U.S. NUCLEAR REGULATORY COMMISSION OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-255/80-24

Docket No. 50-255

License No. DPR-20

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

Facility Name: Palisades Nuclear Power Plant

Inspection At: Covert, MI

Inspection Conducted: December 1-5, 8-12 and 14-19, 1980 and

January 5-31, 1981

Inspectors: D. C. Boyd

Approved By: D. C. Boyd.

Reactor Projects Section 1A

Inspection Summary

Inspection during December, 1980 and January, 1981 (Report No. 50-255/80-24) Areas Inspected: Routine resident inspection program activities including operations; surveiliance; maintenance; reportable events; IE Circulars; plant trips; and followup on previously identified items; plus special augmented resident inspection program including operations; maintenance; surveillance; significant event followup; and implementation of Immediate Action Letter provisions. The inspection involved a total of 549 inspector-hours onsite by five NRC inspectors including 258 inspector-hours onsite during off-shifts. Results: Of the nine areas inspected, no items of noncompliance were identified in six areas. One item of noncompliance was identified in each of the remaining three areas (Both station batteries inoperable - Paragraph 4; Surveillance testing procedures not implemented - Paragraph 6; and Operations and administrative procedures not implemented - Paragraph 2).

DETAILS

1. Persons Contacted

R. W. Montross, General Manager

*J. S. Rang, Operation and Maintenance Superintendent

*H. J. Palmer, Technical Superintendent

W. M. Hodge, Property Protection Superintendent

*G. H. R. Petitjean, Technical Engineer

B. L. Schaner, Operations Supervisor

D. W. Langschwager, Shift Supervisor

R. E. Mieras, Shift Supervisor

A. F. Brookhouse, Shift Supervisor

C. E. Smith, Shift Supervisor

D. W. Kaupa, Shift Supervisor

E. I. Thompson, Shift Supervisor

E. Polk, Maintenance Supervisor

D. L. Morse, Maintenance Supervisor

D. P. Spry, Property Protection Advisor

C. H. Gilmor, Maintenance Superintendent

J. E. Breson, Shift Technical Advisor

R. P. Margol, Shift Technical Advisor

W. L. Burmeister, Shift Technical Advisor

P. F. Bruce, General Engineer

K. M. Farr, Nuclear Plant Public Affairs Director

*D. K. Powers, Shift Technical Advisor

Other members of the operations, maintenance and technical staffs were also contacted briefly.

*Denotes those present at management interview February 5, 1981.

2. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the months of December 1980 and January 1980. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components.

Subsequent to the return of charging pump P-55C to service on January 14, 1981, the inspector was unable immediately to verify proper restoration to the locked-open position for the pump suction and discharge valves. Documentation of the required dual verification was not provided on the switching order, on the Equipment Outage Request, nor in the shift logs. Documentation at least on the switching order is a requirement of the licensee's Administrative Procedures, Section 4.0, Appendix A. Adherence to these procedures is a requirement of Technical Specification 6.8.1.a. While it was later established that dual verification had been performed, the failure to properly record this action constitutes an example of an item of noncompliance with the referenced Technical Specification.

Tours of the auxiliary and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the month of January 1981, the inspector walked down the accessible portions of the diesel generator, boric acid, charging pump, remote shutdown panel (C-33), and iodine removal to verify operability using licensee checklists. Minor discrepancies between the "as found" conditions and the checklists were brought to the attention of the shift supervisor for appropriate action. The inspector noted continuing improvements in general cleanliness and accessibility throughout the auxiliary building, to a condition now considered good.

