

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/84-16(DRP)

Docket No. 50-255

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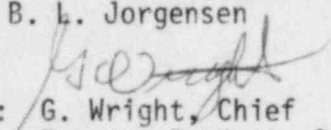
Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Palisades Site,
Covert, MI

Inspection Conducted: August 6 through September 8, 1984

Inspector: B. L. Jorgensen

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

9/25/84
Date

Inspection Summary

Inspection on August 6 through September 8, 1984 (Report No. 050-255/84-16(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspector of operational safety; maintenance; surveillance; reactor trips; reportable events; and independent inspection areas. The inspection involved a total of 150 inspector-hours onsite by one NRC inspector including 30 inspector-hours onsite during off-shifts.

Results: No items of noncompliance or deviations were identified in any of the areas inspected.

DETAILS

1. Persons Contacted

Consumers Power Company (CPCo)

R. W. Montross, General Manager
*J. S. Rang, Operations and Maintenance Superintendent
*W. P. Mullins, Chemistry/Health Physics Superintendent
*C. S. Kozup, Operations Superintendent
*R. M. Rice, Technical Superintendent
*D. W. Rogers, Technical Engineer
*R. A. Vincent, Administrator - Nuclear Activities Plant Organization
R. J. Clendenning, General Health Physicist
L. D. Seamans, Senior Engineer
D. L. Beach, Senior Plant Technical Analyst
*K. E. Osborne, Maintenance Superintendent
*D. G. Malone, Senior Engineer
W. M. Hodge, Plant Property Protection Supervisor
*D. W. Volkers, Administrative Superintendent
*R. E. McCaleb, Quality Assurance Superintendent
D. W. Kaupa, Shift Supervisor
E. I. Thompson, Shift Supervisor
J. R. Meilstrup, Shift Supervisor
K. K. Davison, Shift Supervisor
E. Polk, Mechanical Maintenance Supervisor

*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 force, 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, logsheets, turnover sheets, and equipment status boards were routinely checked against operating requirements. Pump and valve controls were verified proper for applicable plant conditions. On a few occasions, the inspector observed shift turnover activities and shift briefing meetings.

On two occasions during the inspection, the inspector observed licensee response to "Unusual Events" declared under the Palisades Plant Emergency Plan. In the first instance on August 10, 1984, PCS leakage in excess of one gallon per minute developed through an unisolable (at power) weld in an instrument loop off the 1A cold leg. This required a plant shutdown from about 30% power, which the inspector observed. The second case on September 5, 1984 involved discovery that a snubber on the steam supply line to auxiliary feedwater pump P-8B had exceeded its surveillance interval. This rendered

the snubber and the pump administratively "inoperable". The licensee commenced a plant shutdown from about 65% power while performing the surveillance test on the snubber. When the test proved the snubber "operable" the Unusual Event and power reduction were terminated. In both instances, the licensee promptly and properly classified the events and took appropriate action in response.

During the shutdown of August 10, the reactor was manually tripped from low power (see Paragraph 5) and PCS temperature was nearly permitted to drop below 525° F before boration to the cold shutdown condition was achieved. During a subsequent heatup on August 24, the inspector noted a relatively high steam generator tube differential pressure (above 1250 psid) had developed, apparently due to faster heating of the pressurizer than of the bulk of the primary coolant system. Pressurizer backup heaters were secured when the inspector questioned operators about the condition. Another 15° temperature increase in the pressurizer would have been sufficient to have exceeded the Technical Specification limit (1380 psid) on tube differential pressure. These events, taken together with a procedural violation by reactor operators and incorrect setup of engineered safeguards room coolers (both addressed in IE Inspection Report 050-255/84-14) may be indicative of a decreased operator familiarity with requirements and conditions of an operating nuclear plant after a year-long shutdown. This potential was discussed at the Management Interview and in a separate meeting with the Operations Superintendent, who indicated that ways of heightening management attention in this area were being looked at.

Tours were conducted in the turbine and auxiliary buildings to observe various work activities and testing (discussed elsewhere in this report) and to observe plant equipment condition, cleanliness, fire safety, and adherence to procedural and regulatory requirements. Routine Operations Department checks of fire extinguishers and hose stations throughout the toured facilities were verified current.

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, hold points, verification testing, fire prevention/protection, and cleanliness.

