

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/90006(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, Michigan

Inspection Conducted: January 27 through March 8, 1990

Inspectors: E. R. Swanson
J. K. Heller

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

3/19/90
Date

Inspection Summary

Inspection on January 27 through March 8, 1990 (Report No. 50-255/90006(DRP))

Areas Inspected: Routine unannounced inspection by the resident inspectors of: actions on previously identified items; plant operations; reactor trip; maintenance; surveillance; reportable events; and, 10 CFR Part 21 review. No Safety Issues Management System (SIMS) items were reviewed.

Results: No violations or deviations were identified. The inspection disclosed weaknesses in the licensee's electrical post modification testing. The inspection did not disclose any notable strengths in the licensee's program.

DETAILS

1. Persons Contacted

Consumers Power Company

D. P. Hoffman, Vice President, Nuclear Operations
#D. W. Joos, Vice President, Engineering Service Division
*#G. B. Slade, Plant General Manager
#R. M. Rice, Plant Operations Manager
#D. J. Vandewalle, Technical Director
#J. G. Lewis, Technical Director
*#R. D. Orosz, Engineering and Maintenance Manager
*#K. M. Haas, Radiological Services Manager
#J. L. Hanson, Operations Superintendent
R. B. Kasper, Mechanical Maintenance Superintendent
K. E. Osborne, System Engineering Superintendent
*#H. M. Esch, Plant Planning
#J. L. Kuemin, Licensing Engineer
#T. J. Palmisano, Administrative & Planning Manager
R. M. Brzezinski, I&C Engineering and Maintenance Superintendent
L. J. Kenaga, Health Physics Superintendent
#K. W. Berry, Director, Nuclear Licensing
*#C. S. Kozup, Technical Engineer
*J. R. Brunet, Licensing Analyst
D. J. Malone, Senior Licensing Analyst
#R. E. McCaleb, Quality Assurance Director
*R. J. Frigo, Operations Staff Support Supervisor and Acting
Operations Superintendent
#M. C. Sniogowski, Administrative Controls
#J. D. Alderink, Industry Experience & Assessment
#R. R. Frisch, Nuclear Licensing
W. L. Roberts, Plant Projects Supervisor
R. W. Smedley, Staff Licensing Engineer
#K. A. Toner, Plant Projects Superintendent
R. A. English, Corporate Health Physicist
L. T. Phillips, Senior Systems Engineer
*J. R. Schepers, Site Quality Control

Nuclear Regulatory Commission (NRC)

#W. L. Axelson, Chief, Reactor Projects Branch 2
#B. L. Burgess, Chief, Projects Section 2A
#D. H. Danielson, Chief, Materials & Processes Section
#E. R. Swanson, Senior Resident Inspector
*#J. K. Heller, Resident Inspector
#A. W. DeAgazio, Project Manager, NRR

*Indicates those attending the March 9 exit interview.

#Denotes some of those present at the Management Meeting on February 13.

Other members of the Plant staff, and several members of the Contract Security Force, were also contacted during the inspection period.

2. Actions on Previously Identified Items (92701, 92702)

- a. (Closed) Unresolved Item 255/88007-01(DRP): Review additional safety evaluations to verify compliance with 10 CFR 50.59. The inspector reviewed Revision 3, dated September 7, 1989, to Administrative Procedure 3.07 "Safety Evaluations". The procedure contained adequate guidance and a helpful Safety Evaluation checklist as an attachment. Administrative Procedure 1.00 "Plant Organization and Responsibilities", Revision 6, was reviewed and did not reflect recent organization changes as authorized by Technical Specifications Amendment 127, dated August 16, 1989. This Amendment established qualification requirements for the Plant Safety and Licensing (PSL) reviewers, and permits the Safety and Licensing group to review/screen issues for referral to either the Plant Manager for approval or to the Plant Review Committee. The referral process was reviewed and found to have an appropriate discrimination level. Several Safety Evaluations were reviewed and found to be acceptable with good reviews being performed by PSL. One review identified that a procedure change had the potential to be an unreviewed safety question. Other safety evaluations, especially those done for Temporary Modifications, tended to read more like a rationale for why it was OK to make a particular change, but no safety impact was identified in the selection reviewed. The new program appeared to be functioning well.
- b. (Closed) Open Item 255/88025-03(DRP): Inspector concerns over implementation procedure MSS-M-19 "Disassembly, Inspection, Reassembly of Main Steam Isolation valves" were resolved through further explanation of the situation and revision of the procedure. The concern expressed by the repairmen in being directed to perform actions outside the scope of the procedure was also resolved. The inspector recommended to licensee management that a statement be included in procedures which either require verbatim compliance or state the conditions under which deviations may be authorized. This was discussed at the exit interview.

