



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-8064**

April 28, 2000

Craig G. Anderson, Vice President,  
Operations  
Arkansas Nuclear One  
Entergy Operations, Inc.  
1448 S.R. 333  
Russellville, Arkansas 72801-0967

SUBJECT: NRC INSPECTION REPORT NO. 50-313/00-02; 50-368/00-02

Dear Mr. Anderson:

This refers to the inspection conducted on March 6 to 20, 2000, at the Arkansas Nuclear One, Units 1 and 2, facility. The purpose of the inspection was to review your corrective action program using the guidance provided in NRC Inspection Procedure 40500 dated May 3, 1999. A telephonic exit meeting was held with you and your staff on March 20, 2000. The enclosed report presents the results of this inspection.

We considered your corrective action program to be effective at identifying and resolving problems before they became safety significant. We noted that site personnel and management clearly understood the importance of this program. However, we also noted an example where all corrective actions were not identified.

Based on the results of this inspection, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. This violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the Enforcement Policy. This noncited violation is described in the subject inspection report. If you contest the violation or severity level of this noncited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Arkansas Nuclear One, Units 1 and 2, facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and enclosure will be placed in the NRC Public Document Room (PDR).

Entergy Operations, Inc.

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Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

**/RA/**

John L. Pellet, Chief,  
Operations Branch  
Division of Reactor Safety

Docket Nos.: 50-313; 50-368  
License Nos.: DPR-51; NPF-6

Enclosures:  
NRC Inspection Report No.  
50-313/00-02; 50-368/00-02

cc w/enclosures:  
Executive Vice President  
& Chief Operating Officer  
Entergy Operations, Inc.  
P.O. Box 31995  
Jackson, Mississippi 39286-1995

Vice President  
Operations Support  
Entergy Operations, Inc.  
P.O. Box 31995  
Jackson, Mississippi 39286

Manager, Washington Nuclear Operations  
ABB Combustion Engineering Nuclear  
Power  
12300 Twinbrook Parkway, Suite 330  
Rockville, Maryland 20852

County Judge of Pope County  
Pope County Courthouse  
100 West Main Street  
Russellville, Arkansas 72801

Winston & Strawn  
1400 L Street, N.W.  
Washington, DC 20005-3502

Entergy Operations, Inc.

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David D. Snellings, Jr., Director  
Division of Radiation Control and  
Emergency Management  
Arkansas Department of Health  
4815 West Markham Street, Mail Slot 30  
Little Rock, Arkansas 72205-3867

Manager  
Rockville Nuclear Licensing  
Framatome Technologies  
1700 Rockville Pike, Suite 525  
Rockville, Maryland 20852

Entergy Operations, Inc.

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**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket Nos.: 50-313; 50-368  
License Nos.: DPR-51; NPF-6  
Report No.: 50-313/00-02; 50-368/00-02  
Licensee: Entergy Operations, Inc.  
Facility: Arkansas Nuclear One, Units 1 and 2  
Location: Junction of Hwy. 64W and Hwy. 333 South  
Russellville, Arkansas  
Dates: March 6 to 20, 2000  
Inspectors: Thomas Stetka, Senior Operations Engineer  
Mike Murphy, Senior Operations Engineer  
Ryan Lantz, Operations Engineer  
Jim Melfi, Project Engineer, Project Branch E  
Approved By: John L. Pellet, Chief, Operations Branch  
Division of Reactor Safety

ATTACHMENT: Supplemental Information

## EXECUTIVE SUMMARY

### Arkansas Nuclear One, Units 1 and 2 NRC Inspection Report No. 50-313/00-02; 50-368/00-02

An inspection team performed a routine core inspection of the corrective action program implementation at the Arkansas Nuclear One Station. An in-office inspection was conducted from February 28 to March 3, 2000, which was followed by an onsite inspection that was conducted during the week of March 6 to 10, 2000. Further in-office inspection was conducted from March 13 to 20, 2000. The inspection was conducted in accordance with the guidance provided by NRC Inspection Procedure 40500.

#### Operations

The Arkansas Nuclear One corrective action program effectively identified and resolved problems before they became safety significant. The team also noted that site personnel and management clearly understood the importance of this program. However, the team identified one example where all corrective actions were not identified.

#### Engineering

Corrective actions were not identified to determine if installed safety-related relays that exceeded their qualified life were operable. This is being treated as a noncited violation consistent with Section VII.B.1.a of the NRC Enforcement Policy and has been entered into the licensee's corrective action program (Section E7.1b).

## Report Details

### Summary of Plant Status

Unit 1 was shutdown for a maintenance outage and Unit 2 operated at approximately full power during the onsite inspection period.

## I. Operations

### **O7 Quality Assurance in Operations**

#### **O7.1 Corrective Action Program**

##### **a. Inspection Scope (40500)**

This inspection consisted of a review of the licensee's programs that were intended to identify and correct problems discovered at the facility. The review focused on the following seven specific areas: (1) the identification and reporting threshold for adverse conditions, (2) the setting of problem resolution priorities that were commensurate with operability and safety determinations, (3) program monitoring used by the licensee to assure continued program effectiveness, (4) program measurement or trending of adverse conditions, (5) the understanding of the program by all levels of station personnel, (6) the ability to identify and resolve repeat problems, and (7) resolution of noncited violations.

In addition to these seven areas, the corrective action program implementation for the emergency and abnormal operating procedures and the emergency feedwater system were selected for a focused review. The emergency feedwater system was selected based on the system risk importance ranking, a review of the licensee documented system status, and past NRC review activity. Details on this focused review are documented in Section E7.1 of this report. The purpose of the emergency and abnormal operating procedures review was to determine if procedure adequacy problems identified at other Babcox and Wilcox-type facilities were evident at Arkansas Nuclear One, Unit 1. Details on this review are documented in Section O7.2 of this report.

##### **b. Observations and Findings**

The licensee's corrective action program was implemented by Procedure 1000.104, "Condition Reporting and Corrective Action."

#### **(1) THRESHOLD OF REPORTING**

The team interviewed 12 personnel from a cross section of maintenance, operations, engineering, and training departments. These interviews indicated that personnel generally identified issues and resolved the concerns within the scope of the corrective action program. However, during discussions with

engineering personnel, the team determined that some engineers were unsure when a condition report was required to be written. These engineers stated that they considered the procedural guidance for determining the report writing threshold to be unclear for proper implementation. The team noted that engineering management was aware of this issue, and that management was in the process of issuing an engineering directive to clarify the condition report threshold guidance. The team did not identify any issues that were not entered into the corrective action program via the corrective action process during its review of lower level documents listed in the supplemental information attachment to this report.

## **(2) PRIORITY OF RESOLUTION**

The licensee set condition report priority in accordance with Procedure 1000.104. This procedure did not specifically set a "priority" on condition reports, but defined the three classifications and seven categories that the licensee used to place the condition reports in the order of most important to least important. The three levels of classification were - "significant," "non-significant," and "below scope or duplicate condition report." The licensee then categorized condition reports with three levels of significance, three levels of non-significance, and a below scope level. The initial review and category assignment classification was made by the shift superintendent.

Out of approximately 72 condition reports reviewed, the team found the shift superintendent reviews and classifications to be thorough and timely. When needed, operations personnel implemented the appropriate compensatory measures and entered the proper technical specification limiting condition for operation.

## **(3) EFFECTIVENESS OF PROGRAM**

With one exception, the program effectively identified and resolved problems. The exception was a long-standing issue that did not identify all necessary corrective actions. This involved the corrective actions needed to determine if installed safety-related Agastat relays, that exceeded their qualified life, remained operable. This issue is discussed in Section E7.1 of this report.

## **(4) PROGRAM MEASUREMENT**

The team reviewed the internal reports and metrics for the last 12 months for the corrective action programs. The team noted that the licensee's executive trending covered adverse trends, repetitive equipment failures, and a program overview. The team also noted that the licensee trended corrective action issues. Examples of issues tracked included open condition reports by age, open condition report corrective actions, safety significant condition reports greater than 60 days overdue, non-significant safety condition reports greater than 90 days overdue, safety corrective actions greater than 30 days overdue,



safety corrective actions with greater than three date extensions and the percentage of late corrective actions. Condition reports over 3-years old were assessed by management on a quarterly basis to determine why they were still open and what specific emphasis was needed to complete them. In addition, the team noted that the last three quarterly self-assessments, one quality assurance audit and a special quality assurance surveillance of corrective action effectiveness in the emergency preparedness program provided a good measure of program effectiveness. For example, during the first quarter self-assessment for 1999 an adverse trend was identified in the maintenance area concerning welding deficiencies. Condition Report CR-C-99-0148 was issued with appropriate corrective actions and responsibility was assigned to the maintenance department. The second quarter self-assessment reviewed this area and determined that the adverse trend could be down graded to a trend watch based on the actions taken by maintenance. Another example of the program effectiveness was found in the area of the management observation program as discussed in Section M7.2 of this report.

**(5) PROGRAM UNDERSTANDING**

Interviews of facility personnel indicate a good understanding of the corrective action program. The team found these personnel to be very knowledgeable of the various methods available to raise concerns within the corrective action program. However, the team also noted that the failure to write a condition report for a dropped makeup system filter (see Section R7b of this report) was an exception to this understanding.

**(6) REPEAT PROBLEMS**

Based on the team's review of 72 condition reports, 7 engineering requests, and 8 maintenance action initiations, no repetitive issues were identified.

**(7) NONCITED VIOLATION FOLLOWUP**

The team reviewed 6 of the 21 noncited violations that were identified over the past 2-year period covered by this inspection to determine if these noncited violations were entered into the corrective action program and were being resolved in a timely and technically adequate manner. The following noncited violations were reviewed:

- 50-368/9903-03, addressed by Condition Report CR-2-1999-0197;
- 50-368/9904-01, addressed by Condition Report CR-2-1999-0324;
- 50-368/9909-02, addressed by Condition Report CR-2-1999-0528;
- 50-313/9909-08, addressed by Condition Report CR-1-1999-0200;
- 50-313/9915-01, addressed by Condition Report CR-1-1999-0186; and,
- 50-313/9915-03, addressed by Condition Report CR-1-1999-0178.

The team found all these noncited violations to be entered into the corrective action program and resolved in a timely and technically adequate manner.

c. Conclusions

The Arkansas Nuclear One corrective action program effectively identified and resolved problems before they became safety significant during the 2-year period covered during this inspection. The team also noted that site personnel and management clearly understood the importance of this program. However, the team also noted an example where all corrective actions were not developed.

O7.2 Emergency Operating Procedure and Abnormal Operating Procedure Review

a. Inspection Scope (40500)

This inspection was performed to determine if industry events involving Babcox and Wilcox-type reactor emergency and abnormal operating procedures were identified and resolved by the licensee.

b. Observations and Findings

To accomplish this inspection, the team reviewed all operating experience reports for the period of January 1999 through March 20, 2000. The team then selected those events that resulted in changes to the Unit 1 emergency and abnormal operating procedures for further review. In addition, the team reviewed a sampling of emergency operating procedures for Unit 1 to determine if the emergency operating procedures were written following guidance in the facility procedures and the Technical Basis Document. The emergency operating procedures were also evaluated for adequacy of validation and verification in accordance with facility procedures and requirements.

Industry Event Review

The licensee provided nine operating experience evaluations that involved changes to the Unit 1 emergency operating procedures. The team noted that the licensee identified that one of these nine operating experience evaluations impacted Unit 2 (a Combustion Engineering type reactor). The licensee determined that Operating Experience Evaluation OEE-99-1898, involving a plant trip due to a loss of a single vital bus (that occurred at the Indian Point Unit 2 facility) did not have an abnormal operating procedure to address a similar failure at Arkansas Nuclear One, Unit 2. The licensee had previously relied on annunciator response, operator training and operator knowledge as the methods used by operators to mitigate this type of event. However, while the licensee considered its procedural guidance and operator knowledge to mitigate such an event to be adequate, it also determined that the development of a specific abnormal operating procedure to address this event would reduce operator burden during event response. The licensee wrote Condition Report CR-2-1999-0646 to place this finding into the corrective action program and was in the process of developing the new abnormal operating procedure. The licensee expected to issue the new abnormal operating procedure by March 31, 2000. The team also requested and

received a listing of events for the period of December 4, 1997, to February 28, 2000, for the Crystal River facility, and December 4, 1997, to February 17, 2000, for the Oconee facility, for review. From these listings, the team identified one item from the Crystal River facility events and three items from the Oconee facility events that involved issues with emergency operating procedures or abnormal operating procedures. The team's review of these issues indicated that none of these events were applicable to Arkansas Nuclear One, Unit 1, emergency and abnormal operating procedures.

The team also requested and received engineering requests that involved emergency and abnormal operating procedure issues. From this request, the licensee identified five engineering requests that were applicable to Unit 1 emergency operating procedures. All of these engineering requests involved changes to the emergency operating procedure setpoint document. The team determined that four of these five engineering requests did not involve changes to the emergency operating procedures. The one engineering request that did impact the Unit 1 emergency operating procedures was only a procedure enhancement and the licensee had written a procedure information form to implement the enhancement.

During review of these engineering requests, the team noted that Revision 8 to Setpoint Document 91-R-1018-02, "ANO [Arkansas Nuclear One, Unit 1] EOP [Emergency Operating Procedure] Setpoint Basis Document," was pending since April 1997 (approximately 3 years). In addition, the team noted that while the change was approved for implementation on February 8, 1999, as of March 2000, it was not implemented. The licensee stated that the setpoint document was delayed because required changes to the emergency operating procedures, due to the setpoint document revision, had not yet been accomplished. With the exception of engineering request Engineering Request 980832, involving high pressure injection pump runout (which was not included in the pending Revision 8), the licensee's reason for this delay was that the changes were only changes to calculation references or procedure enhancements and, therefore, did not need a high priority to implement. The high pressure injection pump runout issue, which could involve a required change to an emergency operating procedure and affect response to an accident, was also not resolved for approximately 3 years. However, during subsequent discussions with the licensee, on March 10, 2000, the team was presented with an engineering evaluation that addressed this pump runout condition. The team noted that this evaluation concluded that pump runout would not occur.

