U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-255
License No:	DPR-20
Report No:	50-255/98019(DRP)
Licensee:	Consumers Energy Company 212 West Michigan Avenue Jackson, MI 49201
Facility:	Palisades Nuclear Generating Plant
Location:	27780 Blue Star Memorial Highway Covert, MI 49043-9530
Dates:	October 8, 1998, through November 25, 1998
Inspectors:	J. Lennartz, Senior Resident Inspector J. Maynen, D.C. Cook Resident Inspector E.Schweibinz, Project Engineer
Approved by:	Anton Vegel, Chief Reactor Projects Branch 6

EXECUTIVE SUMMARY

Palisades Nuclear Generating Plant
NRC Inspection Report 50-255/98019

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

Operations

- In general, the conduct of operations continued to be professional with the control room environment free of unnecessary distractions. No significant emergent equipment problems challenged plant operations during this inspection period. (Section O1.1)

- Weak equipment status control for the hydrazine addition system, a system normally operated by chemistry personnel, contributed to the inadvertent draining of hydrazine into the turbine building sump. The incident was considered minor because an inadvertent release of hydrazine to the environment did not occur and there was no impact on nuclear safety. However, the incident highlighted the need for improved equipment status control, effective inter-departmental communications, and increased rigor by operations personnel when they are conducting evolutions on equipment that is normally operated by other plant department personnel. The recovery efforts were well coordinated between operations and environmental department personnel. Immediate corrective actions were considered appropriate. (Section O1.2)

Maintenance

- Maintenance and surveillance activities were conducted in a professional manner and workers actively utilized and adhered to procedures. The safety-related battery charger and instrument inverter system modification has been effectively coordinated with operations. (Section M1.1)

Engineering

- To date, the safety-related battery charger and instrument inverter modification project has proceeded without any significant problems. Assigning two licensed operators to the modification team was a positive action, in that it fostered a strong tie between operations and the modification work group. The status of the new and existing equipment was displayed in the control room and was continuously available to the control room operators, which was also a positive action. (Section E1.1)

- The observed training session for system engineers regarding the maintenance rule was effective. (Section E5.1)

- Key information pertaining to system status was provided to plant management during the system health assessment presentations. Documenting operator concerns and

maintenance staff concerns in the system health reports integrated the various plant departments in the process, which was considered a positive attribute. (Section E7.1)

Plant Support

- Actions taken by chemistry personnel following the inadvertent draining of the hydrazine addition tank were timely. Feedwater and steam generator chemistry hydrazine concentrations were restored to normal values in less than 2 hours. (Section R4.1)

- The emergency planning personnel's critique of the emergency drill was self-critical and appropriate remediation training was conducted to address the identified concerns. (Section P7.1)

- Security personnel maintained positive control of the vital area doors that had inoperable card readers during the ongoing security system modification project. (Section S.1)

- The fire protection department effectively used an unannounced drill to challenge the fire brigade and to exercise response from off-site assistance to the fire scene. (Section F.1)

Report Details

Summary of Plant Status

The plant operated at full power during the entire inspection period. A modification to install new 125 VDC safety-related battery chargers and instrument inverters was in progress at the end of the inspection period. To date, that modification project has proceeded on-schedule without any significant problems.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations continued to be professional with the control room environment free of unnecessary distractions. No significant emergent equipment problems challenged plant operations during this inspection period. Specific events and noteworthy observations are detailed in the sections below.

O1.2 Equipment Status Control Weakness

a. Inspection Scope (71707)

The inspectors reviewed Equipment Tagout Request A845-CD178, Condition Report C-PAL-98-1836, "Release of Hydrazine to Turbine Building Sump," and reviewed Administrative Procedure 4.02, "Control of Equipment," and discussed the incident with chemistry and operations personnel.

b. Observations and Findings

Operations personnel developed and hung the applicable equipment tagout (A845-CD178) to support scheduled maintenance on the demineralized water supply to hydrazine tank (T-16) manual valve, MV-CD-178. The purpose of the tagout was to isolate condensate to the hydrazine tank and to drain the line that contained MV-CD-178 prior to the maintenance. The expected drain path was into the empty morpholine tank T-15 that had not been used for several years.

