

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/84-27(DRP)

Docket No. 50-255

License No. DPR-20

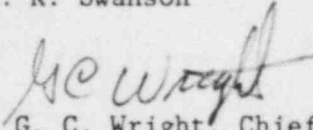
Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site, Covert, MI

Inspection Conducted: November 26, 1984 through January 4, 1985

Inspector: E. R. Swanson

Approved By:  G. C. Wright, Chief
Reactor Projects Section 2A

1/30/85
Date

Inspection Summary

Inspection on November 26, 1984 through January 4, 1985
(Report No. 50-255/84-27(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspector of operational safety; maintenance; surveillance; LERs; and independent inspection areas. The inspection involved a total of 118 inspector-hours onsite by one NRC inspector including 26 inspector-hours onsite during off-shifts.

Results: Of the five areas inspected no items of noncompliance or deviations were identified in four areas. One item of noncompliance was identified in the remaining area (Primary Coolant Low Flow trip setpoint nonconservative - Paragraph 5.e.).

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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
- C. E. Axtell, Health Physics Superintendent
- *R. M. Rice, Plant Operations Manager
- C. S. Kozup, Plant Operations Superintendent
- H. M. Esch, Plant Administrative Manager
- W. M. Hodge, Property Protection Supervisor
- *D. W. Rogers, Technical Engineer
- *D. G. Malone, Senior Engineer
- *D. L. Fitzgibbon, Licensing Engineer
- *R. E. McCaleb, Quality Assurance Director

*Denotes those present at the Management Interview.

Numerous other members of the plant Operations/Maintenance, Technical, and Chemistry Health Physics staffs, and several members of the contract Security forces, were also contacted briefly.

2. Operational Safety

The inspector 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 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, central and secondary alarm stations 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.

No items of noncompliance or deviations were identified.

3. Maintenance

The inspector reviewed and/or observed selected work activities and verified appropriate procedures were in effect controlling removal from and return to service of selected systems and/or components, hold points, verification testing, fire prevention/protection, and cleanliness.

The following was observed/reviewed:

- a. Overhaul of a control rod drive seal package
- b. System maintenance on various heat trace circuits
- c. Calibration of Power Range Nuclear Instruments (NI-04, MO-#84-NMS-007)
- d. Station Battery Charger #3 cleaning and replacement of C-5 capacitors (MO#84-SPS-995 and 988)
- e. Diesel Generator 1-2 Breaker control switch replacement

No items of noncompliance or deviations were identified.

4. Surveillance

The inspector reviewed surveillance activities to ascertain compliance with scheduling requirements and to verify compliance with requirements relating to procedures, removal from and return to service of selected systems and/or components, personnel qualifications, and documentation. The following test activities were inspected:

- a. "Primary Coolant System Sampling" Procedure F3.1
- b. "Emergency Diesel Generator Monthly Surveillance" Test MO-7A-2.
- c. "Reactor Coolant Flow Channels Calibration" Test RI-1 (Review only)
- d. "Reactor Protective Trip Units" Test MI-1 and MI-2
- e. "Safety Injection Tank Level Switch Operational Check" Test RI-15
- f. "Inservice Test Procedure - Low Pressure Safety Injection Pumps" Test MO-23 (Review only)
- g. Weekly Control Rod exercising - Test D/WO-1
- h. "Cable Tray Temperature Monitoring" - Test T-175
- i. "Reactor Internals Noise Monitoring" Test DWT-7

j. "SIRW Tank Support Surveillance" T-164

No items of noncompliance or deviations were identified.

5. Licensee Event Reports

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

- a. (Closed) LER 79-033: Inoperable snubber due to twisted mounting. During walkdown performed for IEB 79-02, the I-beam which Snubber No. 33 was attached to was found twisted 20 degrees. Also, the snubber was mounted such that it would have been a rigid support when compressed. The defective I-beam was replaced and the snubber properly mounted. Cause was attributed to pipe movement at some unknown prior time. Corrective maintenance and procurement documentation were reviewed.
- b. (Closed) LER 84-24: Primary Coolant System (PCS) unidentified leakage greater than limit. On November 15, 1984 a PCS leakrate was calculated at 4.65 gallons per minute. The Technical Specification limit is 1.0 gallon per minute. The source was determined to be a Control Rod Drive Seal and required cooldown from Hot Shutdown to Cold Shutdown and replacement of the CRDM seal and drive packages. During the cooldown leakage was estimated to be as high as 20 gallons per minute. The seal failure was attributed to entry of foreign material into the seal. The foreign material is believed to be wear products from the primary coolant pump impeller failure. Another possibility is that an interference problem was created by barely acceptable seal face stack-up tolerances which caused accelerated wear (six years). In either case the cause was viewed as seal specific, and no further corrective actions are planned.
- c. (Closed) LER 84-25: Primary Coolant System unidentified leakage greater than limit. On November 19, 1984 PCS leakage was calculated at 4.22 gallons per minute unidentified. A relief valve which provides over pressure protection for the primary coolant pump seal leak off was found leaking. The valve was reseated by manual lifting. The valve stem was found bent and apparently caused the binding. Due to the short discovery and correction time no change in mode from hot shutdown was required. No cause for the bent stem was identified.

NOTE: A noncompliance was issued in Inspection Report No. 50-255/84-25(DRP) for the above b. and c. LERs for late reporting of the events and ineffective corrective actions to previous violations.

- d. (Closed) LER 83-79: Trip settings required by Technical Specification 2.3 for low Primary Coolant flow for two pump operation were found set less than the limit. The requirement to perform the low flow trip settings for two pump operation were evidently deleted due to a change in fuel vendor analysis which prohibits two pump operation. Corrective action included revising the procedure to make the setting so conservative that at full flow selecting the two pump operation mode causes a trip. The administrative procedure governing surveillance procedure revision and review was also changed to require a parallel review of the test procedure and the test basis document. The reason for the latter change is that the basis document referred to the requirement for checking the trip setpoints for four, three, and two pump operation, but the two pump requirement was revised out of the surveillance procedure.
- e. (Closed) LER 84-23: While in cold shutdown it was determined that the Reactor Protection System (RPS) primary coolant low flow trip setpoints were improperly set. The test which is used to obtain the correct values for the low flow trips was not performed following the 1981 refueling when flow was changed by steam generator tube plugging. In addition, the procedures which calibrate and verify the low flow trip setpoint did not require updating of the setpoints following refueling. As a result, the Technical Specification safety system setpoint limit was exceeded during plant operation from July 24, 1984 to September 8, 1984 and September 14 through 16, 1984. Setpoints in all four channels were less than the 95% setpoint required by Table 2.3.1 of Specification 2.3. The greatest error was 94.37% and was not considered by the licensee to constitute a potential threat to the health and safety of the public. The licensee recorded new flow data by re-performing test T-69 and input new values into the monthly setpoint checking procedure to achieve compliance before critical operation in November. Subsequent investigation revealed that the three pump low flow trip settings were also set nonconservatively. In addition, the licensee determined that the formula used to calculate the two and three pump flow setpoints from data obtained in test T-69 was nonconservative in that it did not take into account backflow through idle pumps. This deficiency has existed since 1974 when the procedure was written. The licensee plans to supplement the event report to document the details of this later discovery. The above violation of Technical Specifications is considered an item of noncompliance, as set forth in the Appendix (255/84-27-01).

The violation is considered significant in that a limiting Safety System setting was incorrectly set and the licensee failed to detect the error despite several subsequent verifications of the settings. Poor administrative controls are considered to be the root cause of this failure, yet actions taken thus far to prevent recurrence have narrowly focused on the event itself (i.e., incorrect setpoint) and have not addressed the more generic cause of the failure. Inadequate bi-annual review of Technical Specification Surveillance Tests (MI-2, T-69) is a common thread between this event and Licensee Event Report 83-79.

The safety significance of this event is not considered high due to the small magnitude of the four pump flow setpoint error (0.63%). This setpoint error would result in the delay of a low flow trip of approximately one tenth of a second of the required value. The licensee's engineering judgment based on a previous reanalysis (of Boron dilution/uncontrolled rod withdrawal) using the XNB correlation and a new flow calculation methodology concluded that additional margin to DNB of 10-22% would be realized. In the licensee's judgment, this additional margin would more than compensate for the setpoint error.

The three pump low flow trip setting, although found to be 2.9% below the Technical Specification limit, was not relied on during any period of critical operation. Two pump flow settings were found to be within the Technical Specification limits.

One item of noncompliance and no deviations were identified in this area.

6. Independent Inspection Activities

- a. The inspector 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.

- b. The inspector observed physical security activities at various access control points, including proper personnel identification and search, and toured security barriers to verify maintenance of integrity. Access control activities for vehicles and packages were occasionally observed. Activities in the Central and Secondary Alarm Stations were observed.
- c. An ongoing review of all licensee corrective action program items at the Event Report level was performed.
- d. An Unusual Event was declared on December 7, 1984 when, during the performance of procedure RI-15 "Safety Injection Tank Level Switch Operational Check", two SI tanks had levels drop below the Technical Specification minimum levels. The C tank was being drained to check the low level switch and the D tank inadvertently drained below the low level switch also. Level in the D tank was restored to above the minimum level in two minutes. This event is attributed to a leaking drain valve, an inaccurate level indication on the D tank which did not show that the level was near the lower limit, and lack of attentiveness on the part of an operator. The D tank drain valve

was known to be leaking from prior draining operations. Level indication for this tank was inoperable prior to unit startup, but was not calibrated because it was not required for Technical Specification compliance. This is an Unresolved Item (255/84-27-02).

- e. An alert was declared under the Emergency Plan on December 26, 1984 when it was discovered during checking of the Saturation Monitor that less than the required 50 degrees F subcooling margin existed for greater than five minutes. From discovery, this condition existed for two periods of time, 9 minutes and 6 minutes in duration. The actual condition may have existed for up to four and a half hours (based on the T-average recorder). Operators borated the primary coolant system to reduce temperature.

Contributors to this event include:

- Operating with an elevated T-average to increase power output
- T-cold and Reactor Regulating Units were switched and, in this case, the regulating unit the operator was using was the lower reading instrument (of two) for control thus actual T-average was higher than anticipated
- The pressure mode was selected on the Subcooling Margin Monitor so the "less than 50 degrees" condition was not displayed
- The alarms associated with the monitor did not reset until 55 degrees subcooling was obtained (this reset band was subsequently narrowed)

A Licensee Event Report will be submitted by the licensee.

No items of noncompliance or deviations were identified.

7. Unresolved Items

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

8. Management Interview

A management interview (attended as indicated in Paragraph 1) was conducted at the conclusion of the inspection. The following were discussed:

- a. The inspector discussed the scope and findings of the inspection as documented in these Details.
- b. The unresolved item in Paragraph 6.d. relating to the two SI Tanks being inoperable was discussed.

- c. The item of noncompliance identified in Paragraph 5.e. for violation of a Limiting Safety System Setting was discussed.
- d. The quality of Licensee Event Reports with respect to determining root cause, completeness of the account, and generic corrective actions was discussed.
- e. Visibility and accessibility of the Resident Inspector was discussed and the licensee agreed to assist the inspector with the signs and notices discussed.