

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/88008(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: March 3 through April 4, 1988

Inspectors: E. R. Swanson
N. R. Williamsen
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Approved By: *B. E. Burgess*
B. E. Burgess, Chief
Reactor Projects Section 2A

4/22/88
Date

Inspection Summary

Inspection on March 3 through April 4, 1988 (Report No. 50-255/88008(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspectors and Region III staff of followup of previous inspection findings; operational safety; maintenance; surveillance; physical security; radiological protection; bulletins; generic letters; information notices; and quarterly management meeting.

Results: Of the areas inspected two violations were identified. The first involves inadequate evaluation and documentation of an issue involving an unreviewed safety question. The second involves an improperly performed surveillance test where technician performance was not adequate.

DETAILS

1. Persons Contacted

Consumers Power Company (CPCo)

D. P. Hoffman, Plant General Manager
*J. G. Lewis, Technical Director
*W. L. Beckman, Radiological Services Manager
*R. D. Orosz, Engineering and Maintenance Manager
*R. M. Rice, Operations Manager
*D. W. Joos, Administrative and Planning Manager
C. S. Kozup, Licensing Engineer
*R. A. Vincent, Plant Safety Engineering Administrator
*D. J. Malone, Licensing Analyst
*R. E. McCaleb, Quality Assurance Director
R. A. Fenech, Operations Superintendent
T. J. Palmisano, Plant Engineering Supervisor

*Denotes those present at the Management Interview on April 4, 1988.

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

2. Followup on Previous Inspection Findings:

(Closed) Violation 255/85003-21(DRP): A QA audit had an inadequate categorization of "Observations" compared to "Findings"; furthermore, it appeared that Observations that required corrective actions were not being tracked. The licensee has amended his definition of "Observation" and will continue to classify Observations and Findings according to their significance. However, those Observations that are considered to be conditions adverse to quality and not corrected prior to the issuance of the report will be documented on an Action Item Record (AIR) and tracked to completion and trended via the Corrective Action System. The licensee states that procedures are in place to assure personnel follow-up on AIRs and to perform a completion review prior to closeout of the document. The inspector reviewed a number of QA audit reports and the categorization of Observations and Findings and "conditions adverse to quality" seems adequate. This Violation is closed.

(Closed) Open Item 255/85013-08(DRP): Failure of the 2400 volt breakers to effect a fast transfer of vital loads to the startup transformer. This open item was the result of failures documented in LERs 84001, 84015, and 85005. The event described in LER 85031 also involved the failure of the 2400 volt breakers to transfer load. LER 85031 was closed in Inspection Report 255/88005, Paragraph 9, and that closure satisfies Open Item 255/85013-08, also. This Open Item is closed.

(Open) Open Item 255/85030-02(DRP): Revise Test Procedure RO-65 so that the testing of the both HPSI train check valves will be congruent with ASME Code Section XI, Article IWB-3522, which states that the pressure differential for equivalent flow shall be no greater than that observed during the preoperational test. The preoperational testing was done with the flow going into all four loops and the flow thru each check valve being measured. However, the present version of the test procedure calls for the check valves being tested one at a time, hence putting the full head of the pump across just one check valve until it opens. The licensee has stated that they are evaluating a revision to Test Procedure RO-65 such that the pressure differential across the check valves during testing will be congruent with the pressure during preoperational testing.

(Closed) Unresolved Item 255/86005-02(DRP): Licensee to submit a study and planned corrective action for Region III review by June 30, 1986, regarding the problem of local leak rate test failures. The study results and the corrective action plan were submitted on time.

(Closed) Open Item 255/86035-157(DRP): Improve the testing of the High Pressure Safety Injection (HPSI) pumps through a combination of better instrumentation and enhanced procedures. As reported in Inspection Report 87032, the improved procedures had been completed but a vibration problem with the newly-installed precision-type discharge pressure gauges still remained. The licensee has now corrected the vibration problem and this Open Item is closed.

(Closed) Unresolved Item 255/87005-08(DRP): Licensee could not identify the relief valve which protects against overpressure on the Low Pressure Safety Injection pump discharge line, if there were thermal expansion of the water in the line due to a sudden increase in room temperature. The necessity for such a relief valve is documented in FSAR Section 6.1.2.2, Paragraph 6. Relief Valve RV-3162 (see Drawing 203, Sheet 2, Rev. 8, 3/13/87) has been identified by the licensee as the valve which provides the necessary protection. This item is closed.