However, when the drain path was established, the hydrazine was unexpectedly siphoned from T-16 to the morpholine tank T-15 and a normally closed drain valve (FW-268) on T-15 was open. Consequently, T-16 emptied and the hydrazine inadvertently flowed into the turbine building sump through the open drain valve. The hydrazine was subsequently pumped to the oily waste separator by the turbine building sump pumps which cycled on to drain the turbine building sump. A Chemistry Department Supervisor identified the unexpected draining of T-16 during a tour to check on the status of the scheduled maintenance. Control room operators were immediately

informed and appropriate actions were taken to mitigate an inadvertent release of hydrazine to the environment.

The maintenance activity was canceled and operations and environmental department personnel developed a plan to clean up the hydrazine from the undesirable locations. The recovery efforts were well coordinated between the operations and the environmental departments. The evolution effectively removed the hydrazine from the turbine building sump and the oily waste separator and precluded a release to the environment. In addition, a "Level 2" Condition Report, C-PAL-98-1836, was generated. As per the licensee's corrective action program, a "Level 2" condition report was generated for an issue that was determined to be a significant condition adverse to quality and required a root cause determination. The root cause evaluation was on-going at the end of the inspection period.

The inspectors noted that the T-15 drain valve (FW-268) was a normally closed valve as indicated on the piping and instrument drawings. Also, the valve was not contained on any operations system valve check lists and that it was normally operated by chemistry personnel which was allowed by applicable administrative procedures. However, chemistry personnel did not have any controls in place to positively maintain the valve status and could not definitively determine why the valve was open. Actions necessary to maintain an accurate status of plant equipment that was operated by chemistry personnel were being evaluated.

This particular incident was minor in that an inadvertent release of hydrazine to the environment did not occur and there was no impact on nuclear safety. Therefore, enforcement action was not warranted. However, this incident was another example of equipment status control problems that have been identified in the recent past and also identified that systems not normally operated by operations personnel is a new area of vulnerability. In addition, this incident highlighted the need for effective inter-departmental communications and increased rigor by operations' personnel when they are conducting evolutions on equipment that is normally operated by other plant department personnel.

As an immediate corrective action, operations management directed that any equipment normally operated by other work groups would not be manipulated by operations personnel without having that applicable work group verify equipment status. Also, the T-15 manual drain valve was placed in its normally closed position after an evaluation determined that there was no specific reason for the valve to be open. The inspectors considered the immediate corrective actions as appropriate.

c. Conclusions

The inspectors concluded that weak equipment status control for the hydrazine addition system, a system normally operated by chemistry personnel, contributed to the inadvertent draining of hydrazine into the turbine building sump. The incident was minor in that an inadvertent release of hydrazine to the environment did not occur and there was no impact on nuclear safety. However, the incident highlighted the need for improved equipment status control, effective inter-departmental communications, and

increased rigor by operations' personnel when they are conducting evolutions on equipment that is normally operated by other plant department personnel. The recovery efforts were well coordinated between operations and environmental department personnel. Immediate corrective actions were considered appropriate.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) Unresolved Item 50-255/95007-01: Excessive pressurizer vapor space cooldown. On May 25, 1995, during a primary coolant system cooldown, the operators observed that the pressurizer vapor space had cooled down in excess of 100°F/hour. The excessive vapor space cooldown was due to venting hot, non-condensible gases from the pressurizer. During the primary coolant system cooldown, a temperature differential had developed between the pressurizer liquid space and the pressurizer vapor space. Venting the non-condensible gases resulted in the relatively cooler pressurizer water filling the void in the pressurizer vapor space. A rapid temperature drop was observed as the liquid level in the pressurizer increased and contacted the vapor space temperature indicator. The maximum average cooldown rate over 1 hour was determined to be 139°F/hour.

The Engineering Specification for the pressurizer used a cooldown rate of 200°F/hour in the pressurizer design. Additionally, the Engineering Specification required 500 cooldown events in the design analysis for the pressurizer. Based on this information, the licensee concluded that the cooldown rate temperature excursion was within the design basis of the pressurizer vessel.