The following was observed/reviewed:

- a. Overhaul of containment spray pump P-54A
- b. Preventive maintenance (by contractor) of the reactor internals monitoring system Fourier analyzer.

The inspector also discussed recent events, wherein Instrument and Control group testing or troubleshooting had resulted in unanticipated problems, with the Maintenance Superintendent and at the Management Interview. The

Maintenance Superintendent is having a specific evaluation of these matters performed. Four of the events resulted in Licensee Event reports, which the inspector will evaluate as a group.

No items of noncompliance or deviations were identified.

4. Surveillance

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

- a. MO-19 "Inservice Test Procedure - Containment Spray Pumps"
- for return to service of pump P-54A on August 22.
- b. MO-34 "Engineered Safety Room Cooling and Ventilation"
- performed August 24 (see also Paragraph 6.b).
- c. DWO-13 Personnel airlock seals test performed August 29. The inspector noted a sample valve associated with this test did not have an identification tag. Subsequent followup verified the operators performing the test had reported this condition for correction.
- d. MI-1 "Nuclear Power Range, Rod Drop, Flux - Delta T Channel Power Level Calibration" performed September 5.
- e. DWT-7 "Reactor Internals Noise Monitoring" performed at 75% power on September 6.

No items of noncompliance or deviations were identified.

5. Plant Trips

The inspector reviewed the reactor trips of August 4 and August 10 to evaluate plant and operator response, and was in fact present and observed the reactor trip of August 10, 1984.

The plant tripped from near 50% power on August 4 on a generator/turbine trip from loss of load. A turbine electro-hydraulic control (EHC) oil pump coupling apparently vibrated loose, and the turbine governor valves drifted closed as EHC oil pressure decreased. The operators observed the load decrease, loss of governor valve control, and increasing average primary coolant temperature; and took immediate action in driving in control rods to reduce reactor power; but generator load decreased much faster and actuated the generator reverse power trip relay. The reactor protection system (RPS) functioned properly, and all rods tripped as designed. One 2400 v bus did not fast-transfer to startup power from station power due to an indicated startup transfer low voltage in the supply breaker control circuit, the associated diesel-generator started and loaded via the normal shutdown

sequencer as designed, so no "train" power loss resulted. Followup review concerning the blown fuse will be pursued in evaluation of the LER associated with this reactor trip. The plant was held at hot shutdown until EHC system and fast-transfer circuitry repairs were completed and then was returned to service.

The plant trip of August 10 was an operator manual reactor trip from low (about 2%) power. Power had earlier been reduced from about 30% after discovery of an unisolable primary system leak of slightly over 1 gpm from a weld in an instrument loop connected to the 1A cold leg. After the turbine was tripped off at about 4%, and despite boration and continued rod insertion, average primary coolant temperature began to increase. The reactor was tripped rather than allowing temperature (thus, pressure in the steam system) to reach the opening point for the atmospheric steam dump valves. The steam bypass valve to the turbine was subsequently determined not to be controlling properly, which caused the temperature rise. Desiccant was found and cleaned out of the bypass valve positioner. Except for the bypass valve, no anomalies were noted in plant response for this trip.

Several minutes subsequent to the reactor trip of August 10, the inspector noted average primary coolant system temperature was down to 527° F and still falling. Plant procedures require boration to the cold shutdown concentration prior to going below 525° F, but this boration was still incomplete. This was brought to the attention of the Shift Supervisor and Shift Engineer, who had the operators close the MSIVs to terminate the cool-down before temperature dropped below 525° F.

No items of noncompliance or deviations were identified.

6. Reportable Events

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.

- a. (Closed) LER 82-44: Potential overload of motor control centers MCC-1 and MCC-2. A load study identified two potential scenarios of MCC-1 or MCC-2 feeder breaker and cable overloading, either from battery chargers drawing maximum current (if station batteries were discharged) or from loading hydrogen recombiners (a manual action) without first removing some other load. The licensee installed battery bus low voltage monitoring and performs daily battery status verification to assure battery discharge detection. Instructions concerning recombiner loading and testing were issued (though on one occasion - Ref. LER 83-39, both recombiners were loaded in a test) to prevent that scenario. During the recently ended outage, the licensee modified the appropriate circuits (Facility Change FC-558) such that MCC-1 and MCC-2 are now fed via different breakers and cabling off load centers No. 19 and No. 20, respectively, rather than via the potentially undersized feeds off load centers No. 11 and No. 12 previously used.