(Closed) Unresolved Item 255/87005-09(DRP): Five instrument isolation valves, which the Engineered Safeguards System Checklist required to be positioned open, were missing from Drawing M-203 Sheet 2 (Revision 4). Four of the missing valves had been added to M-203 as Rev. 7 and the fifth valve was added when Rev. 9 was issued. The inspector also verified that all five valves are in the Equipment Data Base of the Advanced Maintenance Management System.

(Closed) Open Item 255/87018-03: Facility Change 623; Auxiliary Feedwater Nozzle Modification. The inspection report identified a concern about the lack of consideration of differential thermal stresses on the steam generator internals caused by removal of the sparger. The licensee's re-evaluation report concludes that the auxiliary feedwater will be sufficiently warmed by either the secondary side water or, if the water level has dropped to expose internals, by the wall of the steam generator. The inspector reviewed the drawing of the steam generator and internal configuration to verify these feedwater heating methods.

(Closed) Open Item 255/87018-04: Facility Change 576; Install 2" Auto Isolation Valve on Penetration No. 33. Historically, this issue was discovered in 1982 when a discrepancy between the containment isolation requirements of the FSAR and the operating procedures was discovered. A letter of interpretation was sent to the NRC explaining that since other nuclear plants have Technical Specifications (TS) allowing certain manual containment isolation valves to be open during plant operation, that Palisades intends to continue sampling the Safety Injection Tanks through the series, manual, containment isolation valves. The licensee also committed to submit a TS change request to formally resolve the issue. This penetration was listed in Table 5-2 of the original FSAR as a Class C-3 penetration. Class C-3 includes penetrations that "...are never opened during power operation. These lines contain two normally closed manual valves in series. A mechanical lock on each valve will ensure the valve is not left open or inadvertently opened during power operation." Since this penetration must be opened at least monthly to perform the sampling of the Safety Injection Tanks required by the Technical Specifications, it should have been Class C-2 which would require two automatic isolation valves in series. This is what this facility change, as approved by the PRC, would have accomplished. The safety evaluation, which received appropriate reviews, did not identify that the discrepancy was an unreviewed safety question (URSQ). This constitutes a violation of 10 CFR 50.59 requirements to document the bases for a determination that an URSQ does not exist or receive Commission approval for the change (violation 255/88008-01(DRP)).

The prior inspection report raised the concern that the modification, as described in the safety evaluation and facility change package reviewed and approved by the PRC, was not completed and the remaining incomplete portion was aborted without being re-evaluated and approved by PRC. The portion that was not completed included the automatic isolation that was needed to conform to the FSAR. In response to the open item another evaluation was performed and concluded that this penetration, as presently modified, conforms to the FSAR. This conclusion is based on the updated FSAR that was revised in the Fall of 1987 to match the modified penetration. The basis for this FSAR change was the 1982 licensee letter interpreting the TS, to which the NRC had never formally responded since they were expecting a TS submittal for review. By not completing this change and revising the FSAR, the licensee has granted itself an exception to the approved criteria in the FSAR.

(Closed) Open Item 255/87018-05: Facility Change 445-2; Install Motor Operators on MSIV Bypass Valves. The inspection report identified a deficiency in the safety evaluation, in that it did not address inadvertent or spurious operation of the motor-operated valve. The re-evaluation addresses this issue satisfactorily.

(Closed) Open Item 255/87018-06: Facility Change 676; Supports for Nozzle of HC 23 -3" adjacent to SIRW Tank. The inspection report found that this evaluation did not address any seismic consideration or any loss in safety margin because of the degraded pipe. The re-evaluation identifies that seismic stresses both for the OBE and SSE were included in the analyses but not explicitly mentioned in the original evaluation. With regard to the margin of safety, the re-evaluation concluded that the margin of safety is not reduced but no satisfactory basis is provided. However, discussions with the licensee determined that this modification is temporary until the next refueling outage. The piping will then be restored to a condition equivalent to the original design.

(Closed) Open Item 255/87018-07: Facility Change 564; Addition of Alternate Safe Shutdown Panel C-150A. The evaluation for this change did not address separation or isolation of the instrumentation or controls for class IE circuits. It also did not assess whether any of these items should be added to Technical Specifications. The re-evaluation states that the panel is located in the left channel penetration room and all class IE circuits for the panel are left channel. It also states that Technical Specifications for this equipment have been proposed in a submittal to NRC dated November 21, 1985.