Technical Specification 3.1.2.b that was in effect during the incident required that the pressurizer heatup and cooldown rates be maintained < 100°F/hour. In April 1996, Technical Specification Amendment 171 was issued which raised the allowable pressurizer cooldown rate to 200°F/hour. Therefore, the failure to maintain pressurizer vapor space cooldown rate less than 100°F/hour constitutes a violation of minor significance and is not subject to formal enforcement action. This unresolved item is closed.

O8.2 (Closed) Inspection Follow-up Item (IFI) 50-255/94013-01: Plant Specific Technical Guideline Weakness. This item pertained to several identified weaknesses regarding the Emergency Operating Procedure (EOP) basis documents. The weaknesses included: 1) the basis document did not ensure that all of the owners group guidance as described in the Emergency Procedure Guidelines was either incorporated into plant specific EOPs or adequately justified when a deviation from the guidelines existed; 2) what constituted a safety significant deviation was not defined anywhere; and 3) the basis document received only a minimal level of review.

The inspectors reviewed the actions that were taken by the licensee to address the identified weaknesses. The basis documents were revised to incorporate both the plant specific steps and the owners group Emergency Procedure Guideline steps. The basis documents also contained the documented justification anytime the plant specific step resulted in a safety significant deviation from the Emergency Procedure Guidelines. A definition of what constituted a safety significant deviation was incorporated into

Administrative Procedure - 4.06, Attachment 2, "EOP Writer Guidelines," Revision 8. In addition, Administrative Procedure - 4.06, "Emergency Operating Procedure Development and Implementation," was changed to require a safety review of the basis document to ensure that the requirements of the plant bases and licensing commitments are satisfied.

The inspectors also noted that completely revised EOPs were issued in September 1998. The inspectors concluded that the revised basis document adequately addressed the identified weaknesses. This item is closed.

O8.3 (Closed) Inspection Follow-up Item (IFI) 50-255/94013-02: Emergency Operating Procedure Writers Guide. This item pertained to several identified weaknesses regarding the EOP writers guide. The writers guide weaknesses included: 1) lack of objective criteria for when plant location information was required to be included with the EOP step and to what level of detail; and 2) lack of sufficient restrictive guidance to ensure consistent identification of components.

The inspectors reviewed Administrative Procedure - 4.06, Attachment 2, "EOP Writers Guidelines," Revision 8. The inspectors noted that the writers guide was revised to provide objective criteria for component identification including plant location information. The inspectors also noted that completely revised EOPs were issued in September 1998. The inspectors concluded that the revised writers guide adequately addressed the identified weaknesses. This item is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments (61726 and 62707)

Portions of the following maintenance work orders and surveillance activities were observed or reviewed by the inspectors:

Work Order No:

- 24513529 Diesel Generator 1-1 Ventilation Fan, V-24B
- 24812025 Turbine Driven Auxiliary Feedwater Pump Steam Supply Valve Blowdown
- 24810999 Calibrate/Set Pressure Control Valve For High Pressure Air To Shutdown Cooling Heat Exchanger
- 24813762 Emergency Diesel Generator 1-2 Sprinkler Piping Water Flow Switch
- 24712450 Transferring Breaker Loads From Inverter Y40 To Y40A

- 24712425 — Remove Old and Install New Inverters Y20, Y40, and Battery Chargers 2/4

Surveillance No:

- MO-38 — Auxiliary Feedwater System Monthly Test
- RT-71K — Class 2 System Functional Test For Shutdown Cooling System
- MO-33 — Control Room Ventilation Emergency Operation

The inspectors noted that the work packages were present at the job site for the observed maintenance activities and that work was performed in a professional manner. The maintenance activities associated with the safety-related battery charger and instrument inverter system modification were effectively coordinated with the control room operators. Appropriate radiological control measures were in place, when needed, and workers were sensitive to minimizing radiation dose. Also, the inspectors noted that fire watches were in place, when required, during maintenance activities and that the fire watches were knowledgeable of their duties. Procedures were adhered to and appropriate self checking practices were utilized during surveillance testing. The inspectors concluded that maintenance and surveillance activities were conducted in a professional manner and that workers actively utilized and adhered to procedures. The safety-related battery charger and instrument inverter system modification activities were effectively coordinated with operations.

