U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Report No. 50-255/86018(DRP)

Docket No. 50-255 License No. DPR-20

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site, Covert, MI

Inspection Conducted: May 28 through July 22, 1986

Inspectors: E. R. Swanson
C. D. Anderson

Approved By: B. L. Burgess, Chief
Reactor Projects
Section 2A

7-31-86
Date

Inspection Summary

Inspection on May 28 through July 22, 1986 (Report No. 50-255/86018(DRP))
Areas Inspected: Routine, unannounced inspection by resident inspectors of followup of previous inspection findings; operational safety; maintenance; surveillance; reportable events; special instructions and allegation review requests.
Results: Of the areas inspected one violation was identified in followup to an Unresolved Item concerning modifications and one was identified for failure to make required log entries.

DETAILS

1. Persons Contacted

Consumers Power Company (CPCo)

*J. F. Firlit, General Manager
J. G. Lewis, Plant Technical Director
*R. D. Orosz, Engineering and Maintenance Manager
W. L. Beckman, Radiological Services Manager
C. E. Axtell, Health Physics Superintendent
R. M. Rice, Plant Operations Manager
*R. A. Fenech, Plant Operations Superintendent
*H. M. Esch, Plant Administrative Manager
S. C. Cote, Plant Property Protection Supervisor
D. G Malone, Licensing Engineer
*D. J. Fitzgibbon, Licensing Engineer
R. A. Vincent, Plant Safety Engineering Administrator
*R. E. McCaleb, Quality Assurance Director
*T. J. Palmisano, Plant Projects Superintendent
*P. F. Bruce, Electrical Engineering and Maintenance Superintendent

*Denotes those present at the Management Interview.

Other members of the Plant Operations, Maintenance, Technical, and Chemistry Health Physics staffs, and several members of the Contract Security Force were also contacted briefly.

2. Followup on Previous Inspection Findings

(Closed) Unresolved Item 255/85015-02: Diesel Generator 1-1 was declared inoperable on June 22, 1985, due to leakage from a temporary gauge installed in the lubricating oil system. The gauge had been installed on May 26, 1985, to assure that prelube oil pressure was available while the associated pressure switch was operating erratically. The licensee investigation determined that no controls such as Jumper, Link and Bypass, Maintenance Order, Specification Change, Facility Change, or calibration control were implemented in the installation of the gauge. Failure to implement controls as required by 10 CFR 50, Appendix B, Criteria II and as committed to in Consumers Power Quality Assurance Program CPC-2A constitutes a violation as set forth in the Notice, Item 1 (255/86018-01(DRP)).

The leakage created by the uncontrolled modification was identified during a surveillance test before it had leaked much oil. The diesel was promptly shutdown and an Unusual Event declared. Both diesels were inspected for other temporary gauges (none were found) and the leaking gauge was removed and the fitting properly plugged. To prevent recurrence a letter was issued to all Operations and Engineering Maintenance Department personnel on September 5, 1985, discussing the situation and reiterating plant administrative procedure requirements related to modification and design control. The modification control procedures have also been revised and improved for control of temporary modifications. These actions appear adequate to prevent recurrence.

(Open) Open Item 255/86014-01: The Confirmatory Action Letter (CAL) dated May 21, 1986, related to investigation of the May 19, 1986, reactor trip and maintenance activities continues in effect. In a meeting in the Region III offices on June 25, 1986, the licensee outlined the preliminary results of the Palisades Plant Material Condition Review Task Force. A final report of this task force was submitted July 3, 1986. The report indicated an extensive review was performed on maintenance history and involved a detailed investigation of 222 items resulting in approximately 544 corrective action items, 58% of which will be taken prior to restart, 29% at the 1987 refueling outage, and 13% incorporated in their 5-year plan. Currently the estimate for restart is the middle of September. Additional review by the NRC of the licensee's corrective actions prior to restart will be conducted. Approval of Region III prior to restart is required by the CAL.

(Closed) Unresolved Item 255/86014-02: A system integrity surveillance test for the containment hydrogen monitoring system had not been completed during the last refueling outage as required by Technical Specification (TS) 6.15.2. The root cause of the failure to test is that the additional system piping, which resulted from a modification, was not incorporated into the applicable TS Surveillance Program procedures.