No violations, deviations, unresolved or open items were identified.

3. Operational Safety Verification (71707, 71710, 42700)

Routine facility operating activities were observed as conducted in the plant and from the main control rooms. Plant startup, steady power operation, plant shutdown, and system(s) lineup and operation were observed as applicable.

The performance of: licensed Reactor Operators; Senior Reactor Operators; Shift Technical Advisors; and, auxiliary equipment operators was observed and evaluated. Included in this review was procedure use and adherence, records and logs, communications, shift/duty turnover, and the degree of professionalism of control room activities.

Evaluation, corrective action, and response for off normal conditions or events, if any, were examined. This included compliance to any reporting requirements.

Observations of the control room monitors, indicators, and recorders were made to verify the operability of emergency systems, radiation monitoring systems and nuclear reactor protection systems, as applicable. Reviews of surveillance, equipment condition, and tagout logs were conducted. Proper return to service of selected components was verified.

a. General

The plant operated at essentially 80 percent power during the reporting period, except for the three days the unit was off-line due to a reactor trip (see Paragraph 4 below).

The inspector observed post trip startup which utilized procedure GOP 3, "Hot Shutdown to Critical in Hot Standby."

b. Plant Management

The inspector observed that plant managers and supervisors were well informed on the overall status of the plant and they made frequent visits to the control room and regularly toured the plant.

In response to the plant trip of February 28, the inspector noted that a healthy mix of plant personnel, from various plant disciplines, responded to the site. In addition, the vice president of nuclear operations responded to the site.

c. Tours

(1) Periodic verification of Engineered Safety Features status was conducted by the resident inspector. Equipment alignment was verified against plant procedures and drawings and detailed walk downs selectively verified. This included equipment labeling, the absence of leaks, housekeeping, freeze protection, calibration dates, operability of support systems, breaker and switch alignment as appropriate. Walkdowns during this inspection period focused on containment spray system.

(2) The inspector toured the new steam generators laydown area. Workers were in the primary side hot leg bowls and the secondary side steam separator/dryer area of both steam generators. The inspector observed that workers in the hot legs were touching the tubes and tube sheet without wearing cotton gloves; a practice that could introduce sodium chloride contamination. This was discussed with the vendor representative who indicated that the workers generally wear cotton gloves, however, the need will be discussed with the workers.

- (3) The inspector identified to the containment system engineer that three horizontal containment tendons were empty and asked if the containment design analysis actually reflected this. The system engineer provided the inspector with construction prints from file C-51 documenting that these tendons were inactive. In addition, the engineer obtained an analysis (performed during construction) documenting that these and a few more were inactive and the containment tendon system meets the design requirements with the inactive tendons. The engineer did identify that the FSAR and construction prints did not reflect the as built containment configuration. Deviation report D-PAL-90-050 was written to document the discrepancies and revise documents.

d. Containment Spray Pump Inoperability

During Containment Spray Pump testing (QO-16) on February 13, 1990, data recorded for the first of three pumps (P-54C) fell into the required action range of the In-Service Testing program vibration criteria. This should have resulted in the pump being declared inoperable, but review of the data by the on-shift crew and subsequent crews did not identify the out-of-tolerance high vibration readings on the pump end of the motor. The next pump tested (P-54A) was found to have a high suction-to-discharge delta pressure and declared inoperable. The testing was suspended at this point with P-54A known to be in a seven day Limiting Condition for Operation (LCO 3.4.2). However the unit was in TS 3.0.3 because components on opposite trains of containment cooling were concurrently inoperable as discussed above. On February 15, 1990, the licensee declared P-54A operable based on an engineering analysis (EA-D-PAL-90-032) as allowed by Section XI. Pump P-54B was tested on February 21, 1990, rendering it inoperable during testing for a period of about two hours. This pump (P-54B) is on the same train as P-54C and, therefore, the licensee did not enter TS 3.0.3 during this testing.

During IST review of the QO-16 data on February 21, 1990, it was identified that P-54C should have been declared inoperable nearly eight days earlier. The seven day LCO clock was started at 5:45 p.m. on February 21, 1990, as permitted by Attachment 1 (Paragraph 8) to Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Program".

After taking an oil sample and adjusting the oil level, the licensee ran the pump to take additional acoustic signature data. Vibration data during this run fell into the acceptable range with the exception of one bearing being in the alert range, at this time the licensee exited the LCO.

