U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/92027(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 17 through December 28, 1992

Inspectors: J. K. Heller D. G. Passehl
E. R. Schweibinz R. B. Landsman

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

J K Heller for B.L. Jorgensen
Date 1/13/93

Inspection Summary

Inspection from November 17 through December 28, 1992
(Report No. 50-255/92027(DRP))

Areas Inspected: Routine unannounced inspection by the resident inspectors of operational safety verification, engineering and technical support, maintenance, surveillance, and quality control activities. Topics discussed at the December 8, 1992, Van Buren County commissioner board meeting are also summarized. No Safety Issues Management System (SIMS) items were reviewed.

Results: No violations or deviations were identified in any of the five areas inspected. However, one unresolved item (providing false information - paragraph 6.a), and two inspection followup items (dry cask storage - paragraph 7) were identified.

The strengths and weaknesses are discussed in paragraph 1, Management Interview. In summary, strengths were noted in the licensee's interdepartmental working relationships, the quality of the electrical, instrumentation and control, and computer engineering supervisors; and, the effectiveness of a modification to the digital-electro-hydraulic turbine controls that prevented a reactor trip.

Weaknesses were noted in the licensee's submittal to the NRC which provided inaccurate information, operator tampering with plant records during a test of a safety related pump, and in the effectiveness of the Nuclear Performance Assessment Department in managing the backlog of items pending review.

DETAILS

1. Management Interview (71707)

The inspector met with licensee representatives - denoted in paragraph 10 - on January 6, 1993, to discuss the scope and findings of the inspection. In addition, the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection, was also discussed. The licensee did not identify any such documents or processes as proprietary.

Highlights of the exit interview are discussed below:

a. Strengths noted:

(1) Interdepartmental coordination during the repair effort following a service water leak on containment air cooler VHX-2 (paragraph 2.a.4).

(2) Knowledge, experience, and involvement of the electrical, instrumentation and control, and computer engineering department supervisors (paragraph 2.b.2).

(3) Modifications to the digital-electro-hydraulic controls on the turbine generator were effective in preventing an additional reactor trip (paragraph 3.b).

b. Weaknesses noted:

(1) Incorrect information provided to the NRC involving a modification to safety related 2400/4160 Volt circuit breakers (paragraph 6.a).

(2) Deferral of several agenda items during a meeting of the Nuclear Performance Assessment Department (NPAD) and the excessive backlog of items waiting review by NPAD (paragraph 6.b).

c. Technical Specification clarifications and the need to revise the wording during future Technical Specification change requests (paragraph 2.c).

d. The unresolved item pertaining to incorrect information provided to the NRC and the request to respond to the unresolved item (paragraph 6.a).

e. The two inspection followup items were discussed. The licensee was asked to notify the Resident Inspector when the date to load the first spent fuel dry cask was established (paragraph 7).

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

Routine facility steady state power operating activities were observed as conducted in the plant and from the main control room.

The performance of reactor operators and senior reactor operators, shift engineers, and auxiliary equipment operators was observed and evaluated. Included in the review were 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 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. Reviews of surveillance, equipment condition, and tagout logs were conducted. Proper return to service of selected components was verified.

a. General

(1) The plant operated at essentially full power during this reporting period.

(2) On December 13, 1992, a digital-electro-hydraulic (DEH) turbine generator monitoring system computer program had a fault, and the system successfully switched to a redundant program. The program switch did not affect operation of the turbine.

(3) The licensee has been continuously monitoring the control rod drive leakage. Although the magnitude of the leakage was small, the licensee continues to monitor the leak rate and has planned an outage to replace seal packages if the leakrate increases above a pre-established administrative limit.

(4) The licensee declared containment air cooler VHX-2 inoperable after discovery of an approximate 400 ml/min service water leak. The leak was successfully terminated using plugs and a pre-approved clamp device. The clamp was installed as a backup measure. The inspector observed excellent interdepartmental coordination and considered this repair effort a strength. The containment air cooler was declared operable within the allowable time frame.

b. Plant Tours

(1) During a routine plant tour, the inspector observed loose jam nuts on two U-bolts supporting the component cooling water (CCW) supply and return lines for containment spray

pump P-54A. The CCW supplies cooling water to the pump seal. One U-bolt supporting the CCW supply piping sheared in half when maintenance technicians attempted to tighten the jam nuts on it. The licensee's engineering staff determined there was no immediate operability concern since the other supports were examined and found satisfactory; also, the line was low energy and small diameter. During the repair effort, the licensee found that there was no qualified replacement U-bolt in stock, so a non-qualified U-bolt was temporarily installed. The proper repair was subsequently made with a qualified replacement U-bolt.

(2) The inspector met with the manager of the electrical, instrumentation and control, and computer engineering department to tour the plant. The inspector also met with the supervisors from each of the disciplines to discuss ongoing and future projects. All individuals involved in providing technical support to the plant were knowledgeable and experienced.

c. Technical Specification Clarifications

(1) The NOTE for Technical Specification 5.5.2.i, "Spent Fuel Storage," states that "Until needed for fuel storage, one Region II rack in the northeast corner of the spent fuel pool may be removed and replaced with the cask anti-tipping device."

The meaning of the NOTE was unclear. The NOTE implied that the anti-tipping device would be installed after removal of the fuel rack from the northeast corner of the spent fuel pool. The NOTE also implied that installation of the anti-tipping device after removal of the fuel rack was optional. The licensee considers the latter as the correct interpretation of the NOTE.

The inspector reviewed the Safety Evaluation Report (SER) for the historical changes to Technical Specification 5.5.2 and found that the previous wording for the NOTE specifically required installation of the anti-tipping device when the rack in the northeast corner of the spent fuel pool was removed. This was because of potential seismic effects on the adjacent fuel racks. The current revision of the SER clearly states that the seismic concern was resolved. Based on this, the licensee's clarification of the NOTE was appropriate. This was discussed with the NRC Office of Nuclear Reactor Regulation (NRR) project manager and the NRC Region III section chief.

(2) Technical Specification 3.21.2.a "Movement of Heavy Loads," states that "heavy loads shall not be moved over fuel stored in the main pool zone." The licensee determined that the

cover for a spent fuel dry cask would exceed the defined heavy load weight. Therefore, the licensee may not be in literal compliance with Technical Specification 3.21.2.a when installing the cover on a fully loaded cask that is located in the spent fuel pool.

The licensee's review determined that the requirements of Technical Specification 3.21.2.a. were not applicable, since the fuel in the cask is considered transitory and not in storage. The licensee's position was discussed with the NRR licensing project manager, the NRC legal department, and NRR technical reviewers. All agreed with the licensee's position.

These clarifications were discussed at the exit interview. The inspector recommended that the licensee revise the wording during subsequent changes to the Technical Specifications. The licensee acknowledged the recommendation at the exit interview.

No violations, deviations, unresolved or inspection followup items were identified.

3. Engineering and Technical Support (37828)

The inspector monitored engineering and technical support activities at the site and, on occasion, as provided to the site from the corporate office. The purpose was to assess the adequacy of these functions in contributing properly to other functions such as operations, maintenance, testing, training, fire protection, and configuration management.

a. E-4A Feedwater Heater Support Settlement

The inspector reviewed three occurrences of settlement problems of the E-4A feedwater heater to determine if excessive stress exists on the feedwater heater or the attached piping. The inspector found the settling to be minor and the licensee's monitoring activities to be adequate.

Background

Consolidation of soil beneath the 590 foot floor elevation on the northwest part of the turbine building has been occurring since initial construction.

The first observed instance occurred in 1975 when three areas (approximately 4-5 feet in diameter) under the floor were observed to have a hollow sound. Investigation revealed that the subsurface foundation material had settled away from the floor slab. The identified areas were subsequently grouted full.

The second occurrence was in 1986 when it was noticed that the spring can hangers for the feedwater inlet and outlet piping and the steam inlet piping were found to be bottomed-out on the E-4A feedwater heater. Further investigation revealed that the north pedestal and middle roller support pad had settled approximately 1 1/2 inches and 2 3/16 inches respectively. It was postulated that the north pedestal settled first, redistributing the north load of the heater to the middle roller support, causing the middle support footing to become overloaded and settle. The heater above the north pedestal was shimmied back up to the original elevation while the middle support pad was re-grouted back up to the original elevation.

The third indication of settlement problems occurred in 1990 when a gap (approximately 1/4 inch) was observed between the E-4A heater and the north pedestal. The north pedestal was again shimmied back up to the required elevation.

