U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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License No.:	DPR-20
Report No.:	50-255/97002(DRP)
Licensee:	Consumers Power Company 212 West Michigan Avenue Jackson, MI 49201
Facility:	Palisades Nuclear Generating Plant
Location:	27780 Blue Star Memorial Highway Covert, MI 49043-9530
Dates:	January 11 through March 3, 1997
Inspectors:	M. Parker, Senior Resident Inspector P. Prescott, Resident Inspector
Approved by:	Bruce L. Burgess, Chief Reactor Projects Branch 6

EXECUTIVE SUMMARY

Palisades Nuclear Generating Plant
NRC Inspection Report 50-255/97002

This inspection reviewed aspects of licensee operations, maintenance, engineering and plant support. The report covers a 7-week period of resident inspection.

Operations

- Operator performance was good in response to the three force outages that occurred during the inspection period. Based on concerns expressed by the inspectors, reactor engineering was stationed onshift to provide appropriate monitoring and oversight of radial peaking factors. In addition, aggressive action was taken in response to weaknesses in monitoring and oversight of minimum temperature for criticality, which included performing just-in-time simulator training for the operating crew (Section O1.2).

- The inspectors noted that good operator attentiveness and system engineering followup, resulted in timely resolution, which prevented further degradation of the low service water bay level (Section O1.3).

- Good conservative decision making was noted when the main generator was taken offline to repair a hydrogen leak (Section O1.4).

- During a closeout of a licensee event report, the inspectors identified a non-cited violation as a result of containment integrity not being met for a two minute period when an operator opened the outer door of the personnel air lock with the inner door leaking (Section O8.1).

Maintenance

- The licensee identified a lack of adequate post maintenance testing of an auxiliary feedwater pump flow control valve. Also, the inspectors identified a lack of coordination between operations and maintenance involving changes to post maintenance tests that didn't receive operations review. However, the inspectors concluded that corrective actions taken by the licensee were prompt and thorough. This was considered a non-cited violation (Section M1.2).

Engineering

- The licensee has taken additional steps to resolve the main generator isophase bus problems. These problems led to a forced outage during the inspection period. Additionally, the inspectors identified a weakness in the handling of customer advisory letter (CAL) 93-02 (Section E1.1).

- The inspectors identified weaknesses in the licensee's followup and corrective actions in response to a high pressure safety injection time overcurrent relay trip. Two corrective actions for a previous occurrence in October 1996 had not been fully implemented (Section E1.2). Inspection of this matter continued into the next inspection period, and the issue will be addressed in Inspection Report No. 50-255/97005.

Plant Support

- The inspectors observed good radiological work practices during maintenance outages and plant daily walkdowns (Section R1.1).

- During a closeout of a licensee event report, the inspectors identified a non-cited violation as a result of a primary coolant sample not being analyzed within 72 hours as required by Technical Specifications (Section R8.1).

REPORT DETAILS

Summary of Plant Status

The unit went online January 14, 1997, after a forced outage to repair both main steam isolation valves, which had developed leaks in plugs used to seal valve stuffing box leakoffs. During this forced outage, the "D" primary coolant pump seal was also replaced. Full power operation was achieved on January 17, 1997. On January 23, 1997, a power reduction commenced after the discovery of cracks in the isophase bus connections. Power was reduced on February 11 to evaluate an increase in vibration on a generator isophase bushing. The unit was taken offline on February 17 when a leak was discovered in the generator hydrogen seal oil system piping. After hydrogen seal oil system piping repairs, the unit was returned to power operations. Full power operation was achieved on February 21, 1997. Several modifications/repairs were performed to the main generator isophase components. The various modifications/repairs made during the forced outages are detailed in this inspection report.

I. Operations

01 Conduct of Operations

01.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. The conduct of operations was considered by the inspectors to be good; specific events and noteworthy observations are detailed below.

01.2 Operations Challenged by Several Forced Outages

a. Inspection Scope (71707)

The inspectors observed portions of several plant activities including power reductions and startups associated with the several forced outages that occurred during the inspection period. The observations concentrated on operator performance in the control room.

b. Observations and Findings

Overall, operator performance during this period was considered good. As detailed in inspection report 50-255/96017, operators were unable to maintain primary coolant system temperature above 525°F, the minimum temperature for criticality required by Technical Specifications, during startup from the initial forced outage for the cracked isophase bus connections. Also, during the initial startup from the refueling outage, monitoring and oversight of an essential core parameter involving radial peaking factors was found deficient.

