February 27, 2001

Mr. John Paul Cowan
Site Vice President
Palisades Nuclear Generating Plant
Consumers Energy Company
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

SUBJECT: PALISADES NUCLEAR GENERATING PLANT - NRC INSPECTION REPORT 50-255/01-03(DRP)

Dear Mr. Cowan:

On February 2, 2001, the NRC completed a supplemental inspection at your Palisades Nuclear Generating Plant regarding a white performance indicator for unplanned power changes. The performance indicator is related to the Initiating Events Cornerstone in the Reactor Safety Strategic Performance Area. The enclosed report presents the results of that inspection which were discussed on February 2, 2001, with you and members of your staff.

This supplemental inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, and interviews with personnel. Specifically, the inspectors reviewed the issues and circumstances surrounding the white performance Indicator and assessed your staff's root cause evaluations and associated corrective actions.

No findings of significance were identified and the unplanned power changes did not result in any adverse consequences to plant risk.

Based on this inspection, we concluded that plant personnel adequately identified the problems that resulted in the six unplanned power changes. Your staff's follow-up investigations, for the most part, demonstrated that the root and contributing causes were understood. However, your staff did not adequately address human performance deficiencies, which were underlying contributors to several of your unplanned power changes. Also, while your staff adequately evaluated the extent of condition for the majority of the problems, the extent of condition for the leak from the primary coolant pump seal leak-off line did not comprehensively address improperly installed small bore piping supports. In general, proposed preventive and corrective actions to address the root and contributing causes were appropriate. Short-term corrective actions necessary to address regulatory compliance were implemented in a timely manner. Implementation of longer-term corrective actions were scheduled and are being tracked consistent with the overall safety significance of the problems. However, neither quantitative or qualitative criteria had been developed generically to determine the effectiveness of the associated corrective actions.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS)*. *ADAMS is accessible from* the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Geoffrey Grant, Director
Division of Reactor Projects

Docket No. 50-255
License No. DPR-20

Enclosure: Inspection Report 50-255/01-03(DRP)

cc w/encl: R. Fenech, Senior Vice President, Nuclear
Fossil and Hydro Operations
N. Haskell, Director, Licensing and Performance Assessment
R. Whale, Michigan Public Service Commission
Michigan Department of Environmental Quality
Department of Attorney General (MI)
Emergency Management Division, MI Department
of State Police

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REGION III

Docket No:	50-255
License No:	DPR-20
Report No:	50-255/01-03(DRP)
Licensee:	Consumers Energy Company
Facility:	Palisades Nuclear Generating Plant
Location:	27780 Blue Star Memorial Highway Covert, MI 49043-9530
Dates:	January 22 through February 2, 2001
Inspectors:	J. Lennartz, Senior Resident Inspector
Approved by:	Anton Vegel, Chief Reactor Projects Branch 6 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
! Initiating Events	! Occupational	! Physical Protection
! Mitigating Systems	! Public	
! Barrier Integrity		
! Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

SUMMARY OF FINDINGS

IR 05000255-01-03 on 01/22 - 02/02/2001, Consumers Energy Company, Palisades Nuclear Generating Plant. Supplemental inspection of white performance indicator pertaining to unplanned power changes greater than 20 percent.

The inspection was conducted by resident inspectors. No findings of significance were identified.

Cornerstone: Initiating Events

This supplemental inspection was performed in accordance with NRC Inspection Procedure 95001 to assess the licensee's evaluation and corrective actions pertaining to a white performance indicator for unplanned power changes. The performance indicator crossed the green-white threshold of more than six unplanned power changes greater than 20 percent per 7,000 hours of critical operation following an unplanned power change in September 2000. Licensee personnel reported this white performance indicator to the NRC with the third quarter performance indicator data submitted in October 2000.

Five of the unplanned power changes were self-revealing problems that resulted from failed main feedwater pump seals, elevated contaminants in secondary chemistry and a leak from a primary coolant pump seal leak-off line. The sixth unplanned power change was for a failed check valve in the Emergency Core Cooling System that was identified by licensee personnel. The unplanned power changes did not result in any adverse consequences to plant risk.

During this supplemental inspection, the inspectors determined that licensee personnel adequately identified the problems that resulted in the six unplanned power changes. The licensee's follow-up investigation, for the most part, demonstrated that the root and contributing causes were understood. Licensee personnel assessed the six individual problems collectively resulting in the identification of three generic issues: (1) corrective action program effectiveness; (2) equipment reliability program effectiveness; and (3) control of vendor activities. However, the licensee did not adequately address human performance deficiencies which contributed to several of the problems.

The licensee adequately evaluated the extent of condition for the problems except the extent of condition for the leak from the primary coolant pump seal leak-off line did not comprehensively address improperly installed small bore piping supports. There was no evidence that licensee personnel validated the adequacy of the small bore piping walkdowns that had been completed in 1996, and there was no evidence that the problem was only introduced after 1996. Therefore, improperly installed pipe supports potentially exist on other plant systems. However, the licensee's evaluation also documented that the small bore piping program had been previously instrumental in finding and resolving concerns which provided licensee personnel confidence that other plant systems were not affected.

In general, proposed preventive and corrective actions to address the root and contributing causes were appropriate. Short-term corrective actions necessary to address regulatory compliance were implemented in a timely manner. Implementation of longer-term corrective actions were scheduled and are being tracked consistent with the overall safety significance of

the problems. However, the inspectors noted that neither quantitative or qualitative criteria had been developed generically to determine the effectiveness of the associated corrective actions.

Report Details

01 Inspection Scope (Inspection Procedure 95001)

The inspectors conducted the supplemental inspection because of the potential risk significant performance issue that was revealed when the performance indicator pertaining to unplanned power changes of greater than 20 percent changed to white. An unplanned power change in September 2000 caused the performance indicator to cross the green-white threshold. Licensee personnel reported the white performance indicator to the NRC with the third quarter performance indicator data submitted in October 2000.

Unplanned power changes directly challenge plant operations because of the need to decrease plant power on an emergent basis. Consequently, the probability of an undesired plant transient increases which could result in a challenge to plant system's safety functions. Therefore, this performance indicator is related to the initiating events cornerstone in the Reactor Safety Strategic Performance Area.

The inspectors reviewed condition reports and associated root cause evaluations for the six unplanned power changes that caused the associated performance indicator to change from green to white. Also, the inspectors reviewed a condition report that collectively assessed the six events for potential generic issues. In addition, the inspectors reviewed several other condition reports and associated evaluations pertaining to the circumstances that contributed to the unplanned power changes. The reviews were conducted to provide assurance that:

- root causes and contributing causes were understood;
- extent of condition was identified; and
- proposed corrective actions were sufficient to address the root causes and contributing causes, and to prevent recurrence.

The inspectors reviewed the following condition reports and associated evaluations that directly addressed the six unplanned power changes:

- CPAL9902953, "Exceeding Action Level 3 Limits For Steam Generator Cation Conductivity";
- CPAL0000831, "Removed Feedwater Pump P-1A From Service Due To Degraded Inboard Pump Seal";
- CPAL0001891, "Elevated Pump Seal Leakage On Main Feedwater Pump P-1A";
- CPAL0002053, "Primary Coolant System Unidentified Leakage Raised From 0.025 gallons/minute to 0.084 gallons/minute";
- CPAL0002714, "Radiography Shows Check Valve, CK-ES3332 Internals Separated From Hinge Pin"; and
- CPAL0003000, "NRC Performance Indicator For the Number of Unplanned Power Changes (>20%) per 7000 Critical Hours Turned From Green To White"

The inspectors also reviewed the following condition reports related to the events and circumstances that contributed to the white performance indicator:

- CPAL9902269, “Significant Deficiencies With Replacement Vacuum Breakers For Bus 1D Result In Cancellation Of Their Installation During 1999 REFOUT”;
- CPAL0002049, “Root Cause Evaluations Not Always Effectively Performed”;
- CPAL0002736, “Nonintrusive Testing Performed On CK-ES3332 Incorrectly Diagnosed Full Open and Closed Impacts On Two Separate Occasions”; and
- CPAL0100330, “Corrective Action Sheet Not Initiated For Corrective Action”

In addition, the inspectors reviewed applicable portions of the following documents during the inspection:

- Palisades Nuclear Plant Action Plan 001, “Achieve Operational Excellence,” updated January 5, 2001;
- Palisades Nuclear Plant Administrative Procedure 3.03, “Corrective Action Process,” Revision 24; and
- Palisades Nuclear Plant Work Instruction WI-FWS-M-05, “Main Feedwater Pump Maintenance Instruction,” Revision 4

02 Evaluation of Inspection Requirements

02.01 Problem Identification

a. **Determination of who (i.e., licensee, self-revealing, or NRC), identified the issue and under what conditions**:

Five of the unplanned power changes were self-revealing problems which were recognized through normal monitoring of plant parameters by licensee personnel while the plant was at power. Regarding the self-revealing problems, two resulted from a failed main feedwater pump seal, two resulted from elevated contaminants in secondary chemistry and one resulted from a leak from a primary coolant pump seal leak-off line. The sixth unplanned power change was for a failed check valve in the “A” Train Emergency Core Cooling System minimum recirculating flow line. The failed check valve was identified by licensee personnel during predictive radiography testing while the plant was at full power.

The inspectors concluded that the licensee’s evaluations for the six unplanned power changes adequately determined who identified the problems and under what conditions.

b. **Determination of how long the issue existed and prior opportunities for identification**:

The five self-revealing problems were emergent issues which were recognized in a timely manner by licensee personnel during routine plant equipment monitoring. Regarding the elevated contaminants in secondary chemistry, the licensee’s evaluation determined that the source of contaminants was glass beads used by the vendor to refurbish the low pressure turbines that were installed during the 1999 refueling outage.

The vendor did not inform licensee personnel that the glass beads, an unapproved consumable, were used to refurbish the turbines. Also, licensee personnel did not provide oversight of vendor workshop activities. Therefore, licensee personnel missed a prior opportunity to identify use of the unapproved material. Consequently, licensee personnel were not aware that the unapproved material was used until the glass beads were discovered when sections of the turbine were staged in the plant for installation on October 5, 1999.

In addition, licensee personnel did not generate a condition report after use of the glass beads was discovered. Further, some licensee management personnel became aware that the glass beads were used after reviewing the turbine replacement project daily logbook entries and through communications regarding the use of an unapproved consumable. However, management wanted turbine replacement project engineering personnel to evaluate and address the issue without the influence of management. Therefore, an opportunity was missed to identify use of the unapproved material in the corrective action program. Consequently no actions could be taken through the licensee's corrective action process to evaluate and develop contingency actions to mitigate the effects from the glass beads on secondary chemistry.

Regarding the failed check valve in the Emergency Core Cooling System, licensee personnel concluded that the problem had existed since plant construction almost 30 years ago. Licensee personnel also concluded that there were two prior opportunities to identify the failed check valve during nonintrusive acoustical testing which was performed in November 1997 and June 2000. However, licensee personnel had incorrectly concluded that the valve was operating properly from the data obtained during the testing.

Licensee personnel generated a separate condition report, CPAL002736, "Nonintrusive Testing Performed On CK-ES3332 Incorrectly Diagnosed Full Open and Closed Impacts On Two Separate Occasions," to conduct a root cause evaluation for the failure to identify the failed check valve using nonintrusive acoustical testing.

The inspectors concluded that the licensee's evaluations appropriately identified prior opportunities to identify the source of elevated contaminants in secondary chemistry that caused two unplanned power changes. Regarding the failed check valve, the inspectors concluded that a prior opportunity existed in June 2000, using radiography testing, that was not explicitly noted in the licensee's evaluation.

c. **Determination of the plant specific risk consequences (as applicable) and compliance concerns associated with the unplanned power changes**:

The licensee's evaluations determined that the unplanned power changes did not result in any adverse consequences to plant risk. Also, any resultant compliance concerns had been previously addressed as noted below:

- The failed check valve in the Emergency Core Cooling System was determined to be inoperable for greater than Technical Specification allowed outage time during a ten day period when it was required to perform a closed safety function.

This issue was previously communicated to the NRC in Licensee Event Report 50-255/2000-04 which was reviewed and closed in NRC inspection report 50-255/00-016(DRP). In the event report, licensee personnel concluded that there were no credible failure mechanisms for the Emergency Core Cooling System as a result of the failed check valve. Therefore, the finding was determined to be of very low safety significance (Green) and the inoperable check valve for greater than Technical Specification limits was treated as a Non-Cited Violation.

- Plant operators shut down the plant before any related Technical Specification limits were reached following the emergent leak from the primary coolant pump seal leak-off line.

- The failed main feedwater pump seals were not safety-related components and the main feedwater pumps were not required to prevent or mitigate accidents.

- There were no Technical Specifications applicable to the elevated contaminants in secondary chemistry.

The inspectors determined that the licensee's evaluations appropriately concluded that the problems did not result in any adverse consequences to plant risk. The failed check valve did not result in any credible failures for the Emergency Core Cooling System and the leak from the primary coolant pump seal leak-off line did not exceed any Technical Specification limits. Also, the six unplanned power changes were completed by plant operators without incident. Therefore, there were no resultant adverse plant transients or challenges to plant system's safety functions. Also, all resultant compliance issues had been addressed.

02.02 Root Cause and Extent of Condition Evaluation

a. **Evaluation of methods used to identify root and contributing cause(s)**:

The licensee's evaluations all utilized a systematic method to determine the root causes for the unplanned power changes. Most of the evaluations were conducted by developing a potential failure modes chart, collecting evidence to support or refute the potential failure modes and then constructing the failure mode scenario. On occasion, the evaluation process also included barrier analysis and time sequence event analysis. During the process, licensee evaluators collected evidence through several different mechanism such as interviewing key personnel, reviewing maintenance and design documents, and reviewing applicable plant procedures.

The inspectors determined that the systematic methods utilized by license personnel to evaluate the six unplanned power changes were adequate. Potential failure modes were tied to the identified problem and a sufficient amount of data was collected and verified to support or refute the potential failure modes.

b. **Level of detail of the root cause evaluation**:

Root cause evaluations for the problems that caused the six unplanned power changes contained the level of depth commensurate with the significance of the problem. Root causes identified by licensee personnel for the problems that caused the six unplanned power changes included the following:

- Elevated contaminants in secondary chemistry; plant personnel "did not provide adequate vendor oversight."

- Main feedwater pump seal failures; "intricate seal design results in extremely precise installation requirements which challenged proper installation."

- Leak from primary coolant pump seal leak-off line; "a lack of awareness of the limitations of plant drawing limitations and procedures by work planning and other personnel resulted in inconsistent and incomplete requirements for reinstalling primary coolant pump seal piping hangers."

- Failed check valve in Emergency Core Cooling System; "inadequate tracking and control of equipment status during original plant construction."

The inspectors determined that the root cause evaluations contained an appropriate level of detail. However, the inspectors noted that human performance issues were not addressed when they appeared to be a contributory cause. For example, human performance issues appeared to contribute to the problems that caused the main feedwater pump seal failures and the leak from the primary coolant pump seal leak-off line. However, the evaluations did not go to a depth necessary to address why the human performance issues occurred.

Also, the inspectors noted that the licensee's evaluation for the first main feedwater pump seal problem failed to identify all the contributing causes that were identified during evaluation for the second seal failure. Consequently, the actions taken for the first seal failure were not adequate to prevent recurrence. The inspectors questioned licensee personnel involved with the evaluations and determined that a vendor representative was consulted only during the evaluation of the second seal failure. Several additional contributing causes to the seal failure were identified when the seal vendor was consulted which resulted in subsequent changes to the seal installation procedure. However, the evaluation did not go to a depth necessary to address why, during the first seal failure, licensee personnel failed to identify the additional contributing causes that were identified in the second evaluation.

The inspectors determined that the level of detail of the licensee's root causes was not sufficient to evaluate the reasons why the human performance issues were occurring.

c. **Consideration of prior occurrences of the problem and knowledge of prior operating experience**:

Licensee personnel reviewed industry and Palisades operating experience data bases during the root cause evaluations that addressed each individual unplanned power change. Information obtained from the review of operating experience was assessed and factored into the potential failure mode analysis when applicable. Regarding the elevated contaminants in secondary chemistry problem, licensee personnel concluded that a failed barrier was the lack of information available for review regarding a similar problem at another site. Specifically, the vendor did not send a customer advisory letter to Palisades that described the similar problem.

Also, regarding the second failed main feedwater pump seal problem, licensee personnel concluded that accurate and complete "as-found" equipment data was not obtained during disassembly following the first seal failure. Consequently, an inaccurate root cause evaluation was conducted and the seal failure recurred.

The inspectors concluded that the evaluations for the six individual problems that caused the unplanned power changes adequately considered operating experience information.

d. **Consideration of potential common cause(s) and extent of condition of the problem**:

The licensee's evaluations of contributing factors to the six unplanned power changes did consider potential generic implications of the identified problems. For example:

- Other pumps that use a non-cartridge seal design similar to the main feedwater pumps were reviewed for potential like failure mechanisms which included the safety-related high pressure safety injection, low pressure safety injection, containment spray, and component cooling water pumps. Licensee personnel reviewed the permanent maintenance procedures and noted that the associated procedures did not contain the deficiencies that were identified in the main feedwater pump seal installation procedures. Therefore, licensee personnel concluded that a similar problem would not occur during future activities pertaining to the other pumps that used non-cartridge seal designs.

- Seal leak-off piping on all primary coolant pumps was inspected. Two other primary coolant pump's seal leak-off piping exhibited similar deficiencies which were corrected.

- Licensee personnel conducted a detailed review of other safety-related check valves after the failed check valve was discovered in the "A" Train Emergency Core Cooling System minimum recirculating flow line. The review was conducted to determine if the status of any other safety-related check valves was based on the use of only non-intrusive acoustical testing. Several other safety-related check valves were non-intrusively tested using radiography following the review. Also, licensee personnel generated a separate Condition

Report, CPAL0002736, “Nonintrusive Testing Performed On Check Valve CK-ES3332 Incorrectly Diagnosed Full Open and Closed Impacts On Two Separate Occasions,” to evaluate the root cause for why previous non-intrusive testing did not identify the failed check valve.

In addition, licensee personnel conducted an evaluation to collectively assess the individual problems that caused the unplanned power changes to look for generic issues between the individual events. The evaluation was documented in Condition Report CPAL0003000, “NRC Performance Indicator For the Number of Unplanned Power Changes (>20%) per 7000 Critical Hours Turned From Green To White.” Three generic issues associated with the individual problems were identified which included problems pertaining to:

- corrective action program effectiveness;
- equipment reliability program effectiveness; and
- control of vendor activities.

Licensee personnel had previously identified the problems pertaining to the corrective action program effectiveness and the problems associated with control of vendor activities. The previously identified problems were documented in Condition Reports CPAL0002049, “Root Cause Evaluations Not Always Effectively Performed,” and CPAL9902269, “Significant Deficiencies With Replacement Vacuum Breakers For Bus 1D Result In Cancellation Of Their Installation During 1999 REFOUT.” However, corrective actions were pending and had not yet been implemented. Regarding the equipment reliability program effectiveness generic issue, licensee personnel concluded that management had not consistently demonstrated a commitment to equipment reliability program implementation.

The inspectors concluded that the licensee’s collective evaluation of the six individual problems effectively identified three generic issues. Also, the licensee’s evaluations adequately considered potential common causes and that extent of condition was appropriately addressed with one exception. The inspectors determined that the evaluation for the leak from the primary coolant pump seal leak-off line did not comprehensively evaluate a potential adverse extent of condition.

Specifically, the root cause for the leak from the primary coolant pump seal leak-off line involved improperly installed small bore pipe supports. Small bore piping walkdowns were completed on the primary coolant pumps in 1996 to assess installation of pipe supports and hangers. However, the root cause evaluation did not contain evidence that licensee personnel questioned or assessed the adequacy of the walkdowns. Also, there was no evidence in the root cause evaluation that the problem was only introduced after 1996. Therefore, the adequacy of the walkdowns completed in 1996 was questionable. Consequently, improperly installed small bore pipe supports could potentially exist on other plant systems. However, the licensee’s evaluation also documented that the small bore piping program had been previously instrumental in finding and resolving concerns which provided licensee personnel confidence that other plant systems were not affected.

02.03 Corrective Actions

a. **Appropriateness of corrective actions**:

Licensee personnel developed specific corrective actions for each root and contributing cause that was identified and, in one instance, provided the appropriate justification for why no corrective action was needed. Immediate actions taken and remedial actions planned were also noted in the evaluations. Corrective actions to prevent recurrence for the individual problems that caused the six unplanned power changes included the following:

Elevated Contaminants in Secondary Chemistry

- Administrative Procedure 10.03, "Procurement of Material," Revision 16, was revised to strengthen consumable control requirements for material suppliers.

- A sensitive issues process for major work performed by vendors will be developed and was scheduled for implementation on August 1, 2001.

Main Feedwater Pump Seal Failures

- Work Instruction WI-FWS-M-05, "Main Feedwater Pump Maintenance Instruction," Revision 4, was revised to include steps to check for seal face parallelism, to check all seal components for wear and to inspect the stationary seal face for beveling of the o-ring contact during seal maintenance.

- An Engineering Assistance Request, EAR 2000-0170, "Find Replacement Seal Design For The Main Feedwater Pump," was initiated.

- A maintenance rule goal setting plan was established per 10 CFR 50.65 (a)(1).

Leak From Primary Coolant Pump Seal Leak-off Line

- An engineering training course in the application and use of Maintenance Procedure MSM-M-45, "Removal, Installation and Repair of Pipe Supports," will be developed and conducted. The target audience for the training included Maintenance, Planning, and Systems and Design Engineering personnel and was scheduled for implementation on February 28, 2001.

- The pipe support design for all primary coolant pumps will be reviewed to ensure adequacy with respect to pump vibration and thermal growth. The scheduled implementation date was March 31, 2002.

Failed Check Valve In “A” Train Emergency Core Cooling System

- Engineering Manual EM-09-02, “Inservice Testing of Plant Valves,” will be revised to require more than one nonintrusive testing technique be used to determine check valve condition. The scheduled implementation date was March 15, 2001.

- A process will be developed to evaluate other engineering programs which utilize nonintrusive test methods to prevent over-reliance on one technique. The scheduled implementation date was December 28, 2001.

In addition, licensee personnel developed corrective actions to address the generic issues that were identified when the problems that caused the six unplanned power changes were evaluated collectively. Proposed corrective actions included the following:

- Additional guidance to quarantine evidence after an event and to consider repeat equipment failures as significance level 3 will be added to Administrative Procedure 3.03, “Corrective Action Process.” The scheduled implementation date was March 31, 2001.

- A self-assessment of the equipment reliability processes against industry standards was scheduled to be conducted by July 30, 2001.

The inspectors concluded that the proposed corrective actions to address the identified root and contributing causes for the individual problems were appropriate. Additionally, appropriate corrective actions were developed to address the generic issues that were identified when the individual problems were evaluated collectively.

b. **Prioritization of corrective actions**:

Licensee personnel implemented immediate corrective actions, when necessary, to address regulatory compliance issues in a timely manner. Corrective actions to prevent recurrence were prioritized through scheduled implementation dates.

The inspectors concluded that corrective actions were scheduled to be implemented consistent with the overall safety significance of the problem. Also, licensee personnel implemented the corrective actions necessary to address regulatory compliance issues in a timely manner.

c. **Establishment of schedule for implementing and completing the corrective actions**:

Each corrective action was assigned a unique identifying number on a “Corrective Action Sheet (Initiation)” that was utilized for tracking purposes. A licensee individual responsible for the action and the required completion date were also noted on the corrective action sheet.

The inspectors concluded that the identified corrective actions all had completion due dates established and responsible individuals assigned to them. However, the majority of the corrective actions were scheduled to be implemented after the inspection ended. Consequently, the inspectors were not able to verify that the actions had been implemented as described. The inspectors will evaluate the corretive action implementation in a future inspection consistent with the guidance in NRC Inspection Procedure 95001.

Also, the corrective actions all had identifying numbers that were entered into a formal tracking system with the following exception:

- The inspectors identified that Action F, "Perform an effectiveness review of actions taken as a result of this condition report," from CPAL003000, "NRC Performance Indicator For the Number of Unplanned Power Changes (>20%) per 7000 Critical Hours Turned From Green To White," was not entered into the licensee's tracking system. The action had a due date of December 15, 2001, and the inspectors determined, based on a review of the licensee's program, that adequate checks were in place which minimized the potential for the action to be missed. Licensee personnel generated Condition Report CPAL0100330, "Corrective Action Sheet Not Initiated For Corrective Action" after this issue was identified which was entered into the corrective action program.

d. **Establishment of quantitative or qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence**:

A Management Review Board was conducted in which licensee management reviewed and approved the identified root causes and proposed corrective actions for each of the evaluations. Also, each root cause evaluation had a follow-up action scheduled to determine the effectiveness of the associated corrective actions.

The inspectors concluded that the Management Review Board adequately validated the effectiveness of the proposed corrective action plans for each root cause evaluation.

However, the inspectors noted a generic issue regarding the follow-up action that was scheduled in each root cause evaluation to determine the effectiveness of the associated corrective actions. Specifically, neither quantitative nor qualitative criteria had not been developed as measures of success. Consequently, the corrective action's effectiveness could not be measured.

After further review, the inspectors noted that licensee personnel had previously identified this issue during a self-assessment conducted in June 2000. The associated corrective action, scheduled to be implemented by July 31, 2001, was identified in Condition Report, CPAL0002049, "Root Cause Evaluations Not Always Effectively Performed." Specifically, a handbook was being developed to provide guidance to licensee personnel on how to develop appropriate quantitative or qualitative criteria.

03 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. Cowan and other members of licensee management on February 2, 2001. 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.

ATTACHMENT

Partial List of Persons Contacted

Licensee

M. P. Banks, Corrective Actions
D. E. Cooper, Plant General Manager
J. P. Cowan, Senior Vice President Nuclear Management Company / Site Vice President
P. Harden, Manager, Design Engineering
N. L. Haskell, Director, Licensing and Performance Assessment
D. W. Rogers, Licensing

NRC

G. Grant, Director, Reactor Projects, RIII
A. Vegel, Branch Chief, RIII
R. Krsek, Resident Inspector