Cause of the Settlement

The cause of the settlement of the feedwater heater appears to be placement of the heater footings above 18 feet of improperly compacted soil backfill. The type of backfill material that was used was difficult to adequately compact because it was being placed under, around, and over the main circulating water pipes and over the main turbine building footings. Some other type of backfill material should have been used to alleviate this problem. The licensee stated at the exit meeting that they agreed the backfill material was difficult to compact but disagreed that incorrect backfill material was used.

Corrective Action

The licensee has been monitoring the heater elevations since the last observed settlement in 1990 and has determined that the consolidation has apparently subsided and that nothing more need be done. If it is found that the settlement of the heater foundation continues, the inspector recommended that the licensee institute soil borings in the area to determine the extent of the loose backfill material. The licensee acknowledged the recommendation. At that time, the NRC can reevaluate the adequacy of the licensee's corrective action plan.

b. Digital-Electro-hydraulic (DEH) Control System Voltage Transient

On November 16, 1992, at approximately 7:30 a.m. a line fault occurred on the "Y" phase of the 345 kV line between the Palisades and D.C. Cook plants. This resulted in an internal voltage transient that was seen at the DEH Turbine Control System.

During the previous inspection period, the power sources to the DEH control system were modified to provide a more reliable power

supply. The modification included installation of a voltage and wave monitor on the input and output of the uninterruptible power supply (UPS) and the SOLA transformers. The monitor would assist in analysis of voltage transients and show how effective the modifications were.

The monitor revealed that the incoming line voltage for the UPS experienced a voltage drop of approximately 30 percent while the UPS provided a steady output. The monitor showed that the SOLA Transformer experienced a 15 percent drop in incoming line voltage. The monitor did not record the output voltage.

The inspector reviewed the data from the transient and interviewed several of the system engineers. The licensee concluded that this type of voltage transient had contributed to one of the previous reactor trips. The inspector concluded that the modifications completed following the last plant trip were effective and prevented an additional reactor trip.

No violations, deviations, unresolved or inspection followup items were identified.

4. Maintenance (62703, 42700)

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: 1) the Limiting Conditions for Operation were met while components or systems were removed from service; 2) approvals were obtained prior to initiating the work; 3) activities were accomplished using approved procedures; and 4) post maintenance testing was performed as applicable.

The following work order (WO) activities were inspected:

a. Work Order 24105610, "Modification of Auxiliary Feedwater Pump P-8A breaker 152-104."

b. Work Order 24105627, "Modification of Auxiliary Feedwater Pump P-8C breaker 152-209."

c. Work Order 24203434, "K-5, Inspection of Fire Pump Diesel."

The inspector observed the operability run on diesel driven fire Pump No. P-9B, following completion of its 18 month preventive maintenance work activities. No noticeable fuel or oil leaks were

evident, and the machine ran fine. However, the engine continued to run for about one minute after the fuel supply was shut off. The mechanics attributed this to a faulty fuel supply solenoid valve and submitted a work request.

No violations, deviations, unresolved or inspection followup items were identified.

5. 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. Additionally, test instrumentation was calibrated, Limiting Conditions for Operation were met, removal and restoration of the affected components were properly accomplished, and test results conformed with Technical Specifications and procedure requirements. The results were reviewed by personnel other than the individual directing the test, and deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The following activities were inspected:

a. MO-38, "Auxiliary Feedwater System Pumps Inservice Test Procedure."

b. MO-3, "Reactor Protection Matrix Logic Tests."

c. MO-7C, "Fuel Oil Transfer Pumps."

d. MO-7B, "Fire Water Pumps P-9A, P-9B, and P-41."

The only problem noted was an incorrect Technical Specification reference listed on the "Acceptance Criteria and Operability" form attached to the procedure. The fire protection operability requirements were recently removed from the Technical Specifications and placed in the Final Safety Analysis Report (FSAR), Section 9.6.7.2. The inspector noted that the licensee was in process of upgrading their fire protection procedures to reflect the corrected references in the FSAR. The licensee recently received a Technical Specification Amendment to delete the fire protection requirements from the Technical Specifications, and they were still within their 120 day grace period to complete the administrative changes.

No violations, deviations, unresolved or inspection followup items were identified.

6. Quality Program Activities (37701, 38702, 40704, 92720)

The inspector evaluated the effectiveness of management controls, verification and oversight activities, and the conduct of jobs observed during this inspection.

The inspector frequently attended management and supervisory meetings involving plant status and plans and focusing on proper coordination among departments.

The results of licensee auditing and corrective action programs were routinely monitored by attendance at Corrective Action Review Boards (CARB) meetings and by review of Event Reports and Deviation Reports. As applicable, corrective action program documents were forwarded to the NRC Region III technical specialists for information and possible followup evaluation.

a. Incorrect Information Provided to the NRC

On November 6, 1992, the licensee updated a commitment in response to a Notice of Violation in Inspection Report No. 255/91017(DRP). The November 6 letter stated that the modification to add local and remote indication for all of the safety related 2400/4160 Volt circuit breakers had been completed. On November 24, the licensee revised the November 6 letter by stating that the modification to provide remote indication had not been completed for the breakers to the "A" and "C" auxiliary feedwater pumps because of time constraints during the 1992 refueling outage. The letter stated that the modification would be completed during the 1993 refueling outage. The modifications to provide local indication to the "A" and "C" auxiliary feedwater pumps were completed.

Inspection Report No. 50-255/91017(DRP) documented a violation pertaining to breaker operability following the 1991 refueling outage. The report stated that a containment spray pump was returned to service without adequate demonstration of operability. Approximately three months later, during a Technical Specification surveillance test, the pump failed to start.

The licensee's root cause analysis identified several administrative and hardware problems. The administrative problems were resolved by personnel training and revising several plant procedures to clearly describe management's expectations when returning equipment to service. The hardware problems were scheduled to be resolved by the addition of local and remote indication pertaining to control power availability for the 2400/4160 Volt safety related breakers during the 1992 refueling outage. The licensee also committed to add local and remote indication for the non-safety related 2400/4160 volt breakers during the 1993 refueling outage. This information was documented in the licensee response dated December 13, 1991.

The inspector revisited this item because of the relatively long time frame since the completion of the 1992 refueling outage and the November 6, 1992, letter; the short time frame between the November 6, 1992, and November 24, 1992, letters; and statements made during several 1992 refueling outage planning meetings pertaining to management's expectation that all outage work will be completed unless deferred by outage management.

The inspector reviewed the breaker modification change package (SC-91-135) and identified several milestones that indicated the licensee's November 13, 1991, letter correctly stated the commitment to modify the safety related 2400/4160 volt breakers during the 1992 refueling outage. However, the inspector also found sufficient information to conclude that the licensee knew that auxiliary feedwater pump breakers would not be modified to include remote indication during the 1992 refueling outage. In fact, the dates indicate that the licensee knew approximately two months after the November 13, 1991, letter.

The inspector concluded that the delay to modify the auxiliary feedwater pump breakers by not adding remote indication did not create a safety hazard. This was based on the degree of operator training and completion of the local indication modification.

The licensee has, on several previous occasions, provided misleading or incorrect information to the NRC. Several of the previous examples became a 10 CFR 50.9 violation because the information was used by the NRC to schedule inspection activities or the NRC identified the incorrect information.

In this case, the licensee had identified and corrected the error without NRC intervention. Additionally, the NRC had not relied on the information to perform or schedule inspection activities. Based on this, the inspector will not pursue enforcement action at this time. However, since the licensee has previously provided misleading or incorrect information to the NRC, this item is considered an unresolved item that will require a response that will be evaluated for possible enforcement action (Unresolved Item 255/91027-01(DRP)).

The response shall include, as a minimum, a chronological sequence describing the modification; the reason for the inaccurate communication in the November 6, 1992, letter; corrective action(s) for this event; and, an evaluation of the effectiveness of the corrective action(s) for the previous 10 CFR 50.9 violation.

b. Nuclear Performance Assessment Department (NPAD)

On October 12, 1992, the NRC Region III branch chief for Palisades attended a meeting of the NPAD organization. This organization provided offsite oversight for both the Big Rock Point and

Palisades Nuclear Power plants. The observations documented below were made by the branch chief and apply to the Palisades Nuclear Power Plant.

In general, the topics were discussed in sufficient detail and by knowledgeable personnel. This indicated that adequate independent reviews of plant activities were performed. The branch chief noted -- and considered it a weakness -- that several of the items on the agenda were deferred because the responsible individual was not prepared. The branch chief reviewed the backlog and concluded that the number of items pending review appeared excessive for the size of the NPAD technical staff. In addition, a discussion indicated resources may not be utilized effectively because reviews were being performed on punctuation errors that did not appear to have any safety impact on the plant.

These observations were discussed with the Palisades Senior Resident Inspector.