Operator performance involving subsequent forced outages was monitored during this inspection period. Improvements in operator performance were observed by the inspectors with regard to addressing previously identified weaknesses. The licensee took aggressive action to address previous weaknesses in monitoring and oversight of radial peaking factors and minimum temperature for criticality. This action consisted of stationing a reactor engineer onshift for the reactor startup to full power and performing just-in-time simulator training for the operating crew. The inspectors observed good command and control during the control room observations, with the control room supervisor directing activities. Plant and operations management were onsite and in the control room observing critical evolutions.

During this period, the operations staff identified a repeat problem of cracked isophase flex links. Previous isophase flex link cracking resulted in two forced outages on September 11, 1995 and January 5, 1997. After repair of the isophase connectors, the inspectors observed the startup on February 7, 1997. On February 9, 1997, with the reactor at 47 percent power and approximately 15 minutes after placing the main steam reheater (MSR) control valves inservice, all four MSR control valves spuriously closed. The plant was stabilized at 40 percent reactor power. On February 11, 1997, operations management conservatively decided to reduce reactor power due to the high vibrations of the "Y" isophase bushing on the main generator. After discovery of a hydrogen leak by system engineering on February 16, 1997, the inspectors noted that operator performance was good during the subsequent power reduction.

c. Conclusions

Although operators were challenged several times over the inspection period with plant material condition deficiencies, operator response to these conditions was good. The inspectors observed good operator attention to detail and oversight of plant parameters when questioned. No violations were identified.

01.3 Service Water Pump Bay Level Decrease

a. Inspection Scope (71707 and 62703)

The inspectors reviewed the events leading up to the decrease in service water bay level on February 13, 1997.

b. Observations and Findings

On February 13, 1997, with the plant at approximately 50 percent power, the operating shift observed that the dilution water pump, P-40A, had increased indications for vibration and low suction pressure. Operators also observed that the jockey fire pump was unable to maintain fire system header pressure resulting in the backup electric fire pump starting on two occasions. When the system engineer identified that the service water pump bay level was approximately two feet lower than normal (approximately 577 foot elevation), the traveling screens

were placed in manual to check for fouling. Traveling screen F-4B was discovered with significant ice buildup and traveling screen F-4C was unable to rotate due to a broken sheer pin. Further review determined that the traveling screens' differential pressure alarm sensing lines were frozen, rendering the alarms in the control room inoperable.

During a followup review of the traveling screen performance, the inspectors determined that the traveling screens would not have performed their intended back washing function. Immediate corrective actions to address the ice buildup and frozen sensing lines included placing the traveling screens in manual to eliminate the icing on the traveling screens and thawing the differential pressure switch sensing lines to allow automatic operation of the traveling screens. Also, the auxiliary operators were requested to perform tours of the traveling screens twice per shift to monitor for icing and observe service water bay level. The licensee is continuing to evaluate the cause of the frozen sensing line and the need for insulating the line to prevent further freezing.

c. Conclusions

The inspectors concluded that, after initial identification by an operator, good system engineering followup resulted in timely actions preventing further degradation of service water bay level.

01.4 Plant Shutdown Due to A Hydrogen Leak On The Main Generator

a. Inspection Scope (71707 and 62703)

The inspectors reviewed the licensee's actions in response to a hydrogen leak identified on the main generator and a subsequent plant shutdown on February 16, 1997, following a power escalation.

b. Observations and Findings

On February 16, 1997, the licensee was in the process of escalating power from approximately 50 percent to full power, following resolution of main generator isophase lead box vibration concerns that resulted in the power level decrease. During the power escalation, the shift observed low pressure hydrogen alarms on the main generator, indicating excessive hydrogen usage. The shift determined that the main generator was losing over one psig of hydrogen per hour. Discussions with system engineering resulted in the operations shift sampling for hydrogen leaks in the vicinity of the main generator. The sampling identified elevated hydrogen levels underneath the main generator. The highest levels were identified near the neutral phase of the isophase lead box. System engineering was called in to support further troubleshooting efforts. This inspection identified that the leak was from a gasket in a flange connection on the liquid detector line of the center neutral lead box. Based on system engineering's recommendations, the plant was shutdown on February 17, 1997.