During a control room tour on December 11, 1980, at approximately 1000 hours (EST) an inspector was observing a control room operator place the turbine generator in operation per System Operating Procedure SOP-8, Par graph 6.1.2. The turbine was already spinning when the inspector entered the room and noticed that the condenser vacuum was then and had been less than 25" of Hg, whereas step 2 of Paragraph 6.1.2 requires the vacuum to be greater than 25" Hg prior to spinning the turbine. The inspector questioned various staff about this matter and was advised the vacuum could be expected to increase with turbine speed and that vacuum above 23" Hg (but below 25") was not considered detrimental to the machine. Informal information was received to the effect previous startups on the turbine had also been made with condenser vacuum below 25" Hg. This failure to adhere to a plant operating procedure or, via proper mechanisms provided, to change the procedure as deemed necessary, is of concern to the inspector. Adherence to this procedure is a requirement of Technical Specification 6.8.1.a. Failure to implement procedure SOP-8 constitutes an example of an item of noncompliance with the referenced Technical Specification.

On December 19, 1980, an inspector observed that out-of-date temporary changes remained, and the latest revision was not incorporated, in the controlled copy of the standard operating procedures located at the make up demineralizer desk. This was brought to the attention of the operations supervisor and on December 19, 1980, he committed to the inspector to have a system in effect by February 1, 1981, to assure current changes of procedures are incorporated into controlled copies used by the operations staff.

On January 15, 1981, an inspector observed water dripping from the control room ceiling onto the control panels and an operator's desk. The unit was in hot shutdown preparing for startup. The operators obtained and secured a large plastic sheet to the ceiling, so as to catch and direct the leakage to a mop bucket. During the approximate 20 minutes required to secure the plastic sheeting, operator attention

was diverted and their vision often obscured such that they were unable to continuously monitor the control panels. This could be considered a necessary exigency on the part of the operators, but control room ceiling leakage is a problem of long standing (see IE Inspection Report No. 50-255/77-14 Paragraph 3), which has not been properly resolved despite two roof repair efforts since 1977. This problem may adversely affect safe facility operations as follows:

a. Providing a radioactivity leak path into the control room in an accident.

- b. Creating shorts in the lighting system or controls which pose a fire hazard.
- c. Creating shorts or corrosion in the controls which affect indication and/or cause loss of control action or undesirable control action.
- d. Diverting operator attention.
- e. Causing undesirable control action if the plastic falls on or is dragged across control panels.

This situation has, in addition, an apparent adverse effect on control operator morale. This was discussed with plant management and at the exit interview.

One noncompliance and no deviations were identified in this area.

3. Review of Plant Operations

During this inspection period the inspector reviewed the following licensee activities for the second half of 1980.

a. Procurement

The inspector reviewed procurement and storage activities to ascertain whether the purchase of components, materials and supplies used for safety related functions, is in conformance with the licensee's approved QA program and implementing procedures; nonconforming items are segregated and marked accordingly; applicable preventive maintenance is performed; housekeeping and environmental requirements are met; and, limited shelf-life items are cont.olled.

b. Review and Audits

The inspector verified that provisions of Technical Specifications dealing with onsite review committee membership, review process, frequency, and qualifications were met. The inspector verified that decisions made were reflected in the meeting minutes and that corrective actions proposed were taken.

The inspector reviewed audits conducted by the licensee's offsite audit team and verified conformance with Technical Specifications and QA procedures.

c. Environmental Protection

The inspector verified the installation and operability of six sampling stations and associated equipment and reviewed selected records for completeness and accuracy.

d. Emergency Preparedness

The inspector observed emergency drills on December 2 and 9, 1980, and verified that the licensee has a program for correcting identified discrepancies and that equipment disrupted was returned to its proper location after the drill.

Observations for the December 9, 1980 drill included control room activities, personnel assembly and accountability, and a mock medical emergency. Licensee response was considered timely, well organized, and well controlled. Minor communication problems developed which were quickly accommodated by alternate means. A critique was held shortly after the drill which was attended by an inspector.