- b. (Closed) LER 83-08: Inoperable engineered safeguards room cooler fans. Two fans (one of two in each room) were found with tripped thermal overload devices at the breaker preventing operation on demand, a condition which is not detectable from the control room. A third fan was wired incorrectly, causing it to run backward. The wiring error was corrected immediately, and the thermal overload trips were reset. A monthly surveillance procedure (MO-34) was developed and approved to provide routine verification of operability for all four fans, including verification of air flow.
- c. (Closed) LER 83-57: Improper temperature/pressure ratings on valve procurement. Original piping specifications for some two-inch and smaller piping (ASA 16.5-1957) are being selectively upgraded to ASME 1977 specifications including Summer addenda. An error in development of purchase specifications for 1500-pound class valves in these sizes in 1979, resulted in procurement of a number of valves (of which 12 were subsequently installed) which do not meet ASME specifications, but which do meet original design requirements. The licensee corrected the 1500-pound class code application discrepancies, and developed a 2500-pound class stock code/description. The pipe class drawings now require a specific determination for each valve replacement in the 1500-pound class whether a 1500 or 2500-pound replacement is appropriate, so systems designated for upgrade will not receive "mixed" parts.
- d. (Closed) LER 83-69: Inoperable penetration fire barriers. Initial implementation of an extensively upgraded surveillance procedure (RT-53) for inspection of 522 penetration fire barriers, identified 69 degraded or open barriers. All were declared "inoperable" and hourly tours (with minor/infrequent exceptions as documented in subsequent LERs) were conducted per Technical Specifications until restoration was completed prior to startup from the recently completed outage. Some of the barriers were degraded by aging; a condition which should be prevented by future surveillance under the upgraded procedure. Other barriers appeared to have been left unsealed on original installation. The remainder had been degraded by outage construction still in-progress or recently completed. The procedure (FPS-M-1) for barrier installation/repair was revised to provide controls for future opening, tagging, and proper restoration of penetration fire barriers.
- e. (Closed) LER 83-70: Low temperature overpressure protection not operable. Technical Specifications Amendment No. 72, dated December 21, 1982 requires low temperature overpressure protection (LTOP) operable when shutdown cooling is in service. The licensee revised procedure to assure LTOP was "armed" prior to commencement of shutdown cooling, but did not recognize the existing circuitry would not automatically actuate on high pressure, even if "armed", with primary system temperature above 260 F. When the plant was shut down August 13, 1983 and LTOP "armed" at about 325° F, it remained inoperable (with shutdown cooling in service) for less than six hours until 260° F was reached. The LCO limit is eight hours, so this was not exceeded. The LTOP system was modified so it will operate automatically (if armed) below 300° F,

versus the 260 F setpoint previously used. Further, an amber indication light in the control room now gives positive indication of availability of the LTOP system. Procedures were clarified to assure LTOP is "operable" (not just armed) before placing shutdown cooling in service.

- f. (Closed) LER 83-72: Phase differential relays associated with emergency diesel generator breakers 152-107 and 152-213 not seismically qualified for the de-energized state. The licensee initially advised operating crews of the potential for mis-operation and tagged the subject breakers with instructions. Subsequently, the unqualified relays (GE Model 12CFD12B1A) were replaced with qualified relays (GE Model 12JD52A11A) under a plant specification Change SC-83-183, completed June 8, 1984.
- g. (Closed) LER 83-73: Inadequate fire protection system testing. A review of procedure SO-6 for testing fire detection instruments identified two detectors in switchgear room 1-D which the procedure neglected to address. The two detectors were tested and verified operable, the procedure was revised to include testing the detectors and the entire procedure was re-performed prior to plant startup from the recently ended outage.
- h. (Closed) LER 83-78: Failure to perform surveillance test. A QA audit in September 1983 found a hydro test of service water piping (Procedure FO-1) with a specified five year performance interval ($\pm 25\%$) which had not been performed since March 1976. The test was apparently not scheduled because the licensee was incorporating service water hydro testing into his inservice inspection (ISI) Master Program, for which Code requirements permit a ten year interval. A Technical Specification change request of May 14, 1980 concerning conversion to ISI requirements had not yet been approved by NRC, however, and the five year interval should have been retained. The required hydro test, now incorporated in Test RO-70G, was performed satisfactorily prior to plant startup from the outage in progress at the time of the finding.
- i. (Closed) LER 84-12: Primary coolant system leakage greater than one gallon per minute. The leak was determined to be past loop check valves CK-3116 and CK-3146 into the safety injection lines. The plant was placed in hot shutdown and the check valves were flushed and resealed, terminating the leak.
- j. (Closed) LER 84-13: Primary coolant system leakage greater than one gallon per minute. A charging pump (P-55C) seal leak was located and isolated, reducing PCS leakage to within specification.
- k. (Closed) LER 84-14: Reactor critical at less than 525° F. When the atmospheric steam dump valves were opened to facilitate opening the main steam isolation valves, an excessive PCS cooldown occurred before the dump valves were re-closed. The minimum PCS temperature reached was 521° F. The licensee added a caution step to the procedure to alert operators as to steam dump valve time responsiveness, and reviewed the occurrence with operating personnel.

No items of noncompliance or deviations were identified.

7. Independent Inspection Activities

- a. The inspector made observations concerning radiological safety practices in the radiation-controlled areas, including: verification of proper posting; accuracy and currency 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 reviewed. Followup on an anomalous security force member exposure total established the licensee had noted the anomaly, had performed a follow-up investigation, and had documented the results. Though the investigation suggests the exposure was not from licensee-controlled radioactive materials, the licensee chose to assign the dose recorded on the individual's dosimeter as plant-related exposure since the dose was low (far below Regulatory limits) and no other exposure source could be proven.

General area tours throughout the auxiliary building identified positive improvements in cleanliness from a licensee cleaning and painting project. Further, new, improved permanent postings were noted throughout the building as a result of another licensee improvement project.

On August 8, 1984 the inspector performed independent surveys on a radwaste carrier (resin cask) awaiting shipment. Measured radiation levels were well below regulatory limits and in good agreement with the results obtained by the licensee's surveys.

- 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. A detailed tour was performed in the company of an NRC Region III physical security specialist to improve inspector effectiveness in overview of physical security activities. The condition of selected equipment for protection and/or detection purposes was evaluated. Access control activities for packages and vehicles were observed. The inspector had occasional brief discussions with guard force members, and met with the Plant Property Protection Supervisor and the acting contract security force supervisor for general discussion of inspection activities.
- c. The inspector attended meetings of the Palisades Plant Review Committee (PRC) and the Corrective Action Review Board (CARB) on August 28 and August 20, respectively. The PRC reviewed a Specification Change SC-84-144 involving a clamp on a PCS instrument loop and a safety evaluation concerning a proposed change in testing requirements on the personnel airlock under 10 CFR 50 Appendix J. Each item was found not to constitute an unreviewed safety question. The CARB reviewed a Deviation Report concerning a "spurious" primary coolant pump P-50C start, assigning responsibility for evaluating the matter. The spurious start was traced to an intermittent short which occurred when instrument

technicians moved other cables in the same tray as the control cable for P-50C. This was repaired.

- d. The inspector maintained an ongoing review of all corrective action program items at the Event Report level.
- e. The inspector observed operation of the licensee's new liquid radwaste solidification system, which utilizes an asphalt-base solidification medium, and discussed system design and operation with a project engineer and an equipment operator.
- f. The inspector verified the newly-appointed Technical Superintendent meets the qualification requirements for his assigned position as identified in plant Technical Specifications.
- g. An evaluation report prepared by the Nuclear Activities Plant Organization, covering problems with resin contamination of the clean waste processing system, was reviewed by the inspector. The licensee had requested the evaluation to develop information and address concerns in three areas:
 - (1) The potential for resin contamination of the PCS or other vital systems.
 - (2) The potential for resin contamination in the line and valves at containment penetration P69 causing a rapid increase in, or unacceptably high level of, penetration leakage.
 - (3) The potential for resin intrusion into non-vital plant systems with a resultant negative economic impact.

The evaluation addresses these matters, along with consideration of the cause and corrective actions associated with this problem, and makes recommendations for improvements in several areas. Radiological considerations relating to maintaining occupational radiation exposure "as low as reasonably achievable" (ALARA) were not within the scope of this evaluation, but may be reviewed further by NRC at a future inspection.

No items of noncompliance or deviations were identified.

8. Management Interview

A management interview (attended as indicated in Paragraph 1) was conducted at the conclusion of the inspection. The inspector discussed the scope and findings of the inspection as described in these Details.