(Closed) Open Item 255/86035-153: Upgraded Training. An upgraded training program was conducted in 1988. The training program slides, training material and the revised Procedure No. 3.07, Rev. 1, Safety Evaluations, were reviewed by the inspector. Both the training material and the procedure include pending FSAR changes, Technical Specification changes, design changes, and License Amendments as resource material to be used by the evaluator. A listing of these pending changes is maintained current. The training slides do not specifically address the qualifications of the designated evaluation reviewer. However, the training and the final examination, as well as Procedure 3.07, include these qualifications, i.e., the reviewer be a PRC member or alternate. The revised procedure satisfactorily takes into account the weaknesses identified in Inspection Report 255/86035.

Approximately 150 personnel have been trained with this revised procedure and upgraded training program. An additional 60 to 90 people from the General Office are going to be trained also. The licensee is planning to provide requalification training on a 2 year frequency.

One violations and no deviations were identified.

3. Operational Safety

a. Routine Inspections

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 inspectors observed shift turnover activities and shift briefing meetings.

Tours were conducted in the turbine and auxiliary buildings, and in the 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. A portion of the inspection activities were conducted at times other than the normal work week.

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

b. Boric Acid System

Background

During a routine NRC inspection in June of 1980, the inspector identified that the concentrated boric acid (BA) system was susceptible to a single active failure preventing BA addition during accident conditions. Power supplies to flowpath valves and the BA pumps (P-56A, P-56B) are such that during a Main Steam Line Break (MSLB) accident with loss of offsite power and failure of the 1-1 Diesel Generator, the the only concentrated BA flowpath is from the "T-53A" BA storage tank, thru pump P-56A to the suction of the charging pumps. If either the T-53A storage tank or the P-56A pump are inoperable, then no BA flowpath exists to perform the function of making the reactor subcritical (USAR G.1.2.1, 14.4). As in 1980, Technical Specification (TS) 3.2 requires that only one BA transfer pump be operable, and allows either of the BA storage tanks to be out of service for 24 hours. With either T-53A or P-56A out of service the system is single failure prone, and the susceptible condition can exist for Tank T-53A for 24 hours or indefinitely for the pump P-56A.

Licensee resolution of this issue took the form of verbal commitments to submit appropriate technical specifications, and implementation of Standing Order No. 28 which directs the selection of T-53B for routine BA usage. The potential inoperability of pump P-56A was apparently not an immediate concern because it was supposed that the charging pump could draw water through the idle pump. The licensee actions were reviewed and approved by the NRC and the NRC requested submittal of appropriate TS.

Event

On March 7, 1988, the system engineer recognized the incongruity of the lack of a pump Limiting Condition for Operation and the importance of the operability of P-56A during the above MSLB scenario. He also recalled that the P-56A pump had been out of service from October 19 through November 9, 1987 for maintenance and initiated a Deviation Report.

The Licensee decided that the event was not reportable under 10CFR 50.72 in that it did not constitute an unanalyzed condition nor a condition that could have prevented the fulfillment of a safety function of a system needed to investigate the consequences of an accident. This decision was based on an informal evaluation of the MSLB analysis which indicated that adequate margin was provided by the actuation of a single High Pressure Safety Injection (HPSI) pump. Using similar logic, the licensee does not plan to submit an LER.

The licensee's reinitiation of corrective action on the pump operability is a result of a more conservative view and the realization that prior assumptions were not validated by testing. Specifically, it has not been demonstrated that the charging pumps can draw adequate BA flow through an idle pump, and the pump being inoperable (as during 1987) may result in the isolation of the BA flowpath.

The licensee revised the Standing Order No. 28 on April 8, 1988 to direct treatment of the P-56A transfer pump as required to be operable at all times when the reactor is critical. A modification to the power supplies which will eliminate the single failure concern is planned for the 1988 refueling outage. A TS submittal is also expected by the end of 1988.

Conclusion

Removal of the A train concentrated boric acid system from service is contrary to the current MSLB analysis assumptions. An engineering evaluation by the licensee concluded that adequate reactivity control is provided by the HPSI system; however, this evaluation is not substantiated by test data.

c. Inadvertent Auxiliary Feedwater Pump Start

On March 27, 1988 at about 12:50 p.m., the C sensor channel of the Auxiliary Feedwater Actuation System (AFAS) lost power. The AC power into the power supply was verified energized, but no DC output was indicated. At 1:30 p.m. the channel was bypassed. Later, at 11:25 p.m., operators were attempting to reset lights on one of the two actuation channels and inadvertently pressed the test button, actuating the AFAS and starting the P-8A AFW pump. After control room operators verified that the actuation was spurious, the pump was turned off. No steam generator level control problems resulted, and the licensee determined that the amount of cold water injected was not deleterious from a thermal stress standpoint.

Corrective actions planned by the licensee will address the human error from both the knowledge/training aspect and procedural and human factors considerations.

d. Safety Injection Sequence (SIS) Failure Evaluation

An engineering review by the licensee determined that a loss of coolant accident coincident with loss of offsite power and a single active failure of one channel of the SIS relays would result in either of the following consequences. The service water (SW) non-critical header isolation (CV-1359) would not close and only the P-7B service water pump would start. Failure of the other channel would result in two service water pumps running, but a containment air cooler service water valve (CV-0867) would not close.

Evaluations by the licensee determined that the susceptibility to the postulated single failure is acceptable based on other cooling systems availability (containment spray); the delayed need for cooling to the Component Cooling Water heat exchangers after sump recirculation (20 minutes); and adequate time and procedures controlling operator action.

The NRC had reviewed these susceptibilities under the SEP topic IX-3 review, and also following recent SW System testing and flow balancing in 1986/early 1987 and found them acceptable.

Additional review will be conducted of the planned LER.

No violations or deviations were identified.

4. Maintenance

The inspectors 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. Main Feed Pump Turbine "K-7A" Steam Trap Drain Line Repair (FWS-24801705).
- b. Troubleshooting AFAS Channel C Power Failure (FWS 24801931).
- c. Fan V-24B Thermostat Replacement (SPS-24703560, SC-87-298).
- d. Replacement Of Temperature Indicator Number 1487 on 1-2 Diesel (EPS-24800192).
- e. Replacement Of Instrument Hoses On 1-2 Diesel Control Panel (EPS-24703195).
- f. Lubrication Of Fan V-24D (VAS 24706074).

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. ME-12 Battery Checks.
- b. MI-39 Auxiliary Feedwater Actuation System Logic Test.
- c. DWO-1 Daily Control Room Surveillance.
- d. SHO-1 Operators Shift Surveillance.

During performance of the AFAS Logic Test, the technicians were observed to be conducting the test improperly and had signed off steps where correct actuation logic had not occurred. The technicians had not performed this monthly test recently and were apparently unfamiliar with the required output from the actuation module. An incorrect test button was being pressed. This was apparently due to a combination of confusion and poor labeling. (This same poor labeling contributed to the AFAS actuation discussed in Paragraph 3.c.) The technicians had both signed off the procedure indicating that three status lights had lighted when they had not. The technicians apparently believed that they had obtained the required output indication and called the system engineer when the inspector questioned the results. The INPO certified training program provided documented on-the-job training qualification for the performance of surveillance tests, but the certification was based on the satisfactory performance of a selection of tests which did not include MI-39. ANSI Standard N18.7-76 section 3.3 states that training shall "... assure that suitable proficiency is achieved and maintained." It was also noted that although an inadvertent actuation had occurred during the performance of the test on September 1, 1987, that corrective action identified to improve the procedure had not been included in the January, 1988 biennial review. The above constitutes a violation of the TS procedural compliance requirements of section 6.8.1 as outlined in the Appendix (Violation 255/88008-02(DRP)).

One violation and no deviations were identified.

6. Physical Security

The inspectors observed physical security activities at various locations throughout the protected and vital areas including the Central and Secondary Alarm Stations. Periodic observations of access control activities including proper personnel identification, badging and searches of personnel, packages and vehicles were conducted. The inspectors verified appropriate security force staffing and operability of search equipment. Protected and vital area boundaries were toured to verify maintenance of integrity. Illumination was verified to be adequate to support patrol and Closed Circuit Television (CCTV) monitor observations. CCTV monitor clarity and resolution were also observed. The inspectors periodically verified that appropriate compensatory measures were taken for degraded or inoperable equipment and breached boundaries.

No violations or deviations were identified.

7. Radiological Protection

The inspectors made observations and had discussions concerning radiological safety practices in the radiation controlled areas including: verification of radiation levels and proper posting; accuracy and currentness of area status sheets; adequacy of and compliance with selected Radiation Work Permits and high radiation procedures; and the ALARA (As Low As is Reasonably Achievable) program. Implementation of dosimetry requirements, proper personnel survey (frisking) and contamination control (step-off-pad) practices were observed. Health Physics logs and dose records were routinely reviewed.

The licensee has completed the testing phase of the PCM-1A personnel contamination monitors and has developed a policy for dealing with the expected low levels of contamination that will now be identified. These devices are viewed as a positive enhancement to the Radiation Protection Program.

No violations or deviations were identified.

8. NRC Bulletins

(Closed) NRC Bulletin 88-01: Defects in Westinghouse Circuit Breakers. The licensee determined that none of the subject breakers are in use in IE applications at Palisades. Two DS-416 breakers are in use supplying the asphalt solidification system for which appropriate reviews and actions will be taken separate from the NRC Bulletin requirements. The licensee's response was dated March 14, 1988.

9. Generic Letter 86-07

On March 20, 1986 the NRC issued Generic Letter 86-07, transmitting NUREG-1190 regarding the November 21, 1985 San Onofre Unit 1 loss of power and water hammer event. During this event all inplant ac power was lost for 4 minutes; all steam generator feedwater was lost for 3 minutes; a severe water hammer caused by check valve failures was experienced; all indicated steam generator water levels dropped below scale; and the reactor coolant system experienced an unnecessary cooldown transient.

The inspector verified that the licensee's program for review and assignment of action was appropriately implemented, and that sufficient distribution of the information concerning the event had been accomplished. Of the actions identified as a result of the event, the only action remaining relates to the check valve failures. The licensee has incorporated the guidance and recommendations of INPO SOER 86-03 and the EPRI document, "Application Guidelines for Check Valves in Nuclear Power Plants", into their Valve Improvement Program. Under contract to Palisades, Combustion Engineering has completed an evaluation of the flow criteria for each check valve identified in the program. Additional evaluation criteria are being considered along with various methods for verifying check valve integrity and condition in the formulation of the continuing program.

Specific actions are being tracked under Action Item Record A-SA-87-10, which has an assigned completion date of December 1, 1988.

10. Information Notices

The inspector reviewed licensee action on the following Information Notices in order to verify receipt, appropriate review, distribution, and timely corrective actions.

(Closed) IN 87-21: "Shutdown Order Issued Because Licensed Operators Asleep While On Duty". The licensee and individual licensed operators received the IN, but no action was documented as having resulted from the information.

(Closed) IN 87-23: "Loss of Decay Heat Removal During Low Reactor Coolant Level Operation". Action on this IN and INPO SER 15-87, resulted in a number of procedural enhancements and a modification to provide an alarm indicating impending loss of shutdown cooling.

(Closed) IN 87-24: "Operational Experience Involving Losses of Electrical Inverters". Fans had been added as a result of prior Palisades events and inverter replacement is planned.

(Closed) IN 87-34: "Single Failures in Feedwater Systems". Action on this issue, specifically the low pressure suction trip subsystem, is still not complete, but tracked under the licensee's corrective action program.

(Closed) IN 87-40: "Backseating Valves Routinely to Prevent Packing Leakage". The licensee's evaluation references Administrative Procedure 4.02 "Equipment Control" as providing adequate instructions concerning the proper method for backseating valves and for the identification of valve damage. Distribution was not made to the operator requalification training program or to the "read and sign" file since the licensee had taken action after a similar Palisades event.

(Closed) IN 87-41: "Failures of Certain Brown Boveri Electric (BBE) Circuit Breakers". Palisades does not have any BBE breakers of the 4KV size.

(Closed) IN 87-42: "Diesel Generator Fuse Contacts". Palisades PT fuse drawers were found to already have the knife switch contacts recommended by GE as corrective action.

During the review of the above IN's it was determined that the Training Revision Tracking Committee was functioning, meeting weekly with multidiscipline membership, and making acceptable determinations as to which generic communications are desirable for inclusion into the various plant training programs. Action on IN's continues to be assigned and tracked by the Plant Safety Engineering group.

No violations or deviations were identified.

11. Management Meeting

A quarterly management meeting to review the status and progress of the Palisades plant was conducted on March 31, 1988 at the Palisades site. Consumers Power Company (CPC) was represented by Messrs. D. P. Hoffman, J. G. Lewis, W. E. Garrity, K. W. Berry and others of the staff; and the NRC was represented by Messrs. E. G. Greenman, W. G. Guldemon, M. P. Phillips, B. L. Burgess, T. V. Wambach, and others of the staff. The meeting consisted of presentations by CPC covering an update on the corrective action plan to restore the original design margin to the Component Cooling Water and Service Water Systems, the scope of work planned for the 1988 refueling outage, and a summary of the last INPO evaluation.

12. Management Interview

A management interview was conducted on April 4, 1988, upon conclusion of the inspection. The scope and findings of the inspection were discussed. The inspector emphasized the importance of timely corrective action and management oversight as the keys to preventing licensing roadblocks and violations like the ones discussed in Paragraphs 2 and 5. 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.