The inspector discussed the backlog with the NPAD Director, who acknowledged that the backlog was large. The Director stated that some items were incorrectly entered into the system, however, most were beyond the 45 day administrative review/closeout criteria. He stated that measures had recently been implemented to reduce the number to a 45 day backlog. These measures should reduce the backlog by the summer of 1993. Additionally, the backlog tracking system was being critiqued to determine which items were incorrectly entered.

The NPAD Director stated that the discussion pertaining to editorial review did not apply to Palisades. The Palisades 10 CFR 50.59 screening process eliminated minor editorial changes from the NPAD required review process.

One unresolved item (that requires a response) was identified. No violations, deviations or inspection followup items were identified.

7. Van Buren County Commissioners Board Meeting (94700)

The NRC was invited to attend a regularly scheduled meeting of the Van Buren County Commission Board and discuss the regulatory process for dry cask storage of spent fuel. The December 8, 1992, meeting was attended by the personnel indicated in paragraph 10, members of the press (a radio station, several television stations, and several newspapers), a representative from the Michigan Department of Public Health, several public utilities, and several groups that opposed dry cask storage.

The meeting was preceded by a tour of the facility conducted by the utility, a press conference conducted by groups opposed to dry cask storage, a nonviolent demonstration against dry cask storage, and a meeting between the NRC and the representative from the Michigan Department of Public Health.

The representative from the Michigan Department of Public Health requested and obtained confirmation that the resident inspector will be onsite when the first dry fuel storage cask is loaded (Inspection Followup Item 255/92027-02(DRP)).

The NRC Region III State Liaison Officer stated that his office will notify the Michigan Department of Public Health when the licensee starts loading the first cask (Inspection Followup Item 255/92027-03(DRP)).

During the meeting, the NRC discussed the administrative process for approval of a specific type of spent fuel storage dry cask, and described the criteria that permitted use by an individual utility. Questions that were asked by the county board pertained to the approval process and NRC inspection activities. Questions that were asked from the general public covered a wide range of topics such as reactor vessel embrittlement, steam generator replacement, cost of the casks, design margin of the casks, site decommissioning costs, qualification of site personnel, and many more topics. The NRC presentation, including the question and answer period, lasted approximately two hours.

Two inspection followup items were identified. No violations, deviations or unresolved items were identified.

8. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. One unresolved item identified during the inspection is discussed in paragraph 6.a.

9. Inspection Followup Items

Inspection followup items are matters which receive further inspection activity or further action by the inspector. The inspection followup items identified during the inspection are discussed in paragraph 7.

10. Persons Contacted

Consumers Power Company

#G. B. Slade, Plant General Manager
#T. J. Palmisano, Plant Operations Manager
R. D. Orosz, Nuclear Engineering & Construction Manager
#P. M. Donnelly, Safety & Licensing Director
J. L. Hanson, Operations Superintendent
R. B. Kasper, Maintenance Manager
#K. E. Osborne, System Engineering Manager
D. G. Malone, Operations Staff Support Supervisor
#W. L. Roberts, Senior Licensing Engineer
R. W. Smedley, Staff Licensing Engineer
K. A. Toner, Electrical/I&C/Computer Engineering Manager
T. A. Buczwinski, Engineering Programs Manager

#C. R. Ritt, Administrative Supervisor
#M. T. Nordin, System Engineer
#K. M. Haas, Radiation Services Manager
#R. B. Kasper, Maintenance Manager

Nuclear Regulatory Commission (NRC)

*L. B. Marsh, NRR Project Director
*R. Lickus, Region III State Liaison Officer
#J. K. Heller, Senior Resident Inspector
*F. C. Sturz, Chief, Source Containment and Device Section, Office of Nuclear Materials Safety and Safeguards
#D. G. Passehl, Resident Inspector

Van Buren County Commission

*D. Cultra, Van Buren County Administrator
*D. J. Ruzick, Chairman, Van Buren County Commission
*W. J. Ingrham, Vice-Chairman, Van Buren County Commission
*H. Sarno, Commissioner, Van Buren County Commission
*F. Tobin, Commissioner, Van Buren County Commission
*W. L. Bolinger, Commissioner, Van Buren County Commission

*Denotes some of those present at the Public Meeting on December 8, 1992.

#Denotes some of those present at the Management Interview on January 6, 1993.

Other members of the plant staff, and several members of the contract security force, were also contacted during the inspection period.