Administrative Procedure 9.02, "Plant Modifications - Major," Revision 1, Paragraph 10.3 states that the Plant Project Engineer in cooperation with Plant Modification and Miscellaneous Projects Group is responsible for assuring the updating or preparing of new surveillance procedures for the new or affected equipment. The planning of this modification began in April 1981 and installation was complete in June 1984. In this case, no citation will be issued as allowed by 10 CFR 2, Appendix C, IV.A. This violation was identified by the licensee, likely would have been a Severity Level IV or V, and was not required to be reported. The licensee's corrective actions included reviewing all of Technical Specification Section 6 for any additional missed surveillances; verification that the containment hydrogen monitoring system was tested at time of installation; and developmental implementation of new procedures to periodically test the system. Additionally, a major upgrade of the modification process has taken place over the last two years in response to previously identified weaknesses. The procedural improvements and additional training that the engineers have received on the modification process should prevent recurrence. No corrective actions to previous violations could reasonably have prevented this occurrence.

One violation was identified.

3. Operational Safety

a. The inspectors observed control room activities, discussed these activities with plant operators, and reviewed various logs and other operations records throughout the inspection. Control room indicators and alarms, log sheets, turnover sheets, and equipment status boards were routinely checked against operating requirements. Pump and valve controls were verified to be proper for applicable plant conditions. On several occasions, the inspector observed shift turnover activities and shift briefing meetings.

Tours were conducted in the turbine and auxiliary buildings, and central alarm station to observe work activities and testing in progress and to observe plant equipment condition, cleanliness, fire safety, health physics and security measures, and adherence to procedural and regulatory requirements.

The inspectors made observations concerning radiological safety practices in the radiation controlled areas including: verification of proper posting; accuracy and currentness of area status sheets; verification of selected Radiation Work Permit (RWP) compliance; and implementation of proper personnel survey (frisking) and contamination control (step-off-pad) practices. Health Physics logs and dose records were routinely reviewed.

The inspectors observed physical security activities at various access control points, including proper personnel identification and search, and toured security barriers to verify maintenance of integrity. Periodic observation of access control activities for vehicles and packages and activities in the Central Alarm Station were also conducted.

An ongoing review of all licensee corrective action program items at the Event Report level was performed.

b. At 1:17 a.m. on June 10, 1986, the licensee declared an Unusual Event for a possible security threat. Several teenagers accidentally touched off a security fence alarm, then ran when a security guard was dispatched to the area. The Unusual Event was terminated at 1:25 a.m. after determination that no threat existed. Three of the individuals were caught by the security force and questioned; they apparently were attracted to the plant night lights.

c. At 3:00 p.m. on June 10, 1986, both diesel generators received an automatic start signal during the replacement of a non-Q relay in the turbine protection circuitry. The 10 CFR 50.72 notification was made at 4:35 p.m. During the maintenance planning, the use of a jumper was deemed necessary to maintain the circuitry in the desired configuration. Just prior to the activity, the repairman reevaluated the circuitry since the turbine condition had changed from latched to unlatched. In his evaluation the repairman incorrectly reasoned that the jumper was not needed. When the relay was installed, the reclosing of the circuit energized the diesel start relay, which resulted in both diesel generators starting. This event is discussed in LER 255/86019 (Reference Paragraph 6).

d. At 3:10 p.m. on June 17, 1986, both diesel generators (DGs) received an automatic start signal during turbine oil system flushing. The 10 CFR 50.72 notification was made at 5:43 p.m. The pressure produced during the flush was sufficient to reset the pressure switches in the turbine trip oil system. When the flushing was terminated, the turbine trip oil system pressure decayed below the pressure switch setpoint which resulted in the activation of the DG start circuitry. During the job planning, the system engineer failed to recognize that the

pressure would increase to the reset setpoint in the system configuration at that time. This event is discussed in Paragraph 6 as part of the review of LER 255/86020.