Plant fire drills were observed on two occasions during this inspection. Assembly, instruction and response were good in both cases. Following a small motor-bearing fire on the "C" component cooling water pump on January 24, 1981, the inspector noted the used extinquishers were replaced with spares which had not been checked recently (in-service equipment is checked monthly) for proper condition. The licensee replaced the units with properly checked equipment and instituted monthly checks for units in storage as spares.

e. Licersee Action Concerning Identified Problems

The inspector reviewed corrective actions taken by the licensee pertaining to recurring failures and resolution of identified discrepencies involving safety-related components. The controlling Administrative Procedures and the Deviation Report (DR) record were used as the basis for this review.

Approximately 30 corrective action packages were examined to verify proper assignment, development, approval, review and implementation in accordance with regulatory and administrative requirements. Deviation Report (DR) No. D-PAL-79-160 was included in this review since it describes an event which occurred on September 25, 1979, which was similar to the event described in Paragraph 4 below. The 1979 event occurred while the reactor was in the cold shutdown mode and for that reason was not reportable nor an item of noncompliance. The safety

significance of the 1979 event, with the reactor in the cold shutdown mode, was deemed to be minimal. The licensee conducted an extensive investigation of the event which included a review of the matter with all personnel who could possibly have been involved (station maintenance, electrical, and operations, and contractor electrical personnel). This investigation did not identify how the battery output breakers were mispositioned. The licensee concluded that the event was due to unauthorized tampering with station electrical equipment by persons unknown. The initial corrective actions included locking the breakers in the closed position, but this was later reversed by the Safety Review Board. The other major corrective action was to increase the administrative control over activities conducted in vital areas of the plant.

No items of noncompliance or deviations were identified in this area.

4. Significant Event Followup

On January 6, 1981, the licensee notified the NRC of his discovery that both station batteries were disconnected from the 125 volt DC control center numbers 1 and 2 for approximately one hour on or about 1300 hours (EST) that date. The batteries were disconnected when two electricians made a switching error while performing monthly surveillance test ME-12, which establishes operability of the two station batteries. The electricians were performing step 5.6 which requires disconnecting charger #1 from bus #1 and connecting charger #3. The step also requires disconnecting charger #2 from bus #2 and connecting charger #4. Instead of performing this step as written the electricians disconnected battery #1 from bus #1 and connected charger #3. For bus #2, the electricians disconnected battery #2 and connected charger #4. This alignment resulted in two chargers connected to each bus and no batteries connected to either bus. Upon discovery, the proper combination of a battery and a charger was connected to each bus. Upon notification, the resident inspector walked through ME-12 and verified that the proper alignment of batteries and chargers was established. The requirements that establish battery operability limitations are contained in Technical Specifications 3.7.1 ard 3.7.2; that is, both batteries must be operable for heatup above 325° F and for operation thereafter except, with the reactor critical, one battery may be inoperable for 24 hours provided both chargers are connected to the affected bus. Disconnection of both batteries from their respective buses renders both batteries inoperable and is a violation of the limiting condition for operation established in the referenced Technical Specifications.

Subsequent to the event, the licensee analyzed potential consequences of having the batteries disconnected under main generator trip, reactor trip and loss of offsite power (blackout) conditions. The preliminary determination indicated the emergency diesel auto-start features would function but in the case of blackout, operator manual action would have been required to close the diesel generator breakers to their

respective buses and to initiate the normal shutdown sequencer, which would then restore power to appropriate equipment. Without prompt and proper manual operator action, a blackout with the batteries disconnected would apparently put the plant in natural circulation with temperature stabilized by boil-off through the steam generator code safety valves. Analysis beyond this point is dependent on further assumptions concerning longer-term operator actions and is, therefore, highly speculative. However, the batteries were inoperable in that under conditions of an anticipated operational transient (blackout) the battery function of maintaining uninterrupted 125 volt d.c. and vital 120 volt a.c. (via the inverters) power would have been lost.

One noncompliance and no deviations were identified in this inspection area.