The licensee, a contractor pump specialist and the pump vendor all concurred that the low recirculation flow rate was primarily responsible for the high and erratic vibrations. They indicated that a refueling frequency test (QO-10, "Containment Spray and LPSI

"check valve test") uses a different flow path that provides approximately 1000 GPM flow, while QO-16 uses a flow path which permits approximately 250 GPM flow. Given this information, the inspector expressed concern that the two tests use different flow paths but have the same acceptance criteria. It appears that different acceptance criteria should exist for each test.

The inspector concludes that:

- (1) Four Senior Reactor Operators who reviewed the test results did not identify the high vibrations on the P-54C pump.
- (2) The tables which were used to record the results and check the acceptance criteria were not "user friendly".
- (3) Since the P-54A pump was declared operable after evaluation of the high DP, it would appear that the (hindsight) time of dual inoperability would only be during the testing of P-54A (1 Hour).
- (4) Since P-54C was declared operable without further maintenance, it appears that no safety significance exists.

The inspector has no questions at this time but will review this item when the LER is issued.

No violations, deviations, unresolved or open items were identified.

4. Reactor Trip (93702)

The unit tripped from approximately 58 percent power at 6:25 p.m. on February 28, due to a variable high power trip during a transient induced by a main feedwater pump trip. The "B" main feedwater pump tripped at 6:20 p.m. The reactor operators responded by reducing reactor & turbine power below 50 percent; this was accomplished satisfactorily. During power reductions, the variable high power trip continuously resets automatically. The variable high power trip reset requires operator actions during a power increase. Due to S/G inventory recovery, overcooling occurred which caused a power increase to the variable high power trip setpoint and the reactor trip.

During power reduction, pressurizer level reduced to a point that required start of the two idle charging pumps. One started, however, the other failed to start. It did start manually.

The post trip report highlighted two items that required resolutions prior to plant operation. These were the cause of the "B" main feedwater pump trip and the "C" charging pump failure to start on low pressurizer water level. In addition to these items, the trip report identified some minor problems that did not hinder post trip recovery or prevent restart.

The B main feedwater trip was apparently caused by a defective component in the electronic trip circuit. Failure of a charging pump to start was traced to a wiring error in the pressurizer level control circuit. The wiring error only effected the control circuit and not the safety circuits. The above were resolved prior to returning the plant to service.

The unit was made critical on March 2 at 11:17 a.m. and returned to service on March 3 at 12:30 a.m. The licensee kept NRC (Region III and NRR) informed of problem resolution during conference calls conducted on March 1 and March 2.

The inspector has no additional questions at this time, however, this item will be reviewed when the LER is issued.

No violations, deviations, unresolved or open items were identified.

5. Maintenance (62703)

Maintenance activities in the plant were routinely inspected, including both corrective maintenance (repairs) and preventive maintenance. Mechanical, electrical, and instrument and control group maintenance activities were included as available.

The focus of the inspection was to assure the maintenance activities reviewed 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 post maintenance testing was performed as applicable.

The following activities were inspected:

- a. Troubleshooting Diesel Generator Alarms (W.O. 24000869). This troubleshooting was initiated after a periodic preventive maintenance activity (PPAC) determined that low air pressure in the diesel generator 1-2 air receiver tanks did not actuate local or control room alarms as designed. It was determined that a recent modification to the local alarm panel had resulted in the alarms not being wired correctly. The licensee initiated a corrective action document (D-PAL-90-43) to investigate the apparent failure of the post modification testing to identify the inoperable alarms. Expedited action is being taken to correct the alarm circuits and it was confirmed that Auxiliary Operators verify the operability of the air start receivers on a shiftly basis.

The above situation is similar to another recent modification (FC-839) which was done to provide an alternate bus power supply to charging pump P-55C. Initial review of this situation is documented in D-PAL-90-034, and concerns an inoperable indication of the alignment of the alternate power supply. This situation went undetected because the post modification testing did not verify the alarm function, and operability testing, likewise, did not verify its proper function. The failure of P-55C to start on pressurizer low level during the power reduction on February 28, 1990, was also related to miswiring during this modification and inadequate post modification testing. All of the above modification activities were performed by contractors under the oversight of the Plant Engineering and Construction group.

- b. Repair of charging pump (P-55A) seal leakage (W.O. 2400020)
- c. Repair of a 1/2 GPM leak on fuel oil pump P-18A (W.O. 24001163)

No violations, deviations, unresolved or open items were identified.