Neither of the 10 CFR 50.72 notifications for the above two diesel generator (DG) actuations were recorded nor was the June 17, 1986, DG actuation itself recorded in the Shift Supervisor's Log as required by Administrative Procedure 4.01, Shift Operations, Paragraph 5.7.2.b.4. It states that the Shift Supervisor's Log contains notifications and reportable occurrences among other information. This failure to follow Administrative Procedure 4.01 is considered a violation as set forth in the Notice of Violation (255/86018-03(DRP)). During the previous exit meeting on May 29, 1986, the inspectors discussed previous log keeping inadequacies. Information concerning the May 19, 1986 trip, such as declaration of an Unusual Event and NRC notification of the declaration were not recorded in the Shift Supervisor's Log. On May 20, 1986, while the unit was in hot standby, a main steam safety valve lifted (a reportable occurrence) and no log entries were made for this event. The repetitive nature of this problem is a concern and consequently, a violation is warranted requiring licensee response.

e. While performing modification work on the containment building water level instruments on June 24, 1986, technicians discovered the power supply to the two containment floor water level indicators de-energized. The licensee made a four-hour non-emergency report to the NRC and started an investigation. It was found that the last time a surveillance was performed on these instruments was January 9, 1986 during the last refueling outage. A review of the Procedure RI-68, the instrument strip charts since that date, discussion with the technicians who performed the surveillance, and review of the power switch design led to the following: The switch is a three-way toggle ON-OFF-REF which spring returns from the reference position to OFF. The last step of the procedure directs a full scale check which requires placing the switch in the "REF" position, and does not direct returning the switch to "ON." There were no subsequent checks of operability during the startup and no one noticed the recorder reading below zero as abnormal. It was concluded, although not conclusively, that procedural inadequacy and technician error were responsible for the switches being left in the "OFF" position. The potential for tampering was ruled out by review of the recorder charts where it was determined that the instrument indication dropped below zero after it was calibrated on January 9, 1986. The licensee has proposed technical specifications for the instruments, which will require operability when the plant is greater than 210°F; however, the amendment has not yet been approved. Corrective action to prevent recurrence will include training, of cognizant personnel procedure changes and may also include a modification to the toggle switch to eliminate the "OFF" position. A change to the proposed technical specification surveillance will be submitted.

The safety significance of this occurrence was found to be minimal. Operating procedures do not rely on containment floor level for action initiation and most operators consider the information nice-to-know, but not needed for other than long term post-accident recovery. No citation will be issued since the error was discovered by the licensee; reported as required; corrected with plans for preventing recurrence; was not preventable by corrective action for a previous violation, and was not a violation with potentially serious consequences. The licensee has committed to issue a voluntary LER which will be utilized for followup on the corrective actions.

f. While in cold shutdown for maintenance on July 14, 1986, the licensee identified a problem with the weight used in the seismic analysis for the High Pressure Safety Injection (HPSI) pump discharge valve MO-3007. A rebuilt Limitorque motor operator was procured for replacement and was weighed to assure correct weight for seismic analysis purposes. The weight was found to be 260 pounds, while the vendor drawing (NASH) listed it as 168 pounds. Further confusion was provided by Limitorque who stated that their valve operator (SMB-00) weighs 190 pounds. Preliminary detailed seismic analysis completed on July 16, 1986, showed the piping over stressed by about a factor of three. The licensee declared the HPSI loop (1A) inoperable at 5:05 p.m. on July 16, 1986, after the determination that the system apparently was previously inoperable with the old operator installed. The licensee appropriately notified the NRC Operations Center at 5:26 p.m. on the same date. Additionally, the existing condition with the operator removed and the valve disk pinned open was not seismically analyzed. This condition existed during the recent operating period. The line in question is considered small bore (less than two inch) and was exempt from the IEB 79-14 detailed seismic reviews. The licensee has been in touch with NRR and plans to make a docket submittal relating to the broad application of a new response spectra for seismic events previously utilized in the Systematic Evaluation Program. The use of the new response spectra will resolve the HPSI line concerns and other similar piping configurations. Generic implications of the inaccurate weight and resolution of the specific seismic concerns will be tracked as an open item (255/86018-02 (DRP)).

g. While in cold shutdown on July 18, 1986, the main transformer protective trips isolated the transformer and the deluge system activated. No actual fire or injury occurred. The deluge system was isolated and no external indications of damage were evident. The transformer had been energized but not loaded. Previous oil and gas sampling indicated that the insulation had degraded. Visual inspection revealed severe internal damage evidently caused by a short. The licensee currently plans to replace the transformer with one from Midland Unit 2 which has slightly larger capacity (50 MW). The main problem facing the utility is shipping of the 450 ton replacement transformer since rail service is questionable. Currently the licensee does not believe this issue will impact their planned September startup.