M8 Miscellaneous Maintenance Issues (92903)

M8.1 (Closed) LER 50-255/98-010: Manual Reactor Trip Due To Failure Of The Main Feedwater Pump. This event was discussed in detail in Inspection Report 50-255/98015. The main feedwater pump failure was attributed to a maintenance preventable functional failure of the main lube oil pump coupling. The reactor trip was uncomplicated in that all safety systems functioned as expected and therefore, the event had no safety significance. No new issues were revealed by the LER. This item is closed.

III. Engineering

E1 Conduct of Engineering

E1.1 Safety-Related Battery Charger and Instrument Inverter Modification Project

a. Inspection Scope (37551 and 62707)

The inspectors reviewed portions of the Modification Installation Procedures I-SC-96-033-02, "Transferring Loads From Existing Inverter Y40 to

Transitional Inverter Y40A," and I-SC-96-033-01, "Transferring Loads From Existing Inverter Y20 to Transitional Inverter Y20A." The inspectors also observed portions of the load transfers.

b. Observations and Findings

The inspectors noted that the procedures that were developed for the safety-related battery charger and instrument inverter modification project were very detailed. The procedures were formatted to include sections with specific steps for each individual load transfer and each section included: 1) appropriate review and approval signatures; 2) applicable Technical Specifications; and 3) expected alarms. Additionally, the procedures contained a step to document any pertinent observations or discrepancies noted during the individual load transfers. The documented information would be evaluated and used to update applicable procedures and simulator modeling as necessary.

A Senior Reactor Operator and Reactor Operator were taken off-shift and assigned to the modification team. Use of these individuals as permanent members of the modification work group was considered a positive action in that they fostered a strong tie between operations and the modification team and reduced the burden on the control room operators. Also, a status board was placed in the control room that continuously identified the status of the new and existing equipment on a real time basis to the control room operators. The inspectors considered the status board also as a positive action.

A pre-job brief for each load transfer was held with the control room operators the night before the transfer was to occur. Also, a mini-brief was conducted in the control room prior to the load transfer as a reminder. The load transfers were well coordinated between the modification work group and the control room operators. To date, no significant problems have occurred during the load transfers.

c. Conclusions

The inspectors concluded that, to date, the safety related battery charger and instrument inverter modification project has proceeded without any significant problems. Assigning two licensed operators to the modification team was a positive action in that it fostered a strong tie between operations and the modification work group. The status of new and existing equipment was displayed in the control room and continuously available to the control room operators which was also a positive action.

E5 Engineering Staff Training and Qualification

E5.1 Maintenance Rule Training For System Engineers

The inspectors observed a required training session for system engineers regarding the maintenance rule. The inspectors noted that the training was effective in that: 1) training objectives were established that included a tie to the job responsibilities; 2) the instructor covered all of the training objectives during the session; 3) the instructor was knowledgeable of the subject and provided industry and plant specific examples to

clarify topics; and 4) a test to evaluate the knowledge gained was administered at the end of the session. The inspectors concluded that the observed training session for system engineers regarding the maintenance rule was effective.

E7 Quality Assurance in Engineering Activities

E7.1 Third Quarter System Health Reports

a. Inspection Scope (37551)

The inspectors observed one session of third quarter system health assessments that were presented to plant management. The presentations included the emergency diesel generators, spent fuel pool, chemical and volume control, low pressure safety injection, shield cooling, and security systems. In addition, the inspectors reviewed several system health reports.

b. Observations and Findings

The presentations were conducted by the applicable system engineers and they provided the plant management with key system information that included: 1) the top system problems and status; 2) improvement initiatives; 3) summary of condition reports written during the quarter; 4) outstanding/deferred significant preventative maintenance; and 5) maintenance rule summary data. In addition, the inspectors noted that the individual system health reports documented operator concerns and maintenance staff concerns. This was considered a positive attribute in that it effectively integrated the various plant departments in the system health report process.

c. Conclusions

The inspectors concluded that key information pertaining to system status was provided to plant management during the system health assessment presentations. Documenting operator concerns and maintenance staff concerns in the system health reports integrated the various plant departments in the process which was considered a positive attribute.