6. Surveillance (61726, 42700)

The inspector reviewed Technical Specifications required surveillance testing as described 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 properly 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 deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The following activities were observed:

- a. RI-86A Area monitor calibration.
- b. SO-4A Personnel Air Lock Penetration Leak Test.
- c. QO-16 Inservice Test - Containment Spray tests.
- d. DWO-1 Daily Control Room Surveillance.
- e. SHO-1 Operators Shift Surveillance.

The following were reviewed:

- f. QO-1 Safety Injection System
- g. QO-10 Containment Spray and LPSI check valve test.

h. Q0-16 Inservice Test - Containment Spray tests.

i. Q0-17 Inservice Test - Charging Pumps.

No violations, deviations, unresolved or open items were identified.

7. Security (71707)

Routine facility security measures, including control of access for vehicles, packages and personnel, were observed. Performance of dedicated physical security equipment was verified during inspections in various plant areas. The activities of the professional security force in maintaining facility security protection were occasionally examined or reviewed, and interviews were occasionally conducted with security force members.

The licensee has modified their search procedures to enhance the effectiveness of the metal detectors.

The licensee identified that two people tested positive during fitness-for-duty testing. The results were dispositioned per the fitness-for-duty program. Neither individual was a licensed operator or plant supervisor. A Region III security specialist was contacted regarding the above events.

8. Reportable Events (92700, 92720)

The inspector reviewed the following Licensee Event Reports (LERs) by means of direct observation, discussions with licensee personnel, and review of records. The review addressed compliance to reporting requirements and, as applicable, that immediate corrective action and appropriate action to prevent recurrence had been accomplished.

- a. (Closed) LER 255/88001: Noncompliance with Low Temperature Overpressure Protection (LTOP).
- b. (Closed) LER 255/90001: Manual reactor trip following a loss of main feedwater. A supplemental report will be issued if a root cause for the feed pump trip is identified.
- c. (Closed) LER 255/89024: Inoperable fire barrier penetration seal in roof of 1-1 Diesel Generator room. This LER was found to meet the requirements of 10 CFR 50 Part 2 Appendix C for non-issuance of a Notice of Violation. This is considered a licensee identified violation for which a number is assigned for tracking purposes only (violation 255/90006-01(DRP))

One licensee identified violation and no deviations, unresolved or open items were identified.

9. 10 CFR 21 Report

- a. By letter dated November 6, 1989, the licensee was notified by Rockbestos Company, vendor of cabling, that the cable supplied was stainless steel shielded instead of tinned copper shielded as specified. The licensee had already identified their error and performed an analysis which determined that the increased resistance of the stainless steel shielding would not be a concern for lengths shorter than 200 feet. Lengths of less than 150 feet were used in the PORV modification. The licensee placed a hold tag on the remainder of the spool of wire after Rockbestos supplied the proper material. This issue is closed (Part 21 255/90006-02(DRP)).
- b. On February 22, 1990, the licensee notified the NRC verbally of a 10 CFR 21 defect in a Limiter's supplied motor operator. The motor operator had been assembled without a pin which locks the travel limit ring to the shaft. During testing the limit switch did not actuate and resulted in burning up the motor. Neither Limitorque nor Edwards Valve, who mated the operator to the valve, considered the defect to be reportable. Consequently, Consumers Power Company made the Part 21 determination and the required verbal and written reports. Corrective Action by the licensee has been accomplished by repairing the motor operator and analyzing valve stresses. The vendor considers the defect an isolated occurrence. This issue is closed (Part 21 255/90006-03(DRP)).

10. Management Meeting (73702)

A management meeting was held on February 13, 1990, between the NRC, represented by Mr. W. L. Axelson, and Consumers Power Company, represented by Mr. G. B. Slade. Others in attendance are indicated in Paragraph 1 above. A briefing on the Status of the Steam Generator Replacement Program was provided by D. W. Joos and his staff. Other topics discussed included the November 21, 1989, PORV actuation and lessons learned, Palisades performance improvement initiatives including self assessments, the reactor trip of January 9, 1990, Palisades Generating Company update, and other issues of concern. No decisions or conclusions were reached by the NRC as a result of the meeting.

11. Region III request

Mr. E. G. Greenman, Director, Division of Reactor Projects Region III requested that the resident discuss the NRC policy pertaining to Waivers of Compliance. This was accomplished during the exit interview.

12. Management Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) on March 9, to discuss the scope and findings of the inspection. In addition, 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.