Two violations were identified.

4. Maintenance

The inspector reviewed and/or observed the following selected work activities and verified whether appropriate procedures were in effect controlling removal from and return to service, hold points, verification testing, fire prevention/protection, and cleanliness:

Turbine Protection - Turbine Trip Relay 305-L Replacement (TGS 24605655)

Multiple Power Supply PS-0737A, Overvoltage Setpoint Adjustment for Auxiliary Feedwater System (PWS 24605629)

Instrument Air Dryer Replacement (CAS 24604657)

"C" Service Water Pump Repair (SWS 24605928)

Electrical Lighting Unit Repair (EPS 24606030, 31, and 32)

No violations or deviations were identified.

5. Surveillance

The inspectors reviewed surveillance activities to ascertain compliance with scheduling requirements and to verify compliance with requirements relating to procedures, removal from and return to service, personnel qualifications, and documentation. The following test activities were inspected:

a. MI-2 Reactor Protection Trip Units

b. D/WO-1 Daily Control Room Surveillance

c. MO-18 Inservice Test Procedure: Component Cooling Water Pumps

d. RO-32-41 Local Leak Rate Test for Penetration MZ-41 (Review Only)

During the review of the RO-32-41 conducted in May 1986, the inspector noted where the operators had failed to initial the verification blank for the As-Left Valve Position as required in Step 5.16. In this case, the valves without As-Left verification had not been repositioned during the test and were verified in the As-Found Valve Position. An additional sample of Local Leak Rate Procedures were reviewed and no similar discrepancies were noted. A local leak rate procedure revision is planned by the licensee to clarify that verification in this situation is not required. The procedure following discrepancy was discussed at the exit meeting.

No violations or deviations were identified.

6. Licensee Event Reports

Through direct observations, discussions with licensee personnel, and review of records, the inspector examined the following reportable events to determine whether: reportability requirements were met; immediate corrective action was accomplished as appropriate; and corrective action to prevent recurrence has been accomplished per technical specification.

(Closed) LER 255/86019: An electrical repairman initiated a spurious emergency diesel generator (DG) actuation while replacing a non-Q relay in the turbine protection circuitry (Reference Paragraph 3c). The repairman incorrectly reasoned that a jumper, that was planned for, was no longer needed since the condition of the turbine had changed from latched to unlatched. The importance of thorough system evaluation prior to initiating maintenance was stressed to the repairman. The licensee is evaluating the feasibility of a modification to provide effective isolation of the diesel start circuitry from the turbine protection circuitry during plant shutdown. The LER will be updated when this evaluation is completed.

(Open) LER 255/86020: An inadvertent diesel generator (DG) actuation occurred during flushing of the turbine oil system (Reference Paragraph 3.d). The root cause of the actuation was a personnel error by the system engineer who failed to anticipate that the flushing operation would result in a system pressure that was high enough to reset the pressure switches which led to the DGs starting. The corrective actions listed in the LER do not fully the root cause. This LER will remain open pending receipt of an updated LER.

Review of LERs 86020 and 86019 identified a concern over the control of maintenance activities, specifically in the case of a non-Q work activity affecting Q-components; i.e. the diesel generators. Since these maintenance activities were on non-Q components, they did not have to be as strictly controlled as would Q work, in accordance with the licensee's procedures. Performing maintenance without detailed procedures and instructions is authorized for the various work activities listed in Administrative Procedure 5.01, Processing Work Requests/Work Orders, Attachment 4B. During the exit management meeting on July 24, 1986, the licensee committed to additional review of the adequacy of procedural controls for maintenance activities including this list of "skill of the craft" activities. This issue will be tracked as an Unresolved Item (255/86018-04(DRP)).

No violations or deviations were identified.