5. Immediate Action Letter

On January 9, 1981, the Nuclear Regulatory Commission issued an Immediate Action Letter (IAL) setting forth short-term actions to be taken by the licensee considering the station battery disconnection described in Paragraph 4 above. Concurrently, a program of augmented inspection coverage was initiated to provide some inspection coverage on each of the three daily shifts and full coverage on the daytime shift, seven days per week. The augmented program of inspection, with the exception of followup on the IAL described below, was used to provide significantly greater direct inspection coverage on facility operations, testing and maintenance until such time as longer-term corrective actions may be developed and implemented. Results relating to expansion of routine inspection activities are documented elsewhere in this report.

The IAL of January 9, 1981, stipulates five short-term actions to be taken by the licensee. These actions were verified as follows:

- a. Daily audit of plant operations by a corporate management representative: Discussions were held concerning scheduling and audit areas, and the auditors were routinely encountered by the NRC inspectors.
- b. Liview of procedures against stipulated criteria: The required review committee makeup was verified and the review checklist examined and found to include the stipulated criteria. The schedule established provided for review completion before the next use of a procedure.
- c. Reinstruction of personnel: Covered by licensee memorandum to all staff dated January 13, 1981.
- d. Dual verification by designated personnel when safety-related systems are manipulated: Personnel designated by memos of January 9 and 15, 1981. Licensee dual verification was routinely observed by the inspectors as part of their normal activities in the plant.

e. Review of battery circuitry for a determination on monitoring/ alarming off-normal lineups: This activity was underway but incomplete at the conclusion of this inspection.

No items of noncompliance or deviations were identified.

6. Monthly Surveillance Observation

The inspector observed technical specifications required surveillance testing on the items identified below and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that limiting conditions for operation were met, that removal and restoration of the affected components were accomplished, that test results conformed with technical specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspector witnessed portions of the following test activities:

- a. MI-2 "Reactor Protective Trip Units."
- b. MO-8 "Primary and Secondary Computers PDIL Check and Control rod Out of Sequence Alarm."
- c. MO-21 "Inservice Pump Test-Concentrated Boric Acid" (P-56B only).
- d. MO-20 "Inservice Test Procedure-Charging Pumps."
- e. MO-22 "Inservice Test Procedure: High Pressure Safety Injection Pumps."
- f. SO-6 "Fire System Sprinkler Alarm Test."
- g. Return to service of MOV-3066.

The inspector reviewed documentation for approximately 80% of the surveillance tests performed for October for approximately 60% of those performed in November, 1980, and for approximately 40% of those performed in December, 1980, resulting in the findings described below.

Procedure ME-12 "Monthly Battery Checks," which was being used when the station batteries were disconnected, was carefully examined and associated records reviewed. Two problems were identified. First, as discussed in Paragraph 4 above, an erroneous lineup developed for a period of about one hour on January 6, 1981. This lineup included connection of two chargers to each 125 volt d.c. bus. Procedure ME-12 specifically provides (step 5.6) that only one charger is to be connected to a bus at one time. The lineup of January 6, 1981, thus violated the requirements of procedure ME-12. Second, a review of records against other procedure requirements showed that a monthly rotation of cells for which temperatures are read, established by

step 5.4, had not always been properly performed. Instead of reading different cell temperatures each month, the same cells were read for four consecutive months (May through August 1980) on Battery No. 1, and cells were not rotated on Battery No. 2 in May and August 1980.

A review of test information associated with procedure MC-17, "Emergency Diesel and Fuel Oil Sampling," also showed a problem with recordkeeping. This procedure requires at step 5.8 that the detailed analysis sheet for analyses performed at the licensee's offsite Trail Street Lab for the previous month's sample be attached to each monthly record package. This data was not available with the October 1980 package nor the April 1980 package.

Implementation of procedures for surveillance and testing activities of safety-related equipment is a requirement of Technical Specification 6.8.1.c. The three examples noted above wherein the licensee failed to implement such testing procedures are deemed to constitute an item of noncompliance with the referenced Technical Specification.

One noncompliance and no deviations were identified in this area.

7. Monthly Maintenance Observation

Station maintenance activities of safety related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

The following maintenance activities were observed/reviewed:

- a. Repair of RIA-1113 (vent monitor).
- b. Seal packing for P-7A (service water pump).
- c. Replacement of pump P-52C (component cooling water).
- d. Preventive maintenance on P-55C (charging pump).

e. Repair of CV-1804. f. Repair of MOV-3066 (HPSI injection valve). Testing of snubber No. 5. 2. Following completion of maintenance on the components identified above, the inspector verified that these systems had been returned to service properly. No items of noncompliance or deviations were identified. 8. Licensee Event Reports Followu Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications. LER 80-14 and LER 80-15 - "Inoperable Snubbers." Two snubbers, without visual oil level, were identified during routine surveillance. One was replaced with an operable unit from storage and the other was repaired, retested and returned to service. Review of these items identified two apparent items of noncompliance pertaining to reporting of inoperable snubbers and operation with inoperable snubbers. (See Inspection report 50-255/80-15, Item 1 and 2.) These items are closed pending final review of identified noncompliance. LER 80-19 - "Safety Injection and Refuel Water Tank Level." b. A licensee review of the Technical Specification basis for Safety Injection and Refueling Water (SIRW) tank level revealed that the SIRW tank should contain sufficient borated water to inject 250,000 gallons of borated water during safety injection. Technical Specifications require a minimum of 250,000 gallons of borated water be stored in the tank. Since the automatic recirculation actuation signal following safety injection would leave approximately 27,000 gallons of borated water remaining in the SIRW tank, the plant is administratively controlling the SIRW tank volume to assure a minimum injection of 250,000 gallons of borated water. This item is closed. C. LER 80-22 - "Inoperable Nuclear Instrument." The resident inspector discovered that a wide range nuclear power instrument (NI-003) was considered operable for a plant criticality on July 10, 1980, before the administrative control mechanism (EOR) - 11 -

used to control restoration of NI-003 was reviewed by the appropriate people. Upon discovery, the EOR was reviewed and NI-003 declared operable. The master startup checklist has been revised to require verification that all required EOR are cleared prior to startup. Also, the control room status board is being used to identify EOR(s) required for startup. This item is closed. See also Paragraph 11, below.

d. LER 80-28 - "Safety Injection Tank "A" Low Level."

During power operation, the analog channel pre-limit low level alarm failed to warn operators of decreasing level in the "A" Safety Injection Tank prior to reaching the Technical Specification low level limit switch. Inaccuracy of the analog channel is attributed to slight loss of liquid in the reference leg. The reason for the loss is us bown. It was compensated for electronically until adjustment of reference leg level and instrument recalibration. The operating crew performed the actions required by the Technical Specification for low safety injection tank level. This item is closed.

e. LER 80-30 - "Iodine Removal Tank Outlet Valves Inoperable."

The iodine removal system was declared inoperable when the fuses in the power supply to the iodine removal tank outlet valves were found blown. The fuses were replaced and the system declared operable within the time limits of the Technical Specification. Investigation revealed that a ground caused by moisture in the junction box resulted in the blown fuses. The water was removed from the junction box and the box made water resistant. This item is closed.

f. LER 80-33 - "Misaligned Control Rod."

During biweekly control rod exercising, the operator moved one rod in excess of the required 6 inches and received the 8 inch deviation alarm indicating the control rod was misaligned with the other rods in the group. The plant revised the procedure to require less inward rod movement while still complying with Technical Specification requirements. This item is closed.

g. LER 80-38 - "Low Level in the Concentrated Boric Acid Tanks."

The Resident Inspector identified a concern relating to an operating configuration for the concentrated boric acid system (permitted by Technical Specification) which does not appear to protect against signal-failure (see IE Inspection Report No. 50-255/80-15). While this matter is being resolved the licensee committed to keep 118 inches of corcentrated boric acid in each tank. When the level in one tank was reduced below 118 inches, timely action was taken to return the level. This item is closed.

h. LER 80-46 - "Hydraulic Snubber Failure."

One snubber, without visual oil level, was identified during routine surveillance. The snubber was replaced with an operable unit from storage and returned to service within the time limit of the Technical Specification. This item is closed.

No items of noncompliance or deviations were identified.

9. IE Circular Followup

For the IE Circulars listed below, the inspector verified that the Circular was received by the licensee management, that a review for applicability was performed, and that if the circular were applicable to the facility, appropriate corrective actions were taken or were scheduled to be taken.

79-21 "Prevention of Unplanned Releases of Radioactivity"

79-25 "Shock Arrestor Strut Assembly Interference"

80-08 "BWR Technical Specification Inconsistency - RPS Response Time" - Not issued to Palisades

80-15 "Loss of Reactor Coolant Pump Cooling and Natural Circulation Cooldown"

10. Plant Trips

Following the plant trip on January 15, 1981, caused by failure of the "B" steam generator level controller followed by manual trip due to high "A" steam generator level, the inspector ascertained the status of the reactor and safety systems by observation of control room indicators and discussions with licensee personnel concerning plant parameters, emergency system status and reactor coolant chemistry. The inspector verified the establishment of proper communications and reviewed the corrective actions taken by the licensee.

All systems responded as expected, and the plant was returned to operation early the next day.

Subsequently, licensee trip reports for the trip of January 15, 1981, and for a reactor trip on December 23, 1980, (caused by failure of a power supply for the turbine EHC system leading to intercept valve closure and consequent high primary system pressure) were examined.

No items of noncompliance or deviations were identified.

11. Followup on Previously Identified Items

(Closed) Noncompliance item, IE Inspection Report No. 50-255/80-13: Startup with log range nuclear instrument NI-003 administratively

inoperable. The licensee's actions as stated in his letter dated September 11, 1980, were verified and considered appropriate. (Closed) Noncompliance items, IE Inspection Report No. 50-255/80-12: Incorrect position of containment sump isolation valve CV-3030 discovered on July 27, 1980, and the misoperation of the Safety Injection and Refueling Water Tank isolation valve CV-3031 on August 19, 1980. These items of noncompliance resulted in imposition of a civil penalty of \$16,000, which the licensee paid. Subsequently, NRC representatives conducted a public meeting on December 17, 1980, in the city hall of South Haven, Michigan with Consumers Power Company, public, and news media participation. This meeting was held to explain the safety significance of these occurrences and the actions taken by both the NRC and Consumers Power Company. The licensee actions as stated in his letters dated September 26, 1980 and December 17, 1980, were verified and considered appropriate. (Withdrawn) Noncompliance Item 2a, IE Inspection Report No. 50-255/ 80-15: Prompt notification of two inoperable snubbers. This item has been reviewed and withdrawn as stated in NRC letter dated January 9, 1981. The other items of noncompliance identified in Inspection Report No. 80-15 are being reviewed for referral to NRC Headquarters for resolution. This is being considered at the request of the licensee. Management Interview A management interview, attended as indicated in Paragraph 1, was conducted following the inspection. The following items were reviewed, with licensee response as indicated. a. The inspector summarized the scope of the inspection, identifying areas and items examined as discussed in these details. The apparent noncompliances were identified and reviewed. (Paragraphs 2, 4 and 6) Inspector concerns relating to continuing control room ceiling leakage were stated. (Paragraph 2) d. Inspector concerns relating to control of spare fire extinquishers were stated. (Paragraph 3.d) The licensee stated spares are now being checked monthly with an audit of selected in-service units (to verify their monthly check) also being performed. Inspector concerns relating to incorporation of procedures was e. stated. (Paragraph 2) - 14 -