E8 Miscellaneous Engineering Issues (92902)

E8.1 (Closed) LER 50-255/98-008: Reactor Protection System, High Startup Rate Trip. This licensee identified and corrected event was discussed in Inspection Report 50-255/98010 and a Non-Cited Violation was issued. No new issues were revealed by the LER. This item is closed.

E8.2 (Closed) LER 50-255/94-017-01: Inoperable Diesel Generator Due To Inability To Fully Supply Maximum Analyzed Electrical Power Demand During A Postulated Design Basis Accident. This event was discussed in Inspection Report 50-255/94017. A violation and civil penalty (E 94-222) were subsequently issued in a letter, dated December 13, 1994, from the NRC to the licensee. No new issues were revealed by the LER. This item is closed.

E8.3 (Closed) URI 50-255/96-010-02: Unresolved Item - Potential Common-Mode Post Accident Failure Of Containment Coolers - adequacy of the licensee's operability determination. The Office of Nuclear Reactor Regulation was conducting a review of this issue (Generic Letter 96-06) to determine its acceptability. Therefore this item is administratively closed.

IV. Plant Support

R4 Staff Knowledge and Performance in Radiation Protection & Chemistry Controls

R4.1 Restoration of Secondary Chemistry Following Inadvertent Draining of Hydrazine (71750)

The inspectors reviewed feedwater and steam generator chemistry hydrazine concentrations and Chemistry Operating Procedure - 11, "Secondary Chemistry," following an activity (as discussed in Section O1.2) that inadvertently drained the hydrazine addition tank. Normally, feedwater and steam generator chemistry hydrazine concentrations are maintained at 80-100 ppb and greater than 80 ppb respectively. After the hydrazine tank emptied, feedwater and steam generator hydrazine concentrations decreased to less than 40 ppb. The procedure directed entry into action level 1 for the low hydrazine concentrations which required the hydrazine concentrations be returned to normal values within one week. Subsequently, feedwater and steam generator chemistry hydrazine concentrations were returned to normal values within 2 hours. The inspectors concluded that the actions taken by Chemistry personnel were timely in that feedwater and steam generator chemistry hydrazine concentrations were restored to normal values in less than 2 hours.

P7 Quality Assurance in Emergency Planning Activities

P7.1 Licensee Identified Weaknesses From Emergency Drill

a. Inspection Scope (71750)

The inspectors reviewed a critique conducted by emergency planning personnel of an emergency plan dress rehearsal drill that was conducted on October 27, 1998, for an upcoming evaluated exercise. In addition, the inspectors observed a drill that was conducted on September 12, 1998, by the licensee to practice accountability for personnel located in the protected area.

b. Observations and Findings

The inspectors noted that the critique was self-critical in that it identified several areas of concern that included: 1) accountability of personnel inside the protected area; 2) initial protective action recommendations to the state; 3) interface between the emergency offsite facility and the joint public information center; 4) alignment of emergency priorities and transfer of information from the technical support center to the emergency offsite facility; and 5) emergency offsite facility discussion of accident recovery.

Based on the critique comments from the emergency plan dress rehearsal drill, plant management determined that remediation was necessary. The remediation included a site wide drill of accountability for personnel located in the protected area as well as table top discussions in the emergency offsite facility pertaining to the identified concerns. The objective was to complete the site wide accountability within 30 minutes. The inspectors noted that site wide accountability was completed in approximately 22 minutes.

c. Conclusions

The inspectors concluded that the emergency planning personnel's critique of the emergency drill was self-critical and that appropriate remediation training was conducted to address the identified concerns.

S1 Conduct of Security and Safeguards Activities (71750)

The inspectors routinely observed the security controls that were in place for vital area doors that had inoperable card readers when they were being upgraded during the ongoing security system modification. The inspectors did not identify any discrepancies. The inspectors concluded that security personnel maintained positive control of the vital area doors that had inoperable card readers during the ongoing security system modification project.

S8 Miscellaneous Security and Safeguards Issues (92904)

S8.1 (Closed) Violation 50-255/95-004-07: Atypical Behavior. This Severity Level IV violation resulted from the failure to report to licensee management a physical altercation between two armed security force members that was witnessed by numerous security personnel. Failure to report the altercation was contrary to Palisades Nuclear Plant Policy/Procedure 1982-6, "Atypical Behavior." This item was documented in detail in Inspection Report 50-255/95004. The inspection report documented that the NRC did not require a response for this violation because the licensee had taken steps to correct the identified violation and to prevent recurrence. This item is closed.

F1 Control of Fire Protection Activities

a. Inspection Scope (71750)

The inspectors observed an unannounced fire drill that was conducted on October 20, 1998. Activities in the control room as well as at the fire scene were observed. In addition, the inspectors reviewed Condition Report C-PAL-98-1775, "Difficulty in Using 911 During Unannounced Fire Drill."

b. Observations and Findings

An unannounced fire drill was conducted on October 20, 1998, to expose the fire brigade to a fire situation in which they had to identify: 1) size and type of fire; 2) extinguishment method; and 3) rescue fire victims (simulated). This drill was conducted

with support from the Covert and South Haven fire departments and effectively challenged the fire brigade teams.

The inspectors noted that the control room operators referenced and implemented the appropriate procedures during the drill. However, the control room Shift Engineer had difficulty calling the emergency 911 telephone number from the control room when off-site assistance was requested. Condition Report C-PAL-98-1775 was generated in response to this issue. The licensee subsequently determined that the phone extensions in the control room that could be used to dial off-site assistance using the emergency 911 number were not identified and that the operators involved had a knowledge weakness regarding the phone extensions that could be used. The licensee labeled the appropriate phone extensions and provided written clarification to all operating crews via electronic mail. These corrective actions were considered appropriate.

At the fire scene, the inspectors noted that the fire brigade members responded in a timely manner. Also, security personnel's control and monitoring of the off-site assistance from the Covert and South Haven fire departments allowed timely response to the fire scene. The inspectors noted that there was a lack of specific directives provided to the off-site fire teams when they reported to the fire brigade leader for instructions. Instead, the fire brigade leader appeared uncertain as to how to utilize the off-site assistance. However, the lack of specific directives did not significantly hinder the fire fighting efforts.

c. Conclusions

The inspectors concluded that the fire protection department effectively used an unannounced drill to challenge the fire brigade and to exercise the response from off-site assistance to the fire scene.

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 November 25, 1998. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. J. Palmisano, Site Vice President
G. R. Boss, Operations Manager
P. D. Fitton, Manager, System Engineering
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R. L. Massa, Shift Operations Supervisor
D. W. Rogers, General Manager, Plant Operations
G. B. Szczotka, Manager, Nuclear Performance Assessment Department

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R. G. Schaaf, Project Manager, NRR

INSPECTION PROCEDURES USED

IP 71707:	Plant Operations
IP 62707:	Maintenance Observations
IP 61726:	Surveillance Observations
IP 37551:	Onsite Engineering
IP 71750:	Plant Support Activities
IP 92901:	Followup - Operations
IP 92902:	Followup - Maintenance
IP 92903:	Followup - Engineering
IP 92904:	Followup - Plant Support

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-255/95007-01	URI	Excessive Pressurizer Vapor Space Cooldown
50-255/96010-02	URI	Potential Common-Mode Post Accident Failure Of Containment Coolers
50-255/94013-01	IFI	Plant Specific Technical Guideline Weakness
50-255/94013-02	IFI	Emergency Operating Procedure Writers Guide
50-255/9801 0	LER	Manual Reactor Trip Due To Failure Of The Main Feedwater Pump
50-255/98008	LER	Reactor Protection System, High Startup Rate Trip
50-255/94017-01	LER	Inoperable Diesel Generator Due To Inability To Fully Supply Maximum Analyzed Electrical Power Demand During A Postulated Design Basis Accident
50-255/95-004-07	VIO	Atypical Behavior

Discussed

None