7. Special Inspections

(Closed) Temporary Instruction 2515/75: Inspection of Limitorque motor valve operator wiring. As a result of the Commonwealth Edison (Zion Station) identification of non-environmentally qualified wire in Limitorque valve motor operators, Palisades conducted inspections of their Limitorque operators. As detailed in Licensee Event Report 255/86003, all 13 pre-1970 (procured) motor operators were found to contain white, braid covered, silicone insulated SFF-2 multistrand wire. Since no documentation of qualification existed for this wire, it was replaced during the December 1985 through February 1986 Equipment Qualification/Refueling Outage with Rockbestos Firewall III SIS wire. Of the 16 remaining valve operators on the qualification list, 14 were inspected and found to only contain qualified wire. The remaining operators were not inspected due to the similarity of type and the method of procurement to the other valves inspected. The inspector reviewed the inspection lists for all valves

inspected, the work orders issued for and documentation of wire replacement, and the certification material for the newly installed wire. The completed Specification Change package (SC 86-008) was reviewed and contained supporting documentation and color photographs of the terminal blocks and wiring in sufficient detail to perform independent review of the licensee's inspections.

Since the replacement of the wiring was conducted after the November 30, 1985 shutdown to complete other equipment qualification commitments, no violations of 10 CFR 50.49 qualification requirements existed. The licensee's evaluation of the installed wire concluded that it is very likely that the vendor-supplied wiring would have withstood the temperature and radiation effects of the Palisades design basis accident. This issue is, therefore, considered closed.

(Closed) Temporary Instruction 2515/77: A survey of licensee actions taken in response to selected safety issues was conducted. These issues were highlighted by either NRC Bulletins, Circulars, Information Notices, or by The Institute for Nuclear Power Operations (INPO) Significant Operating Event Reports (SOERs). Of the issues selected the following two were reviewed at the Palisades Plant:

- Biofouling of cooling water heat exchangers. During recent refueling outage inspections of the intake structure, the licensee has not detected any Asiatic clam growth. It was found that although some instrumentation exists which could provide indication of degrading safety-related (service water) heat exchanger performance, the information was not being trended. Instrument readings of safety-related equipment cooled by service water were not being recorded and reviewed against design parameters on a routine basis. Appropriate procedures and training addressed the chlorination system only and did not outline operator actions for degraded heat exchanger performance. Periodic inspections are made of the Component Cooling Water heat exchanger and annually a pressure drop test is performed on the Fire Water System. Since Asiatic clams have not been identified to date at the Palisades Plant, none of the recommended measures had been implemented at the time of the inspection.

- Procedures for natural circulation cooldown were reviewed and the following observations made with respect to the recommendations of the IE Circular and the SOER: Off Normal Procedure 21 "Natural Circulation," contains the required steps addressing the recovery from reactor coolant system voids but does not provide for determination of coolant system inventory during periods when pressurizer level is inaccurate. The procedure directs operation in manual if automatic level control is unreliable due to pressurizer level being anomalous. In accordance with the Combustion Engineering Guidance Report CEN-145, the licensee's procedure directs a rapid cooldown (75 to 85 degrees/hour), then a hold before depressurizing to go on shutdown cooling.

8. Review of Allegation

In mid-January 1986, NRC Region III received an allegation that some licensee personnel undergoing urine analysis for alleged drug abuse were tested without sufficient controls over the personnel or the urine samples.

Subsequently, a telephone interview was conducted with the Director of Human Resources (DHS) at the Palisades Nuclear Plant. The DHS was present during the urine testing of the personnel mentioned in the allegation. The DHS stated that the personnel were observed while urine samples were obtained, and the individuals initialed their specimen sample containers. The urine specimen containers were received by the DHS from the nurse at the clinic and the DHS delivered the containers to the laboratory that conducted the analysis. The delivery and testing of the containers was completed on the same day.

Subsequent to receipt of the allegation, the licensee developed a Fitness for Duty program which was implemented on February 12, 1986. The testing portion for alcohol and controlled substance abuse became effective on March 15, 1986. The procedure for Fitness for Duty Policy (attachment to the policy) describes adequate controls for substance abuse testing.

The inspector determined that adequate controls, as described in the Fitness for Duty Procedure, currently exist for substance abuse testing. Interview results concluded that sufficient controls existed at the time the licensee employees were initially tested.

9. Unresolved Items

Unresolved items are matters about which information is required in order to ascertain whether they are acceptable items, violations or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 6.

10. Open Items

Open Items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. An open item disclosed during the inspection is discussed in Paragraph 3.f.

11. Management Interview

A management interview (attended as indicated in Paragraph 1) was conducted on July 24, 1986, following the inspection. The scope and findings of the inspection were discussed. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.