Following removal of the generator from service and subsequent purging of hydrogen from the main generator, the licensee determined that the leak was from a crack in a welded joint and not the gasketed flange connection. Further sampling for hydrogen did not identify any further leaks; however, nondestructive testing resulted in the licensee questioning several welded connections. The licensee ultimately conducted weld repairs to six joints including the defective weld. In addition, the licensee modified the hanger arrangement of the hydrogen piping to reduce system piping stresses, which was believed to have contributed to the failure.

Prior to restarting the unit, the licensee conducted "just in time" simulator training for the operating crews. This consisted of a simulated startup of the reactor including placing the main turbine online. Included as part of the "just in time" training were discussions of previous problems encountered during reactor startups and turbine synchronizations. On February 19, 1997, the unit was returned to service, with the main generator synchronized to the grid. The plant proceeded to escalate power without any further incidents. The plant achieved full power on February 21, 1997.

c. Conclusion

The inspectors noted good coordination between systems engineering and the operations crew, resulting in the timely detection of the hydrogen leak. Plant management demonstrated conservative decision making in electing to remove the main generator from service. The crew accomplished the removal of the generator from the grid without incident.

01.5 High Pressure Safety Injection Pump Trip

a. Inspection Scope (71707 and 61726)

The inspectors reviewed the licensee's actions following the high pressure safety injection pump (HPSI), P-66A, being declared inoperable, while attempting to charge a safety injection tank.

b. Observations and Findings

On February 21, 1997, during routine sampling of the safety injection tanks (SITs), the high pressure safety injection pump (HPSI), P-66A, tripped immediately following the initiation of the fill procedure. Immediate followup by the operating crew identified that the "Y" phase time overcurrent relay tripped on P-66A. P-66A was declared inoperable. SIT T-82C was also declared inoperable due to a low level following sampling. This action resulted in the operating shift entering Technical Specification (TS) 3.0.3. TS 3.0.3 requires the plant to initiate a plant shutdown if the condition cannot be corrected within one hour.

HPSI pump P-66A was used to refill SIT T-82C. Although P-66A was declared inoperable, the operating crew manually reset the "Y" phase time overcurrent relay. This action was accomplished within one hour, allowing the plant to exit TS 3.0.3 after SIT T-82C level was restored above the Technical Specification value.

In reviewing reportability, the inspectors noted that the licensee determined that this condition did not require a 10 CFR 50.72, one hour report; however, a 10 CFR 50.73, 30 day report was appropriate. In reviewing Palisades Administrative Procedure (AP) 4.00, "Operations Organization, Responsibilities and Conduct," the inspectors noted conflicting guidance between an administrative procedure and a recent licensing position, that stated that entry into TS 3.0.3 was not in itself a 10 CFR 50.72 report to the NRC. The licensee has subsequently initiated steps to eliminate the conflicting guidance in AP 4.00.

See section E1.2 for additional details of the HPSI pump breaker relay repairs.

c. Conclusions

The inspectors concluded that the operating crew took timely and appropriate action to declare the HPSI pump inoperable and enter TS 3.0.3. The inspectors also concluded that the licensee made the appropriate reportability decision based on a licensing memorandum. However, appropriate administrative procedures had not been modified to clearly convey this position in assisting the operating crew in their decision process.

08 Miscellaneous Operations Issues (92700)

08.1 (Closed) LER 50-255/95-002: Degraded sealing capability of inner door of personnel air lock. During a pressure test of the inner door seals, the required test pressure of 15 psig quickly decayed. The operator performing the test was instructed by the control room supervisor (CRS) to enter the personnel air lock to gain access to the inner door and verify it was closed tightly. When the operator opened the outer door and entered the airlock to check the inner door as requested by the CRS, subsequent calculated results of leak rates verified that for a two minute period containment integrity requirements were violated.

Problems identified with operations was a lack of understanding the Technical Specifications (TS) involved. Also, the shift supervisor and shift engineer were not involved in the decision making process. To correct this problem, the shift operations superintendent issued Daily Orders and discussed with each shift the need to establish teamwork and provide contingency planning. Also, maintenance procedure CLP-M-4, "Air Lock Strongback Installation And Personnel Lock Equalizing Valve Leak Check/Adjustment," was revised to perform a post maintenance test prior to the final operations acceptability test.

The licensee is also preparing a TS change, which was in the review process. In Standard Technical Specifications, it is permissible to enter and exit through a locked air lock door to perform repairs on the affected air lock component(s). The

proposed submittal is consistent with this guidance. This licensee-identified and corrected TS violation is being treated as a Non-Cited Violation (50-255/97002-01) consistent with Section VII.B.1 of the NRC Enforcement Policy. The inspectors have not identified a recurrence of this event. This item is closed.

O8.2 (Closed) LER 50-255/96012: Technical Specification violation due to no senior reactor operator in control room. On August 9, 1996, with the plant at full power, the Control Room Supervisor (CRS) left the control room with no other Senior Reactor Operator (SRO) present. The CRS entered the viewing gallery that is directly adjacent to the control room. The time duration that the CRS was out of the control room was estimated to be less than one minute. Since Technical Specification (TS) 6.2.2.b requires at least one licensed SRO to be in the control room at all times other than cold shutdown or refueling, a TS violation occurred. On August 13, 1996, with the plant at full power, a similar occurrence resulted when the Shift Engineer, who temporarily relieved the CRS as the SRO in the control room, briefly left the area to file a work order in the adjacent Technical Support Center. The Shift Engineer was out of the control room for approximately one minute. Another SRO was in the control room; however, there was no explicit turnover of control room responsibilities. These events were the subject of violation 50-255/96008-01. Review of the LER revealed no new issues; therefore, this LER is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62703 and 61726)

The inspectors observed all or portions of the following work activities:

Work Order No:

- 24710449: Rebuild actuator of VOP-0510 MSIV bypass valve
- 24710387: Repair packing leak and stroke test MSIV CV-0501
- 24710388: Repair packing leak and stroke test MSIV CV-0510
- 12697035: Reopen isophase bus duct access covers and inspect bushing
- 24710506: Regenerative heat exchanger letdown stop valve CV-2001 - replace regulator and solenoid valve
- 24710708Y: Disconnect main generator flex connectors/install new flex connectors
- 21297095: Construct main generator mock-up for vibration resonance testing and evaluation

Surveillance Activities

- MO-7A: Emergency Diesel Generator
- MI-2: Reactor Protective Trip Units
- MC-11B: Safety Injection Tank Sampling

b. Observations and Findings

The inspectors found the work performed under these activities to be professional and thorough. All work observed was performed with the work package present and in active use. Work packages were comprehensive for the task and post maintenance testing requirements were adequate. The inspectors frequently observed supervisors and system engineers monitoring work practices. When applicable, appropriate radiation control measures were in place.

c. Conclusions

The inspectors observed good procedure adherence practices. However, the licensee identified a failure by the procedure to adequately address post maintenance testing (PMT), which became evident during auxiliary feedwater post modification testing. During the inspectors' review of this event, programmatic weaknesses in the control of post maintenance testing were identified. See the specific observations detailed below.

M1.2 Auxiliary Feedwater (AFW) Post Maintenance Testing

a. Inspection Scope (37551 and 61726)

The inspectors observed various portions of post modification testing of the auxiliary feedwater (AFW) system following installation of the new steam supply valves to AFW pump P-8B. Part of the testing involved adjustments to the AFW pump discharge valve controllers to correct for flow oscillations. In concert with the changes made to the AFW pump discharge valves, the inspectors evaluated maintenance activities and engineering involvement associated with the adjustment of the flow control valves, CV-0727 and CV-0749. Prior historical performance of the flow control valves was also reviewed.

b. Observations and Findings

During the 1996 refueling outage, the steam supply valves to AFW pump P-8B were replaced. The valves were replaced due to leakage problems which allowed continuous admission of steam to the turbine, causing it to constantly spin. Following the new valve installations, post modification testing included verification of time to flow data for all three AFW pumps. The requirement, as stated in the final safety analysis report (FSAR) for the turbine driven AFW pump was 155 gpm per steam generator (SG), within 177 seconds of receiving an actuation signal. The stated FSAR flow and time to flow requirements were used as acceptance criteria in the post modification testing procedure. Both AFW pumps P-8A and P-8B failed

to meet this acceptance criteria. During testing, actual data recorded showed that 140 gpm was reached in 100 seconds and 155 gpm was reached in 207 seconds, with significant flow oscillations. Because of past concerns with problems of flow oscillations, the licensee had been pursuing a new analysis, which had been initiated in 1994. This analysis concluded that a flow rate of 140 gpm per SG within 200 seconds of the actuation signal was acceptable. The inspectors reviewed the licensees revised engineering analysis and safety evaluation, with no additional concerns identified. After the initial failure to meet the FSAR flow and time to flow requirements, the controllers for both valves were tuned to meet the revised acceptance criteria. Although the licensee could have met the previous requirements, they decided that the conservative action was to reduce system flow oscillations. The final as left data was 155 gpm achieved in 187 seconds. The necessary changes to update the FSAR to reflect the new flow and time to flow requirements were initiated.

As a result of the flow and time to flow requirements not being met during the post modification testing, the licensee conducted a review of previous maintenance. One instance was identified in early 1996, for which inadequate post maintenance testing was performed. On February 13, 1996, adjustments were made to the AFW controller for CV-0727, due to identified flow oscillations. The licensee failed to recognize that there was a correlation between flow oscillation adjustments and it's impact on time to flow. Originally, the work order contained a step to verify time to flow. However, a maintenance supervisor deleted the test step, believing that adjusting for flow oscillations would not impact time to flow. This action was allowed by procedure. No further adjustments were performed to adjust flow and time to flow until replacement of the control valves during the 1996 refueling outage.

The licensee recognized that inadequate post maintenance testing was performed in February 1996. The system engineer's root cause evaluation determined that operability testing requirements should be clearly defined in the work order cover sheet and not within the work order steps. Additionally, the inspectors identified a programmatic weakness, which allowed testing in the work order steps to be revised without operations review. The inspectors reviewed the corrective actions the licensee implemented in response to this event. The system engineer held discussions with engineering management and management from the various affected departments. Administrative procedure (AP) 5.01, "Initiation and Planning of Work Requests/Work Orders" was revised. A step was added to the procedure that now requires the planner return the work order to operations planning for review of the operability testing section if the planner believes the work scope deviated from the original work request.

AP 5.19, "Post Maintenance Testing" was revised to clarify testing criteria in a work order. Specifically, testing criteria should not state "per system engineer or supervisor", as this wording was considered too ambiguous. The system engineer and supervisor discussed the event, lessons learned and the procedure revisions with the various work groups involved. The failure to ensure adequate post maintenance testing is considered a violation of 10 CFR 50, Appendix B, Criterion

V, "Instructions, Procedures, and Drawings". However, the inspectors reviewed the corrective actions and view this as a Non-Cited Violation, consistent with Section VII.B.1 of the Enforcement Policy (NCV No. 50-255/97002-02).

c. Conclusions

The inspectors reviewed the licensee's corrective actions. The inspectors found that the procedural control weaknesses in post maintenance testing were thoroughly addressed. Actions taken appeared prompt and thorough. The inspectors concluded that although the licensee's past practice of allowing system engineering and maintenance supervision to modify the post maintenance testing requirements was inappropriate, the licensee has since modified procedures to prevent a recurrence of this condition. This was considered a non-cited violation.

III. Engineering

E1 Conduct of Engineering

E1.1 Main Generator Isophase Bus Connections Issue

a. Inspection Scope (37551 and 62703)

The inspectors reviewed the licensee's activities to resolve the degraded generator isophase flex link issue. Portions of testing, maintenance and engineering's analysis and resolution of the problems identified were observed.

b. Observations and Findings

Over the past year and one half, three forced outages occurred due to cracking found on the isophase flex links. The first occurrence of cracks found on the connectors was identified on September 11, 1995. The other two instances occurred soon after full power operation was achieved subsequent to the refueling outage. Operations identified cracks in the connectors on January 5, 1997. The cracked isophase strap connectors were replaced and the plant went online January 6, 1997. On January 23, 1997, the connectors were again found cracked and the reactor was placed in hot shutdown.

There were several problems identified by the licensee during the course of the investigation into the January 23rd event. Regarding the cracking observed on the isophase flex links, no one specific failure mechanism was identified. Problems were found in manufacture, system design and maintenance practices. Analysis of the cracked isophase flex links identified that chlorides introduced during the manufacturing process accelerated the cracking problem. Several design deficiencies were identified including a problem with marginal cooling performance from the bus duct cooling system. To improve air circulation within the isophase bus duct, the bottom vents were permanently blocked, and new vents installed near the top of the bushings to receive additional cooling flow. Other design changes involved replacing the isophase flexible laminated straps with larger

capacity and more vibration resistant braided straps. Also, the transition piece, which connects the straps to the bushings, was enlarged for better heat dissipation. The licensee was optimistic that these changes should preclude additional problems with the isophase bushings and flex links.

The inspectors identified a weakness that involved a lack of action by the licensee to incorporate a Westinghouse Customer Advisory Letter (CAL) 93-02. The inspectors found that CAL 93-02 was never logged into the licensee's industry event review program (IERP). The CALs are issued in numerical order. The inspectors found that several CALs were unaccounted for. Previously, in inspection report 50-255/96010, the inspectors identified other programmatic weaknesses in the IERP. The inspectors will review the licensee's proposed corrective actions to address IERP weaknesses in response to Violation 50-255/96010-03. The CAL addressed gap adjustments to the connections between the transition pieces and isophase bushings. A flange attaches the transition piece to the bushing and an electrical contact at this location is maintained by four cap screws. If the required loading on the cap screws is not maintained, electrical arcing can occur. Arcing was identified between the threads of the flange and the bushing, indicating that the proper gap was not maintained. The licensee considered this to be the greatest contributor to the isophase bus degradation.

Since full power operation was achieved on February 21, 1997, vibration and temperature levels have decreased. The licensee is continuing to closely monitor the generator, bushings and related components.

c. Conclusions

The inspectors concluded that the licensee missed opportunities to aggressively pursue root cause investigation on the prior two events. The arcing observed on the main generator bushings had the potential to a have significant impact on the plant.

E1.2 Breaker Trip Of P-66A High Pressure Safety Injection Pump (HPSI)

a. Inspection Scope (37551 and 61726)

On February 21, 1997, the P-66A HPSI pump breaker tripped while attempting to start. The inspectors reviewed the event to determine if licensee evaluation of the circumstances and compensatory measures taken were adequate.

b. Observations and Findings

Pump P-66A was to be used to refill safety injection tank (SIT) T-82C after Technical Specification (TS) test MC-11B "Safeguards Boron Sample Safety Injection Tanks." SITs "A" and "B" had been refilled satisfactorily using P-66A. The P-66A breaker tripped almost immediately after starting to fill SIT T-82C. Operations found its corresponding breaker, 152-207, had the time overcurrent (TOC) relay on the "Y" phase tripped. The relay was reset and the pump started.

However, the TOC relay did not return to the normal pre-start position. The system engineer recommended that the "Y" phase TOC relay be taken out of service (OOS). The inspectors reviewed the operability determination and the Final Safety Analysis Report to ascertain if the breaker's design function would still be met with the "Y" phase taken OOS. No problems were identified.

In inspection report (IR) 50/255-96010, the inspectors reviewed a similar event that occurred on October 2, 1996 with the same breaker and "Y" phase TOC relay. The relay flag indicated that the relay should have actuated (the relay flag had "dropped in"), but the relay did not initiate the expected breaker trip. Extensive troubleshooting was performed. The licensee determined the flag had dropped on the initial pump start and instantaneous amperage spike, and had not reset because of mechanical binding. As was done in the more recent event, the relay was replaced and the pump declared operable.

Inspection of the failed relay found metal particles in the sealed TOC relay component. The licensee believed the particles were from the plated induction disk of the TOC relay. The particles were sent offsite for analysis. Bench testing showed that the particles inhibited proper operation of the relay.

The inspectors reviewed licensee followup of the October 1996 event. Two of the four assigned corrective actions had not been completed to date. The licensee had determined that procurement of spare relays was necessary, as this was a common relay used throughout the plant. Also, it was planned to provide engineering justification to revise procedure SOP-3, "Safety Injection and Shutdown Cooling System," to permit the use of the other HPSI pump P-66B, to fill the SITs at full primary coolant system pressure. Both assigned actions had just been granted extensions to complete the required actions, five months after the previous event.

c. Conclusions

The inspectors found engineering's justification for system operability adequate. However, the licensee's followup to a similar event in October 1996 was not timely. The licensee's followup to either procure spare relays or provide a more detailed engineering analysis to allow use of the alternate HPSI pump the inspectors concluded was not addressed in a timely manner. The inspectors identified a concern with the licensee's timely response to correct identified problems, which will be detailed in inspection report 50-255/97005.

E8 Miscellaneous Engineering Issues (92700 and 92903)

E8.1 (Closed) LER 50-255/94-018: Failure to properly implement Technical Specification 4.7.1.c, refueling outage inspections of the emergency diesel generators. This LER reports a violation of TS 4.7.1.c, failure to perform a 12 year tear down inspection of the EDGs. Technical Specification 4.7.1.c requires, in part, that each diesel generator shall be subjected to an inspection, in accordance with the procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service, at least once per refueling cycle during plant shutdown. Contrary

to the above, on October 26, 1994, the licensee identified that the manufacturer's recommendation for an engine tear down inspection every 12 years had not been implemented. The following corrective actions were completed and appear adequate to prevent recurrence:

1. A formal evaluation of the manufacturer's recommended inspections was completed, and Palisade Technical Specification Surveillance Procedure RM-63, "Diesel Generator Inspections," was revised to include the changes.

2. Palisades Administrative Procedure 9.45, "Vendor Manual Control," was revised to clarify the procedure for dispositioning manufacturer's recommended maintenance and inspections.

3. The diesel generators were inspected during the 1995 and 1996 refueling outages, and no significant problems were noted.

This was the subject of escalated enforcement action. The subject was initially addressed in IR 50-255/94017(DRP). The enforcement conference was addressed in inspection report 50-255/94020. The inspector's concerns associated with whether or not the diesel generators could supply maximum analyzed electrical power requirements during a postulated design accident will be addressed during NRC inspection followup to other items. This item is closed.

E8.2 Closed VIO 50-255/94017-02: Failure to conduct major EDG inspections and overhauls. Licensee actions were addressed in LER 50-255/94018, and were determined by the inspector to be pertinent to this issue. This item is closed.

E8.3 (Closed) IFI 50-255/92016-01: Chronic alarming of pressurizer/reactor head vent valves pressure annunciator. The vent system is connected to both the reactor vessel head and pressurizer. The system relieves to either the pressurizer quench tank or directly to the containment atmosphere. The system configuration provides for dual isolation from either the head or the pressurizer to containment atmosphere or quench tank. The pressure instrumentation is installed on the common piping between the upstream and downstream isolation valves. The pressurizer/ head vent valves are one inch pilot operated Target Rock valves. Upstream of the first set of isolation valves are flow limiting orifices, which would limit leakage from either vent source to less than the make up capacity of a single charging pump. Normal discharge for the system is to the quench tank and quench tank level is monitored. The inspectors verified that overall identified leakage has been small. The other line relieves to containment via a funnel drain line to the containment sump. In discussions with the system engineer, evidence of leakage by telltale boric acid deposits was not found at the funnel when this refueling outage started. Historically, evidence of leakage has been found to be minimal. In discussions with operations personnel, performance of the valve when required during venting of the primary coolant system has been satisfactory. The vendor stated the valves seat best under a high differential pressure, which is hampered by maintaining the lines pressurized between the isolation valves. However, the inspectors found no evidence of excessive leakage, and the valves had performed when required in a

satisfactory manner. The system engineer appeared to be adequately monitoring valve performance. This item is closed.

IV. Plant Support

R1 Radiological Protection

R1.1 Forced Outages and Daily Radiological Work Practices

a. Inspection Scope (71750 and 83750)

The inspectors observed radiological worker activities during the forced outages discussed in this inspection report, and also monitored radiological practices during daily plant tours.

b. Observations and Findings

Observation of jobs in progress during the forced outages mentioned above revealed that radiation technicians were visible at the job sites. The technicians appeared to take necessary actions and surveys consistent with good ALARA practices.

c. Conclusions

The inspectors concluded that radiological practices observed during the maintenance outages and plant daily walkdowns were adequate. The inspectors had no concerns.

R8 Miscellaneous Plant Support Issues (92700)

R8.1 (Closed) LER 50-255/95-016: Primary coolant sample not analyzed within 72 hours. Technical Specification (TS) Table 4.2.1 requires, in part, that the primary coolant be tested for chloride and oxygen concentration with a maximum of 72 hours between samples. Contrary to the above, on December 26, 1995, no chloride sample had yet been taken on a primary coolant sample which was drawn the previous day. The most recent chloride analysis was completed on December 23, 1995; therefore, the 72 hour TS Table 4.2.1 limit was exceeded. The licensee determined the root cause to be analysis equipment malfunction coupled with a misinterpretation of the TS sample requirements. On December 28, 1995, the malfunctioning laboratory equipment was repaired, and the sample analysis was completed, which determined that the chloride concentration was acceptable. Additionally, a memorandum was included in the Chemistry and Radiological Services Policies and Practices Manual which communicated the analysis requirements and management expectations to the Chemistry Department. The inspectors did not identify any similar recent events. This licensee-identified and corrected violation is being treated as a Non-Cited Violation (50-255/97002-03), consistent with Section VII.B.1 of the NRC Enforcement Policy. This item is closed.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on March 3, 1997. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. A. Fenech, Vice President, Nuclear Operations
T. J. Palmisano, Plant General Manager
J. L. Hanson, Acting Nuclear Services General Manager
G. B. Szczotka, Nuclear Performance Assessment Manager
R. J. Gerling, Design Engineering Manager
T. C. Bordine, Licensing Manager
D. W. Rogers, Operations Manager
J. P. Pomeranski, Maintenance and Construction Manager
D. P. Fadel, System Engineering Manager
D. G. Malone, Shift Operations Supervisor
M. P. Banks, Chemical & Radiation Protection Services Manager
K. M. Haas, Training Manager
S. Y. Wawro, Planning & Scheduling Manager

NRC

M. E. Parker, Senior Resident Inspector, Palisades
P. F. Prescott, Resident Inspector, Palisades

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62703:	Maintenance Observation
IP 71707:	Plant Operations
IP 71750:	Plant Support Activities
IP 83750:	Occupational Radiation Exposure
IP 92700:	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92903:	Followup - Engineering

ITEMS OPENED

50/255/97002-01	NCV	Failure to maintain containment integrity
50-255/97002-02	NCV	Failure to ensure adequate post maintenance testing is performed for the AFW pumps
50/255/97002-03	NCV	Primary coolant sample not analyzed within the Technical Specifications time requirement of 72 hours

ITEMS CLOSED

50-255/92016-01	IFI	Chronic alarming of pressurizer/reactor head vent valves pressure annunciator
50-255/94017-02	NOV	Failure to Conduct Major EDG Inspections and Overhauls
50-255/94-018	LER	Failure to properly implement Technical Specification 4.7.1.c, emergency diesel generators refueling outage inspections.
50-255/95-002	LER	Degraded sealing capability of inner door of personnel air lock
50-255/96-012	LER	No Senior Reactor Operator in the Control Room
50-255/95-016	LER	Primary coolant sample not analyzed within 72 hours
50/255/97002-01	NCV	Failure to maintain containment integrity
50-255/97002-02	NCV	Failure to ensure adequate post maintenance testing is performed for the AFW pumps
50/255/97002-03	NCV	Primary coolant sample not analyzed within the Technical Specifications time requirement of 72 hours

LIST OF ACRONYMS USED

AP	Administrative Procedure
ALARA	As Low As Reasonably Achievable
AFW	Auxiliary Feed Water
CAL	Customer Advisory Letter
CFR	Code of Federal Regulations
CL	Check List
CRS	Control Room Supervisor
CV	Control Valve
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
FSAR	Final Safety Analysis Report
HPSI	High Pressure Safety Injection
IFI	Inspection Followup Item
IR	Inspection Report
LER	Licensee Event Report
MSIV	Main Steam Isolation Valve
MSR	Main Steam Reheater
NCV	Non-Cited Violation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OOS	Out of Service
PDR	Public Document Room
PPAC	Periodic & Predetermined Activity Control
RFO	Refueling Outage
SIT	Safety Injection Tank
SRO	Senior Reactor Operator
SG	Steam Generator
SV	Solenoid Valve
SOP	System Operating Procedure
TS	Technical Specification
TOC	Time Overcurrent