaluation was not appropriately conservative. It did not consider that maintenance or minor modifications on the EDGs could inadvertently reduce the EDG load carrying capabilities to a value below the analyzed peak values, and the reduced performance would remain undetected.

A contributor to this event was weak post maintenance testing controls that existed in the 1980s. Presently, Palisades Administrative Procedure 5.19, " Post Maintenance Testing," provides detailed requirements for operability testing of plant components following maintenance or minor modifications.

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

1. Specifically for the EDGs, the monthly Technical Specification Tests, MO-7A-1 and MO-7A-2, have been revised to perform peak load testing every January, and at other times as requested by the system engineer. The peak load testing steps, with acceptance criteria, will remain in the test procedure to allow peak load verification testing to be completed following maintenance or modifications that could impact EDG peak load carrying capability.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

1. Perform a detailed assessment of safety system testing to ensure plant design basis requirements are being properly verified. The order in which the safety systems are being assessed is in accordance with their PRA ranking. This engineering review will be completed by 4/30/95.

2. Establish administrative controls to ensure that changes made to the plant design basis that occur through analysis are properly controlled and evaluated for potential verification testing.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved

VIOLATION

B. *Technical Specification 4.7.1.c requires that "each EDG be subjected to an inspection, in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service, at least once per refueling cycle during plant shutdown. The licensee shall utilize his best efforts to conduct additional major diesel generator inspections and overhauls during shutdown periods."*

*The EDG manufacturer's maintenance schedule, entitled, "ALCO Standby Engine Maintenance Schedule (June 1982," MI-11272, effective November 10, 1983, recommended that the licensee "remove, recondition, and reapply" major components (e.g., fuel injection pumps, engine governor, main bearings, and power drive assembly) associated with the diesel engine "every twelve years or 18,000 hours, whichever comes first." (Previous versions of the ALCO maintenance schedule (MI-11005 series), effective from 1973 until November 10, 1983, required the same maintenance to be completed on a three year frequency).*

*Contrary to the above, during the five years preceding July 19, 1994 (in fact going back to January 1, 1974), the licensee had not inspected and maintained each EDG in accordance with procedures prepared in conjunction with the manufacturer's recommendations at least once per refueling cycle during plant shutdown, or utilized his best efforts to conduct additional major diesel generator inspections and overhauls during shutdown periods. For example, the licensee had never removed, reconditioned, and reapplied the main bearings, power drive assemblies, fuel injection pumps (on EDG 1-1 only), or the turbochargers. (01023)*

CPCO RESPONSE

Consumers Power Company agrees that we failed to implement or properly justify exceptions to several of the EDG manufacturer's recommended periodic inspections. Based on the results of recent EDG peak load test data, the failure to perform the recommended inspections has not resulted in significant engine performance degradation for either engine. Also, the results of an inspection completed in 1988 on one power set from EDG 1-1 indicated that the components were in excellent condition due to very low engine run times.

REASON FOR THE VIOLATION

The reason for this violation was weak administrative controls over vendor manuals and recommendations. Palisades Administrative Procedure 9.45," Vendor Manual Control," did not exist in the early 1980s, and also presently does not provide adequate direction for dispositioning of manufacturer recommendations. The EDG manufacturer provided the new inspection recommendations for standby engines in 1982, however, a formal evaluation with the manufacturer's concurrence was never properly documented.

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

1. Continue the formal evaluation with EDG manufacturer and industry experts pertaining to the recommended maintenance and inspections for our standby engines. The results provide a basis for the scope of future engine maintenance and inspections. The following activities are specifically planned: (1) During 1995 Refueling Outage, replace the turbocharger, cylinder heads, and perform a complete engine overhaul on EDG 1-1. If generic implications are discovered during the EDG 1-1 inspections, then complete appropriate actions for EDG 1-2; (2) During the 1997 Refueling Outage, replace the turbocharger on EDG 1-2, and complete maintenance and inspections deemed necessary for EDG 1-2 based on the results of the EDG 1-1 inspection.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

1. Complete a revision to Technical Specification Test RM-63,"Diesel Generator Inspection," and its basis document to incorporate the necessary changes that resulted from the review of the manufacturer's recommended inspections.

2. Continue the present effort of evaluating and optimizing preventive maintenance practices for the critical risk significant systems, structures, and components identified during Maintenance Rule, 10CFR50.65, scoping. The product of this action will be maintenance basis documents that contain a documented rationale for the resultant preventive maintenance practices. The development of the maintenance basis documents will include an evaluation of manufacturer recommendations contained in existing equipment files.

3. Revise Palisades Administrative Procedure, 9.45, " Vendor Manual Control", to clarify the process for dispositioning manufacturer's recommended maintenance and inspections. The process shall include a formal approval of all exceptions to manufacturer's recommendations.

4. Complete the inspections, component reconditioning, and component replacements deemed necessary for both EDGs during the 1995 and 1997 Refueling Outages to maximize component reliability, and also to determine the cause for the slightly reduced maximum output for EDG 1-1. Revise RM-63 and its basis document based on the findings of these inspections.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved

*VIOLATION*

*C. 10 CFR 50.59, "Changes, tests and experiments" allows a licensee to make changes to the facility as described in the final safety analysis report (FSAR) without Commission approval unless the proposed change involves a change in the technical specifications incorporated in the license or an unreviewed safety question. A proposed change is deemed, in part, to involve an unreviewed safety question if the margin of safety as defined in the basis for any technical specification is reduced.*

*10 CFR 50.59 also requires, in part, that the licensee maintain records of changes in the facility and these records must include a written safety evaluation which provides the bases for the determination that the proposed change does not involve an unreviewed safety question.*

*FSAR Section 8.4.1.3, "Emergency Generators Design Analysis, " states that , "the emergency generators have been selected to have sufficient capacity to supply the minimum necessary engineered safeguards loads with only one generator operating. The emergency diesels are designed to reach rated speed and voltage and to be ready for loading within 10 seconds after receipt of a start signal and be capable of loading and carrying required safety-related loads within the times established for sequential loading (see Tables 8-6 and 8-7).*

*Contrary to the above, on several occasions since initial plant operation, including July 9, 1990, April 29, 1994, and May 9, 1994, the licensee made changes to the EDG load profiles, increasing required peak accident loads from 2451 to 2688 Kw, and 2465 to 2663 kW for EDGs 1-1 and 1-2, respectively, without performing safety evaluations to provide the bases that these changes did not constitute an unreviewed safety question. (01033)*

CPCO RESPONSE

Consumers Power Company agrees that we failed to process safety evaluations for the three identified engineering analyses (EAs) that updated the EDG electrical load profiles for the time period following a postulated worst case accident.

REASON FOR THE VIOLATION

The reason for the violation was weak administrative procedure requirements. There was not sufficient guidance in Administrative Procedure 9.11, "Engineering Analysis," pertaining to the need to process a safety review (10CFR50.59) for engineering analysis that affect the design basis of the plant, and are associated with activities outside of the plant modification process.

CORRECTIVE ACTIONS TAKEN AND RESULTS ACHIEVED

1. Safety reviews were completed for the engineering analyses that are mentioned in this violation. The completed safety evaluations determined that the changes to the maximum analyzed EDG electrical loads were not unreviewed safety questions.

2. Administrative Procedure 9.11, "Engineering Analysis," was revised on 10/29/94 to clarify the requirement to process a safety review (10CFR50.59) for all engineering analysis that affect the design basis of the plant.

CORRECTIVE ACTIONS TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

1. Provide a briefing to plant engineering staff pertaining to this event and the enhancements made to Administrative Procedure 9.11, "Engineering Analysis."

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved.