

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/87014(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 5 through June 1, 1987

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

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

6/11/87  
Date

Inspection Summary

Inspection on May 5 through June 1, 1987 (Report No. 50-255/87014(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspectors of followup of previous inspection findings; operational safety; maintenance; surveillance; engineered safety feature walkdown and reportable events.

Results: Of the areas inspected one violation was identified. A previously unresolved item is being cited as a failure to test eight containment isolation valves per ASME Code, Section XI. One unresolved item was identified concerning the miswiring of two temperature instruments leading to the remote shutdown panel.

## DETAILS

### 1. Persons Contacted

#### Consumers Power Company (CPCo)

- \* D. P. Hoffman, General Manager
- \* J. G. Lewis, Technical Director
- \* R. D. Orosz, Engineering and Maintenance Manager
- \* R. M. Rice, Operations Manger
- D. W. Joos, Administrative and Planning Manager
- \* W. L. Beckman, Radiological Services Manager
- C. S. Kozup, Technical Engineer
- \* D. J. Malone, Licensing Analyst
- \* R. E. McCaleb, Quality Assurance Director
- R. M. Brzezinski, Instrument and Control Superintendent
- K. M. Haas, Reactor Engineering Superintendent
- R. A. Fenech, Operations Superintendent
- S. C. Cote, Property Protection Supervisor
- \* T. A. Buczwinski, Plant Projects Engineer

\* Denotes those present at the Management Interview on June 3, 1987.

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 255/86034-01: While performing drawing reviews an engineer identified that the design of the four containment penetrations related to the post accident Containment Hydrogen Monitoring System (CHMS) did not incorporate independent containment isolation signals to the series isolation valves. A single failure of an isolation signal would result in a monitor (with two containment penetrations) not being isolated. During a design basis loss-of-coolant-accident where an earthquake had ruptured the monitor lines, excessive releases to the atmosphere could result. The NRC has concluded that postulation of these concurrent events is beyond the design basis requirements of the Palisades plant and therefore escalated enforcement action was not warranted. Corrective actions taken included revision of the design and implementation of the design change (FC-732), review of other modifications done by the same architect/engineer (A/E), and completion of the review of the circuitry for containment isolation valves. The root cause appears to be related to both an inadequate understanding of the design requirements for the system by the A/E and inadequate design reviews. The three year implementation time also complicated the modification process and central accountability. In the past, Consumers Power Company (CPC) has reviewed designs by external organizations by audit only. Currently no external design organizations are being utilized; however, revised controls have been implemented to assure that

adequate independent design reviews are conducted in the future. Project Management and Control Procedure 13-4, "Design Control With Outside Lead. Design Organization", was issued May 28, 1987. As discussed in Reports 255/86034(DRP) and 255/87004(DRP), the event was reported under both 10 CFR 50.72 and 10 CFR 50.73. As allowed by the enforcement policy (10 CFR 2, Appendix C) a notice of violation will not be issued for this violation which meets the five specified criteria: The design error was discovered by a licensee initiative to review containment isolation logic, is of low severity (level IV), was reported properly, was corrected with measures taken to prevent recurrence, and was not expected to be prevented by corrective action for a previous violation.

Licensee actions which identified and corrected the error, and those taken to prevent recurrence demonstrated a conscientious and rigorous approach to safety and compliance.

(Closed) Unresolved Item 255/87006-03: The inspector identified that eight solenoid operated containment isolation valves associated with the Containment Hydrogen Monitor System were not tested under the requirements of ASME Code, Section XI, Article IWV-3400 which include stroke timing and position switch verification. The Section XI Engineer was apparently not aware that an Operations Department daily surveillance opens the valves therefore requiring that the valves be capable of "active" closure during an accident. This issue was identified to the licensee in February 1987 but corrective action has not yet been taken to correct the problem. Therefore a violation is set forth in the Appendix (Violation 255/87014-01(DRP)).

(Closed) Open Item 255/87008-03: The licensee has revised Health Physics Procedure 6.51 to specify the preplanned alternate monitoring methods to implement Technical Specification Table 3.24-2, Action 38.

No new violations or deviations were 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 and Secondary Alarm Station were also conducted.

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

- b. On the evening of May 15, 1987, while reducing power to perform turbine valve testing, a pressurizer spray valve stuck in an intermediate position causing pressure to reduce and stabilize at approximately 55 pounds below normal. Actions by both the operators and maintenance personnel were successful in partially reseating the valve which was accessible at power. As a result of the valve failure, on May 16, 1987, the plant was shutdown reaching the hot shutdown mode at 5:18 p.m. This action by the licensee was conservative since it was possible that stroking the valve at power could jeopardize pressure control if it stuck in a farther open position.

While shutdown, the spray valve was found to be binding due to a cocked packing follower and scored stem. The follower was aligned, the stem smoothed out, and the valve stroked satisfactorily. Since the valves do not normally full stroke at power, the licensee plans to stroke the spray valves periodically to prevent recurrence. The licensee also repaired a small steam leak on the "B" Main Feed pump, repacked the "B" Cooling Tower pump, repacked the "A" Charging pump, added oil to the "B" Primary Coolant pump motor, and completed other repairs during the plant shutdown. The plant remained in hot shutdown for a secondary chemistry hold until 5:43 a.m. on May 20, 1987. The reactor startup was witnessed by the inspector and was uneventful. The generator was tied to the grid at 3:06 p.m. on May 20, 1987.

- c. On May 22, 1987, at 12:07 a.m., the reactor and turbine were manually tripped from 35% power as a result of a valving error. While lining up the moisture separator reheaters, an Auxiliary Operator (AO) mistakenly isolated the operating main feed pump turbine from the condenser resulting in the rupture disk rupturing which caused actuation of area fire sprinklers. At this time, the control room operators (COs) had indication of low vacuum on the feed pump and a fire header system demand. An AO called the control room to report the steam leak. The Shift Supervisor (SS) went to evaluate conditions while the COs started reducing power. Upon

arrival at the scene, at approximately three minutes into the event, the SS directed the plant be tripped. The plant response to the trip was normal with all systems functioning as expected.

The valving error was determined to be a result of poor communication between the two AOs performing the valve line up. The operators were disciplined and will be required to review the event and lessons learned with the other AOs. Repairs were made to the rupture disk and the sprinkler heads were replaced. The plant was taken critical at 5:47 p.m. and was paralleled to the grid at 9:29 p.m. on May 22, 1987. Additional review of this event and the licensee's corrective actions will be documented under review of the LER.

- d. While operating at 100% reactor power at 11:39 a.m. on May 28, 1987, the P-55B Coolant Charging pump breaker failed to close. Within an hour, electricians had diagnosed the trip signal as not valid and replaced the breaker with a ready spare.

While evaluating the failed breaker, the electrical repairman noticed that the tripper paddle was misaligned causing a standing trip signal. The hinge pin for the breaker had worked itself out because the retaining cotter pins had not been installed. The breaker, a 480 volt ITE Model K-225, had recently been rebuilt by the vendor, Brown-Boveri, after experiencing other failures due to wear and aging. The licensee inspected other rebuilt breakers to determine if the assembly error was an isolated case.

One other deficiency was found in the Containment Air Cooler Recirculation fan V-2A. The licensee investigation into the cause and source of the problem is continuing. 10 CFR Part 21 reporting is being considered. Additional information concerning these breakers can be found in Palisades LER 255/87004.

- e. On May 28, 1987, while performing QO-23 "Alternate Hot Shutdown Panel Instrument Check" for the first time at power, operators identified that the remote shutdown panel hot and cold temperature indications were reversed for one primary coolant loop. The instruments were declared inoperable at 7:30 p.m., entering a seven day Limiting Condition for Operation. The preliminary investigation found that prior to the addition of the panel, the temperature instrumentation wiring was reversed in two places. The double reversal led to correct control room indication. Since one reversal was upstream of the panel and one downstream, the panel indications were incorrect. The licensee is continuing the investigation to determine the time of miswiring, root cause and corrective actions. Review of this issue will be tracked as an Unresolved Item (255/87014-02(DRP)).
- f. As a result of lessons learned in the outage and during startup activities the licensee has included listings of long range equipment concerns and items receiving priority attention in the

daily status report to the Vice President of Nuclear Operations. This has helped in focusing management attention and resources on equipment problems.

No violations or deviations 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, radiological controls, and cleanliness where applicable:

- a. Repair of P-55A Charging Pump Oil Leaks (CVC-24702341, CVC-24702192).
- b. Miscellaneous Waste Transfer Pump Repair (RWS-24700926, RWS-24606546).
- c. Repair of P-55B Charging Pump 480 Volt Breaker (CVC-24702906).

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. MO-8 Primary and Secondary Computers-PDIL Check and Control Rod Out-Of-Sequence Alarm.
- b. MO-38 Auxiliary Feedwater System Inservice Test Procedure - P8C only.
- c. MO-33 Control Room Emergency Ventilation - train B only.
- d. GOP-13 Daily Leak Rate Calculations - Results of the licensee calculations were verified using the NRC leakrate program RCSLK9-VG with good results.
- e. DWO-1 Daily Control Room Surveillance.
- f. SHO-1 Operators Shift Surveillance.

No violations or deviations were identified.

#### 6. Licensee Event Reports

Through direct observations, discussions with licensee personnel, and review of records, the inspectors 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 the Technical Specifications.

(Closed) Special Report (LER) 255/87010: Technical Specification 3.22.1 requires that a Special Report be submitted when certain Fire Protection instruments are inoperable. This Special Report documents several inoperable water flow switch fire detectors whose failure was attributed to erosion of the flappers. These were the first identified failures of these detectors. The four failed detectors will be replaced and since the failure is related to the end of the normal service life, other similar detectors are planned to be replaced. At the time of this writing, one detector (WFS-2B1) has not been replaced and a fire patrol watch is being maintained until replacement parts are available. LER 255/87013 relates to the same event.

(Open) LER 255/87013: Technical Specification 3.22.1, which requires a fire watch patrol be established for an inoperable water flow switch fire detector, was violated from March 22 until April 20, 1987. A quarterly operations checklist had been performed which determined that the fire sprinkler header water flow switch WFS-2G2 was inoperable. An hourly fire watch patrol was not established as the compensatory measure in the 1-2 Diesel Generator Room. The Auxiliary Operator performing the test on March 22, 1987, noted the deficiency and wrote a work request. The Shift Supervisor (SS) reviewed the checklist but did not identify the Technical Specification (TS) action requirement. While releasing the detector for repair on April 20, the SS found that no hourly fire watch patrol had been established. The licensee identified the root cause of the event as unfamiliarity with the TS and a poor procedure which does not reference the TS nor specify the required action if components are found inoperable.

The purpose of the water flow switch fire detectors is to provide early detection and location of fires which will reduce the potential damage to safety-related equipment. Although the Diesel Generator Room annunciator alarm was not compensated for by a fire watch, the Suppression System remained operable and the sprinkler actuation would result in an annunciator alarm in the control room when the fire suppression system pump started. Additional review of licensee corrective actions is required before a determination is made whether the violation will be cited or not. Therefore, this report remains open.

No violations or deviations were identified.

#### 7. Engineered Safety Feature Walkdown

The inspector performed a partial walkdown of the "A" and "B" Auxiliary Feedwater pump subsystems and verified: That each accessible valve in the flowpath was in its required position and operable, that power was aligned for components that activate on an initiation signal, that essential instrumentation was operable, and that no conditions existed which would adversely affect system operation.

No violations or deviations were identified.

8. Unresolved Items

Unresolved items are matters about which more 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 3.e.

9. Management Interview

A management interview was conducted on June 3, 1987, at the end of the inspection. The scope and findings of the inspection were discussed. The inspector also discussed the likely information content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary.