

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/85030(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 19 through December 23, 1985

Inspectors: E. R. Swanson

C. D. Anderson *[Signature]*

Approved By: C. W. Hehl, Chief  
Reactor Projects Section 2A

*1/15/86*  
Date

Inspection Summary

Inspection on November 19 through December 23, 1985

(Report No. 50-255/85030(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspectors of operational safety; maintenance; surveillance; engineered safety features walkdown; reportable events; headquarters requests and regional requests. The inspection involved a total of 186 inspector-hours onsite by two NRC inspectors including 35 inspector-hours on site during off-shifts.

Results: Of the areas inspected one violation was identified for late reporting of the identification of degradation of containment integrity during local leakrate testing.

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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  
W. L. Beckman, Radiological Services 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  
R. A. Fenech, Technical Engineer  
D. L. Fitzgibbon, Licensing Engineer  
R. A. Vincent, Plant Safety Engineering Administrator  
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

- 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 proper for applicable plant conditions. On several occasions, the inspectors 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 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.

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. Access control activities for vehicles and packages were occasionally observed. Activities in the Central Alarm Station were observed.

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

- b. An Unusual Event was declared and a power reduction commenced on November 29, 1985, at 7:55 p.m. due to having two inoperable Safety Injection Tanks (SITs). The 'D' SIT became inoperable at 7:23 p.m. due to low level and at 7:31 due to a low boron concentration of 1710 ppm (Technical Specifications (TS) require 1720 ppm). The 'C' SIT became inoperable at 7:55 p.m. due to high level resulting from back leakage from the primary coolant system and the fill and drain lines. Having two SITs inoperable put the licensee in TS 3.0.3 which requires a plant shutdown and a declaration of an Unusual Event in accordance with their site emergency plan. At 8:07 p.m. and 8:11 p.m. the 'C' and 'D' SITs, respectively, were declared operable with level and boron concentration restored and the Unusual Event was terminated. The licensee has been experiencing check valve and fill and drain valve leakage problems which will be investigated during the outage.
- c. On November 30, 1985, at 2:00 a.m. the licensee commenced a scheduled unit shutdown from 98% power. The unit was off line at 9:30 a.m. and in hot shutdown at 1:05 p.m. on November 30, 1985, and in cold shutdown at 11:16 a.m. on December 1, 1985. Some major activities to be completed during this 72 day outage include refueling, electrical environmental qualifications, inservice inspection, safety injection refueling water tank modification and turbine/generator maintenance.
- d. An Unusual Event was declared at 11:45 p.m. on November 30, 1985, due to certain electrical equipment being declared inoperable since they are not yet environmentally qualified (EQ). The 10 CFR 50.49 deadline for EQ was midnight on November 30, 1985. This situation put the licensee in Technical Specification 3.0.3 which requires a shutdown and declaration of an Unusual Event in accordance with their site emergency plan. The Unusual Event was terminated at 11:20 a.m. on December 1, 1985, after reaching cold shutdown.
- e. On December 2, 1985, at 11:30 a.m. an Unusual Event was declared due to the high level of Lake Michigan accompanied by high winds and large waves. The wave action was causing severe erosion in the vicinity of two large tanks of contaminated waste water. The primary system makeup storage tank, T-90, contained approximately 120,000 gallons of water with activity of  $1.2\text{E-}3$  gamma and  $4.4\text{E-}4$  beta radiation. The utility water storage tank, T-91, contained approximately 34,500 gallons of water with activity of  $1.4\text{E-}5$  gamma

and  $1.4E-6$  beta. Until backfilling of the area with rock was complete (at 9:00 p.m.), there was a threat of losing one or both of the tanks and thus releasing the tank contents. Also a portion of the security perimeter was degraded and security compensatory measures were taken. The licensee terminated the Unusual Event at 9:30 p.m.

- f. On December 4, 1985, the licensee determined and reported that a terminal block located inside containment was not environmentally qualified (EQ) as previously determined. This makes one pressure transmitter, which initiates a safety injection low pressure signal, low pressure, high pressure and thermal margin low pressure reactor trip signals, not EQ. The other three channels were not affected due to being located outside of containment. The licensee had previously analyzed data received from Sandia Labs by telephone and had determined by the March 31, 1985, deadline that the terminal block was qualified. Subsequently, the final Sandia Test Report was issued. A more detailed review was completed by the licensee on December 3, 1985 which did not substantiate the previous conclusion. This will be corrected during this outage.
- g. On December 10, 1985, at 7:22 a.m. an inadvertent left channel safety injection signal (SIS) occurred. A construction electrician working behind a control room panel caused a short next to the terminal he was working on. This removed the SIS block relay which then allowed the actual low pressure condition to cause the SIS actuation. It was reported at 7:54 a.m. as required by 10 CFR 50.72. The resident inspector entered the control room shortly after the SIS occurred and discussed it with the Shift Supervisor who had noted no abnormalities at the time.

On December 14, 1985, while troubleshooting a containment sump drain isolation valve that failed to open, it was discovered that the SIS had not been properly reset four days before. This locked-in SIS also caused the main service water outlet valve from the cooler to be held open and the boric acid recirculation valve to be held closed. The SIS had only been reblocked and not reset on December 10, 1985. On December 14, 1985, it was reset and the three valves were returned to their normal positions. The valve problems were noted during the four-day period but were not linked together as having a common cause. Also the "Safety Injection Initiation Signal A" alarm in the control room should have alerted the operators to the fact that the SIS was not reset. The licensee is evaluating the effect on the seven SIS relays of having them energized for four days. Repairs will be made if necessary. Additional review by the inspectors will be conducted during review of the Licensee Event Report concerning the improper resetting of the SIS.

- h. On December 16, 1985, the licensee became aware that a containment local leakrate test (LLRT) conducted on December 4, 1985, had found leakage which exceeded the limitations of Technical Specification 4.5.2. (0.60 La). This was then reported as a 10 CFR 50.72

four-hour report. This report, however, should have been made on December 4, 1985, and is a violation of the reporting requirements of 10 CFR 50.72 (b)(2)(i) (255/85030-01). Review of the corrective actions taken will be conducted during review of the Licensee Event Report.

- i. On December 17, 1985, discussions were held between the NRC and the licensee concerning the Technical Specification (TS) definition of "Refueling Operations." Prior to the removal of the upper guide structure (UGS) the resident inspectors determined that the licensee planned on removing the UGS without the controls required by T.S. 3.8.1 for refueling operations. "Refueling Operations" is defined in TS 1.1 as "any operation involving movement of core components when the vessel head is unbolted or removed." The licensee was informed that the UGS was a core component therefore TS 3.8.1 applied during movement of the UGS. The licensee established the required conditions prior to UGS removal.

One violation and no deviations were identified.

### 3. Maintenance

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

- Replacement of HFA relays - Procedure I-SC-84-068-10 and work order 24503835
- Turbine Driven Auxiliary Feedwater Pump - inspection and installation of new governor work order 24503195(197,201)
- Rework of steam control valve (CV0521) to Auxiliary Feedwater Pump Turbine.

No violations 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, personnel qualifications, and documentation. The following test activities were inspected:

- Daily Control Room Surveillance - Test D/WO-1
- HPSI - RHPSI/Check Valve Test - Test RO-65

During the review of RO-65 above, it was noted that the testing methodology used provides a large differential pressure for full stroking of the check valves. This methodology appears to conflict with ASME Code Section XI

Article IWV-3522 which states that "...the pressure differential for equivalent flow shall be no greater than that observed during the preoperational test." This conflict requires resolution by the licensee either by changing the test procedure or pursuing approval of a testing exemption. This resolution will be tracked as an Open Item (255/85030-02).

No violations or deviations were identified.

5. Engineered Safety Features Walkdown

The inspector performed a walkdown of portions of the service water system and verified: That each 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 significant exceptions were noted.

No violations or deviations were identified.

6. 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 Specification.

(Closed) LER 255/83-67: An analysis performed by the Bechtel Corp. resulted in the discovery of a design deficiency in the support configuration for the one-inch diameter fill and drain piping to the 'D' Safety Injection Tank (SIT). The support configuration did not provide adequate vertical and lateral support to meet the FSAR seismic criteria. Further analysis was performed on the other three SITs and similar deficiencies were found on 'A' and 'C'. New supports were installed to correct these deficiencies. This event report is closed.

(Closed) LER 255/84-11: During the calibration of containment pressure switches, two spurious containment high pressure (CHP) signals were generated which resulted in a safety injection, containment isolation, and containment spray actuation. Approximately 1000 to 3000 gallons of borated water was sprayed into containment prior to securing the pumps. When the 1803 pressure switch was reset the contacts were left misadjusted such that they were closed. Therefore, when the 1804 switch was tested it made up the two out of four logic of the Engineered Safety Features system resulting in the actuations. Switch 1804 was tested twice prior to halting the calibration. It did not involve a procedural violation. Procedures have been revised to require verifying that no test lights are illuminated and the CHP alarm has cleared. Instrument and Control technicians reviewed this event as part of the corrective actions to prevent recurrence. This report is considered closed.

(Closed) LER 255/85-024: The 'A' Low Pressure Safety Injection pump and the 'B' Safety Injection Tank (SIT) were concurrently inoperable. This event and the concerns it raised were addressed in Paragraph 3.g of Inspection Report No. 255/85027(DRP). This LER is considered closed but the concerns continue to be tracked by Unresolved Item 255/85027-03. In evaluating the effect of the inoperable SIT on plant operation, the LER statement that the boron concentration is required to prevent dilution of the primary coolant system is misleading. The design function of the SITs is to both reflood the core after a large break loss of coolant accident and to maintain a cold shutdown boron concentration during the transient (i.e., not dilute the other safety injection). This event report is closed.

No violations or deviations were identified.

7. Headquarter's Request

Prompted by two Unusual Events declared on October 15 and 16, 1985, due to high calculated unidentified primary coolant system (PCS) leakage, the inspector was requested to review the licensee's procedure for PCS leakrates and to perform independent calculations. The inspector used the licensee's data for October 15 and 16, 1985, but used the NRC's computer program entitled RCSLK9: Reactor Coolant System Leak Rate Determination for PWRs. Excellent agreement was found between the licensee's twenty-four hour leakrate calculation and the inspector's calculations. Both calculations showed a leakrate higher than allowed by Technical Specifications (TS). The licensee took data for two hour calculations which was also used by the inspector. There was good agreement between these calculations, which showed an acceptable leakrate. The difference between the twenty-four hour and two hour calculations is thought to be due to the large amount of water that was diverted from and added to the system at the end of core life to effect boron concentration changes. The inaccuracies in determining these volumes of water is believed to be the cause for the high calculated twenty-four hour leakrates. The licensee has submitted a TS change request to allow for an evaluation period to eliminate unnecessary reporting and Unusual Events.

A Region III specialist further reviewed this issue in Inspection Report No. 255/85031(DRS).

No violations or deviations were identified.

8. Regional Request

Prompted by a situation which occurred at the Millstone Station, the inspector was requested to inspect the use of licensed reactor operators (ROs) in supervisory positions at the Palisades plant. The licensee maintains two licensed ROs on shift during normal operations. One is more senior and is called the Control Operator (CO) 1. Palisades Administrative Procedure 4.00 "Operations Organization and Responsibilities" states, in part, that the CO 1 shall "direct the Control Operator 2 (CO 2) and the Auxiliary Operators to perform prescribed Plant Operations."

10 CFR 55.4(d) defines an "operator" as an individual who manipulates a control of a facility or directs another individual to manipulate a control. 10 CFR 55.4(e) defines a "senior operator" as an individual who directs the licensed activities of licensed operators. The "activities" of a licensed operator are those evolutions, surveillances, tests, system line-ups, etc. conducted during a shift. Controlling the permission to commence such activities is the responsibility of a senior reactor operator (SRO) and cannot be delegated to a RO. Administrative Procedure 4.00 was therefore, found to be inconsistent with the above definitions. On December 18, 1985, the licensee altered certain portions of this procedure to remove any implication that the CO 1 supervises the CO 2.

The second issue raised at the Millstone Station of not having an SRO in the control room during operational modes other than cold shutdown or refueling is not a problem at Palisades. Administrative Procedure 4.01 "Shift Operations", Section 5.1.1.C, implements the requirement to have an SRO in the control room at all times when in an operational mode other than the cold or refueling shutdown modes.

9. 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 4.

10. Management Interview

A management interview (attended as indicated in Paragraph 1) was conducted on December 23, 1985, 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.