The team also identified an example where the rate of implementation affected a change to the setpoint document. Engineering Request 991369, which involved a calculation reference change, was a part of the pending Revision 8. However, due to the long time for issuing Revision 8, one of the affected calculations (80-D-1083C-01, Revision 4, dated December 22, 1998) had actually changed two revisions (i.e., Revision 5, dated September 28, 1998, and Revision 6, dated February 8, 1999). Therefore the updated setpoint document would not have reflected the latest calculation references. The licensee stated that it would further review this observation as a potential generic programmatic concern.

### Procedure Validation

The team reviewed Emergency Operating Procedures 1202.006, "Steam Generator Tube Rupture," and Procedure 1202.008, "Blackout," in detail. Both were consistently written and followed the two column format with the first column providing the action steps, and a second column providing the "response not obtained" column. The team reviewed Procedure 1015.029, "Unit 1 EOP Writer's Guide," and found both emergency operating procedures to be consistent with that guidance.

The licensee utilized the guidance in Procedure 1015.022, "EOP Verification and Validation," to review each emergency operating procedure and subsequent changes to ensure continued adequacy of the emergency operating procedure to support accident mitigation. The team reviewed the latest change to Procedures 1202.006 and 1202.008 and noted that while the guidance in Procedure 1015.022 was followed, the team identified two minor errors in the procedure that were not identified by the licensee. The team noted that the guidance for verification and validation was clear and supported a consistent licensee review of the emergency operating procedures.

The two minor errors were noted in Procedure 1202.008. The first error involved Step 3 and one of the procedure's floating steps that directed the operator to go to Step 48 if the operator diagnosed two conditions - inadequate subcooling margin and indications of reactor head voids. Step 48 directed the operator to check again for the above conditions, but also added the condition "no high pressure injection is available," prior to directing any action. Step 48 had been changed in the last revision to Procedure 1202.008 to be consistent with other emergency operating procedures, however, the change was not applied appropriately to Step 3, nor the floating step. The second error was in contingency Step 15E, which was rendered meaningless because of missing words (obvious word processing errors). The team determined that neither of these examples would prevent successful application of the procedure during an emergency.

The team reviewed the local actions required in Procedure 1202.008. This review, which included a procedure walkthrough, focused on the ability of the minimum number of operators required by technical specifications to respond to the event prior to the arrival of additional emergency response personnel to the site. This review included the physical limitations imposed on operators performing local actions while in an emergency condition. For each local action in Procedure 1202.008, the team verified: procedure adequacy and availability in the plant, adequate emergency lighting, availability of ladders and access keys, importance of the action to event mitigation, and approximate completion time and availability of operators to perform the action when needed. This review confirmed that the local actions required by Procedure 1202.008 could be performed as written by the available operators.

c. Conclusions

Industry events involving emergency and abnormal operating procedure adequacy for the Unit 1 Babcox and Wilcox reactor were appropriately addressed. In addition, Unit 1 emergency operating procedures were clearly and consistently written and reflective of the technical bases document. Review of local actions in Procedure 1202.008 verified that these actions could be completed under accident conditions with the technical specification required minimum number of operators.

O7.3 Vendor Information and Industry Operating Experience

a. Inspection Scope

This inspection evaluated the adequacy of the licensee's implementation of corrective actions for operational experience feedback. The evaluation encompassed the period of January 5, 1999, through March 6, 2000.

b. Observations and Findings

The licensee's industry events analysis group was assigned the responsibility to conduct reviews of events that occurred externally to their facility. The purpose of this review was to determine if any of these events had an impact on facility operations. The group's activities were documented in Procedure 1010.008, "Industry Events Analysis Program." The team noted that during the period of interest, January 5, 1999, through March 6, 2000, the industry events analysis group conducted 3798 evaluations.

To accomplish this inspection, the team reviewed the corrective actions for two NRC generic letters, four NRC information notices, seven Part 21 reports, and nine operating experience evaluations. The corrective actions for Generic Letter 99-02, the four information notices, the seven Part 21 reports, and the nine operating experience evaluations were found to be adequate and complete. The corrective actions for Generic Letter 98-04 were discussed in Section E7.2 of this report. The team considered the industry events analysis program to be very effective at identifying issues and entering them into the corrective action program. An example of this effectiveness involved the industry events analysis processing of Operating Experience Evaluation 99-1884. While this operating experience evaluations applied only to boiling water reactors, the licensee took the initiative to review the operating experience evaluations and determined from this review that some additional procedure enhancements were warranted for its pressurized water reactors.

c. Conclusions

The licensee had a very effective industry operating experience program. The team noted that each item had a very detailed descriptive summary, that Industry Events Analysis group findings were forwarded to appropriate personnel, and that applicable items were placed into the corrective action program.

## **O8 Miscellaneous Operation Issues (92700)**

- O8.1 (Closed) Violation 50-313;368/98004-01: Improper release of hold card. This violation concerned an inappropriate release of a hold card, which created a potential for personnel injury. This violation was cited because of this improper release and a previous hold card error as documented in NRC Inspection Report 50-313;368/96-09. Following identification by the NRC of this potential adverse trend, the licensee initiated Condition Report CR-C-1997-0246 to place this issue in their corrective action program.

The corrective actions following this violation included revisions to training and procedures and new computer programming. The new computer programming uses signature reviews that are sequentially based, and will not allow a review to be conducted out of sequence. Signatures were verified by logon identification and passwords. These actions were successful in reducing errors in the hold card process.

The team reviewed the trend of hold card errors entered in the condition reporting system. While such errors are still being documented, the team noted a measurable decline in the errors. The team also noted that these errors were administrative and did not create any potential for personnel injury.

## **II. Maintenance**

### **M7 Quality Assurance in Maintenance**

#### **M7.1 Maintenance Rule**

##### **a. Inspection Scope (40500)**

This inspection reviewed the licensee's monitoring of the structures, systems, and components that were within the scope of the maintenance rule. This monitoring was reviewed to determine if the corrective actions, goals, and monitoring of structures, systems, and components that were in 10 CFR 50.65(a)(1) were appropriate and adequate.

##### **b. Observations and Findings**

The team conducted a review of a historical summary of 13 maintenance rule panel minutes covering the period of March 28, 1996, through September 3, 1999. This summary concerned the administration of the maintenance rule. The summary identified the condition reports and corrective actions applied to declare structures, systems, and components in rule Categories (a)(1) or (a)(2). The team also reviewed these condition reports and the associated corrective actions. This review confirmed that the licensee was adhering to its administrative procedures in this area and was assigning corrective actions, setting goals, and properly assessing the declaration of structures, systems, and components as Category (a)(1) or (a)(2) in a timely manner.

c. Conclusions

The licensee's corrective actions, goal setting, and monitoring of the structures, systems, and components included in the maintenance rule were appropriate.

M7.2 Management Observation Program

a. Inspection Scope (40500)

The team reviewed the licensee's actions taken to improve the implementation of Procedure 1025.034, "Maintenance Activity Performance Assessment." Revision 2 to this procedure was issued in July 1994, to identify the requirements, direction and controls for periodic assessment of maintenance activities. An initial evaluation of its effectiveness was conducted during a previous NRC inspection as documented in NRC Inspection Report 50-313; -368/97-18. The conclusion of the NRC at that time was that while a process for management field observations of maintenance activities had been established, it was not being aggressively implemented.

b. Observations and Findings

The team reviewed the performance assessment forms required by Procedure 1025.034 for the period of December 1997 to December 1999. The results of this review identified that the field observations of maintenance activities were still not being aggressively implemented. Discussions with the licensee representatives confirmed that this process was not effective. Further discussions revealed that the licensee was developing a new program that involved what was referred to as "coaching cards" developed for each discipline onsite and would eventually involve all line supervisors in actively becoming involved in the day-to-day work efforts of all departments, not just maintenance. The licensee planned to delete Procedure 1025.034 when the new program is implemented.

c. Conclusions

A problem with the management observation program, identified by the licensee, was addressed by the planned implementation of a new management oversight process.

### **III. Engineering**

E7 **Quality Assurance in Engineering Activities**

E7.1 Emergency Feedwater System Review

a. Inspection Scope (40500)

This inspection consisted of a review of the corrective action processes as they related to engineering activities for the emergency feedwater system. The review included 35 condition reports, 2 engineering requests, 18 maintenance action items, 2 procedures, and miscellaneous licensing documents concerning the emergency feedwater system.

b. Observations and Findings

The team found that, in general, the condition reports were written, categorized, and assigned priority consistent with facility procedures and management expectations. Corrective actions were identified, assigned, and completed in a timely manner, consistent with the assigned priority of the action. In most cases, corrective actions were thorough and addressed the root cause of the condition report. However, several exceptions to these practices were noted.

Condition Report CR-1-1999-0247 identified 13 Agastat relays (7000 series) past their 10-year qualified life that were discovered installed in the facility. Preventive Maintenance Engineering Evaluation-139, "Control Relays," Section 10.3, directed replacement of the relays every 10 years or 6 refuel cycles. The 13 relays had been discovered following review of an operational event review from the Crystal River facility, which indicated some problems with these Agastat relays. The 13 relays consisted of 7 that were installed in the hydrogen purge system, which had been abandoned in place approximately 6 years ago. The other 6 relays were alarm relays that did not perform a safety function other than alerting the plant operators to problems in the emergency feedwater and emergency diesel generator ventilation systems.

Design engineering performed a calculation to evaluate design life of the relays, and concluded that there was no operability concern with leaving the relays installed even though they exceeded their manufacturer's qualified life. The inspectors reviewed the draft engineering calculation and agreed with the assumptions and conclusions of the calculation, but noted that the calculation was still not approved, even though it had been completed in August 1999. Additionally, based on the conclusions of the calculation, Preventive Maintenance Change Document 99-0295 was initiated in September 1999 to change the requirement in Preventive Maintenance Engineering Evaluation-139 to replace the 13 relays from every 10 years to a new, longer period based on the calculation. The inspectors noted that this procedure change was not completed and the status of actions to complete the change had not been updated since its proposal in September 1999.

Condition Report CR-1-1999-0247 was administratively downgraded to Category G as "below scope" and closed in September 1999. Procedure 1000.104, defined Category G as a "CR [condition report] classified as non-significant and administratively closed as being below the threshold of an adverse condition. . . ." The team reviewed the justification for this downgraded classification and noted some inconsistencies with the requirements of Procedure 1000.104. The justification for Category G stated that a prior condition report from 1989, Condition Report CR-C-1989-050, would have specifically excluded these relays from operability concerns since they were either abandoned equipment or alarm only relays. The team reviewed Condition Report CR-C-1989-050 and found that it only stated that alarm-only relays were not as high a priority as other function dependent relays, and their replacement could be postponed until the next scheduled outage without concern for system operability. It did not specifically exclude them from the requirement for replacement. The team also obtained from interviews with licensee personnel that the abandoned-in-place relays



may have been retained in the maintenance program due to their potential use as spare relays. No other corrective actions were performed or identified prior to closure of the condition report. The team determined that the licensee did not identify the generic corrective actions necessary to resolve this finding. Specifically, the licensee did not determine the affect of this qualified life problem on safety-related relay operability.

Criterion XVI of Appendix to 10 CFR Part 50, "Corrective Action," requires that conditions adverse to quality, such as defective material, are promptly identified and corrected. The failure to determine if relays used in safety-related applications exceeded their qualified life, potentially affecting the operability of safety-related equipment, was a violation of Criterion XVI of Appendix B to 10 CFR Part 50. This Severity Level IV violation is being treated as a noncited violation consistent with Section VII.B.1.a of the NRC Enforcement Policy (50-458/002-01). This violation was entered into the licensee's corrective action program as Condition Reports CR-C-2000-0063 and CR-1-2000-0161.

During personnel interviews, the team was informed that the facility had identified programmatic concerns in the preventive maintenance area in August 1998 from an adverse trend in preventive maintenance corrective actions. The inspectors reviewed applicable Condition Report CR-C-1998-0198, which was extensive and whose corrective actions were ongoing. Corrective Action 39 (of 57) directed a re-validation of the preventive maintenance engineering evaluation requirements to reestablish the baseline for preventative maintenance source documents. This action item was originally scheduled for completion in January 1999. In January 2000, 1 year after the original due date and 16 months after identification, the due date was reestablished as May 2000. No documentation of partial completion or additional current status was noted.

Condition Report CR-2-1999-0674 identified a minor overpressurization event for the suction piping of the emergency feedwater pumps on Unit 2. Due to an unusual system lineup during a plant shutdown, back leakage from the "B" emergency feedwater pump discharge check valve pressurized the emergency feedwater common suction piping to the alarm limit, but did not exceed system design pressure. The cause was diagnosed and the operability evaluation determined that the back leakage was not excessive and did not affect system operability, but that the unusual system lineup did not allow pressure relief for the suction piping through the opposite train. The corrective actions were to revise Procedure OP-2106.006, "Emergency Feedwater." These recommended corrective actions included adding a limit and precaution step, as well as, a specific step in two applicable sections of the procedure, to ensure the system lineup maintained a relief path for the suction side piping to the recirculation header. The condition report was closed noting that all corrective actions had been completed.

The team reviewed Procedure OP-2106.006, and noted that only the limit and a precaution step had been added to the procedure. There was no documentation in the condition report to explain the discrepancy. When questioned, the licensee explained that while the steps were not added because the addition of the limit and precaution was considered to be adequate, this decision had not been documented in the condition report. The team determined that the licensee's decision was appropriate. The licensee entered this lack of documentation issue identified in Condition Report CR-2-1999-0674 in its corrective action program as Condition Report CR-C-2000-0063.

The team interviewed the system engineers for both Unit 1 and 2 emergency feedwater systems. Both engineers were knowledgeable of current system status and concerns, and were familiar and satisfied with the corrective action system at the facility. Both had generated numerous corrective action documents and were satisfied with the final disposition of those documents.

c. Conclusions

Corrective actions were not identified to determine if installed safety-related relays that exceeded their qualified life were operable. This was a Severity Level IV noncited violation of Criterion XVI of Appendix B to 10 CFR Part 50 consistent with Section VII.B.1.a of the NRC Enforcement Policy and has been entered into the licensee's corrective action program.

E7.2 Protective Coatings in the Reactor Buildings

a. Inspection Scope

This inspection consisted of a review of the licensee's action on NRC Generic Letter 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after a Loss-of-Coolant Accident because of Construction and Protective Coating Deficiencies and Foreign Material in Containment."

b. Observations and Findings

As a part of the review of the licensee's action on industry events (as discussed in Section O7.3 of this report), the team selected Generic Letter 98-04 and reviewed engineering's response to this generic letter. The actions requested by the generic letter were found to be included in the corrective action program and were being tracked for completion. The team noted that the licensee's actions for Generic Letter 98-04 were developed following the issuance of NRC Information Notice 97-013. The licensee issued Condition Report CR-C-1997-0289, "Documents instances in which protective coatings have not been properly applied, maintained/qualified for their intended use and have jeopardized operation of SR [safety-related] equipment," to address the information notice and track these activities. The team's review of this condition report indicated that while the issue was being tracked, there were instances where the corrective actions continued to be extended.

For Condition Report CR-C-1997-0289, design engineering provided the assignments and the closeout authority for each corrective action. The team noted that Corrective Action 1 identified six corrective actions (numbered 2 - 7) to be performed. This corrective action was initiated on October 6, 1997, with an assigned completion date of December 31, 1997. This completion date was extended to July 31, 1998, then to September 4, 1998, because the licensee was waiting on the issuance of Generic Letter 98-04. Generic Letter 98-04 was issued on July 14, 1998. Even though some corrective actions were not completed, Corrective Action 1 was closed on August 21, 1998. The licensee stated that Corrective Action 1 was closed when the intent of this action, to develop an initial corrective action listing, was completed. The licensee further stated that the status of the remaining corrective actions would continue to be tracked by the corrective action program.

Of the remaining six corrective actions, the team noted that Corrective Actions 3 and 4 were completed. Corrective Action 2, which involved the impact of unqualified coatings inside the Unit 1 and 2 reactor buildings on the emergency core cooling systems was not completed. Corrective Action 2 was issued on November 2, 1998, and then extended until December 31, 1999. It was again extended to August 31, 2000.

The team discussed the methods the licensee used to control the introduction of coatings into the reactor buildings. From these discussions, the team determined that the introduction into the Units 1 and 2 reactor buildings of coatings on structures, systems, and components by plant modifications was controlled by the modification process. In addition, since safety-related components were purchased with qualified coatings, the licensee stated that it had control of coatings on safety-related structures, systems, and components. However, the team noted that if materials were introduced into the reactor buildings through other processes, such as the component procurement or the maintenance process, the potential existed that unqualified coatings on nonsafety-related structures, systems and components could be introduced into the reactor buildings. While the licensee acknowledged that the potential existed for the introduction of unqualified coatings into the reactor building through these processes, the licensee stated that its operability evaluation addressed the effect of unqualified coatings on the emergency core cooling systems and that this action was being left open pending the results of NRC's ongoing testing of the effect of coatings on emergency core cooling system operation. In addition, in response to the team's discussions, the licensee developed Corrective Action 8 which provided further information that supported its operability evaluation. The team determined that the licensee was taking appropriate actions to resolve the coating issue and had an appropriate basis to support the effect of nonqualified coatings in the reactor buildings on the emergency core cooling systems.

c. Conclusions

Corrective actions to control the introduction of unqualified coating materials into the reactor buildings were entered into the corrective action program and were being resolved.

#### **IV. Plant Support**

##### **R7 Quality Assurance in Radiation Protection and Chemistry Controls**

###### **a. Inspection Scope (40500)**

The inspection consisted of a review of selected condition reports and radiological incident reports for the radiation protection area. In addition, several months of radiation protection logs (which encompassed Unit 1 Refueling Outage 15) were reviewed, and a selection of notable log entries were assessed to determine if issues were properly entered into the corrective action program, and if the subsequent corrective actions were appropriate.

###### **b. Observations and Findings**

The team reviewed approximately 20 condition reports and two radiation incident reports that were entered into the corrective action program for resolution. The team determined that, for problems identified in a corrective action document, the conditions were properly tracked for resolution and had been adequately resolved.

During the review of the radiation protection logs, the team identified log entries that appeared to be issues that should be entered into the corrective action program. As the result of further reviews, the team determined that, with one exception, the licensee had entered the selected issues into their corrective action program. The one exception involved a log entry from September 12, 1999, that was not entered into the corrective action program. The log entry involved the transport of a makeup pump discharge filter to radwaste. During this transport, the filter disengaged and fell from the transport assembly filter grapple. While this event did not result in any additional spread of contamination, and technicians successfully completed the transfer to radwaste, the technicians did not write a condition report to address the dropped filter event. This was entered into the licensee's corrective action program as Condition Report CR-C-2000-0057. The team noted that the licensee no longer used the radiological incident reports, and had replaced these reports with condition reports.

###### **c. Conclusions**

Corrective actions to identify and correct problems that occurred in the radiation protection area were being entered into the corrective action program and were being resolved.

**P7 Quality Assurance in Emergency Preparedness Activities**

a. Inspection Scope (40500)

This inspection involved a review of selected condition reports and emergency planning action tracking system entries in the emergency preparedness area. Further, three drill critique reports were reviewed to assess if all items for improvement were addressed.

b. Observations and Findings

The team noted that the emergency planning organization wrote relatively few condition reports. Condition reports were generally reserved for items involving personnel or equipment problems that could adversely affect the ability to implement the emergency plan. The emergency planning organization wrote seven condition reports in the 13 months prior to the inspection. The team reviewed the following three condition reports: CR-C-1999-0292, concerning the failure of the meteorological tower to meet the availability assumptions noted in Safety Guide 23, dated February 1972; CR-C-1999-0154 concerning the failure to hear public address announcements in some areas of the plant during a June 9, 1999 training drill; and CR-C-2000-0019, concerning a failure to staff the technical support center notification communicator positions during a January 25, 2000, drill. The team determined that these condition reports were properly dispositioned.

Other items identified in drills that did not affect the ability to implement the emergency plan were placed in the emergency plan action tracking system. These included all improvement items identified during the training drill critiques. The team reviewed the drill critique memos, and verified that selected improvement items were properly tracked and entered into the emergency plan action tracking system.

c. Conclusions

The team found that the emergency planning organization was properly implementing the corrective action program.

**V. Management Meetings**

**X1 Exit Meeting Summary**

The team leader presented the inspection results to members of licensee management telephonically at the conclusion of the inspection on March 20, 2000. The licensee's representatives acknowledged the findings presented.

The team leader asked the licensee staff and management whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Ashley, Licensing Supervisor  
S. Bonner, Unit 2 Systems Engineer  
T. Brown, Manager, Standards  
M. Byran, Supervisor, Design Engineering  
M. Chisum, Manager, Unit 2 System Engineering  
M. Cooper, Licensing Specialist  
J. Cotton, Design Engineer  
R. Cowling, Design Engineer  
E. Franch, Design Engineer  
G. Giles, Supervisor, Operations Training  
M. Goecke, Control Room Supervisor  
H. Hughes, Design Engineer  
D. James, Manager, Licensing  
W. Kendrick, Mechanic, Unit 2  
J. Kowalewski, Manager, Unit 1 System Engineering  
D. Lach, Supervisor, Design Engineering  
L. McCarty, Supervisor, Industry Events Analysis  
E. McCormic, Senior Licensed Operator, Unit 1  
M. McKinney, Supervisor, Safety Analysis  
A. Mendez, Electrician, Unit 2  
J. Miller, Operations Manager, Unit 1  
T. Mitchell, Operations Manager, Unit 2  
S. Pyle, Licensing Specialist  
T. Ritter, Mechanic, Unit 1  
M. Ruder, Corrective Actions & Assessments  
T. Sherrill, Licensed Operator, Unit 2  
B. Short, Unit 1 Systems Engineer  
J. Sigle, Shift Superintendent, Unit 2  
W. Tolbert, Electrician, Unit 1  
T. Van Schaik, Unit 1 Assistant Operations Managers  
D. Walls, Licensed Operator, Unit 1  
T. Woodson, Systems Engineer

NRC

J. Pellet, Chief, Operations Branch

## INSPECTION PROCEDURE USED

40500            Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems

## ITEMS OPENED AND CLOSED

### Opened and Closed

50-313;368/002-01    NCV    Failure to have adequate corrective actions as required by Appendix B, Criterion XVI of 10 CFR Part 50 for Agastat relay problems (Section E7.1).

### Closed

50-313;368/9804-01    VIO    Improper release of hold card (Section 08.1).

## PARTIAL LIST OF DOCUMENTS REVIEWED

### **PROCEDURES**

1000.104, "Condition Reporting and Corrective Action," Revision 15

1000.162, "Control of Work," Change 000-03-0

1000.153, "Engineering Request Process," Change 004-03-0

1010.008, "Industry Events Analysis Program," Revision 9

1025.034, "Maintenance Activity Performance Assessment," Revision 2

1309.013, "Unit 1 Service Water Flow Test," Revision 8

2104.033, Supplement 3, "Containment Cooler 14 day Test," to Procedure 2104.033, "Containment Atmosphere Control," Revision 39-01

1202.006, "Steam Generator Tube Rupture," Revision 7

1202.008, "Blackout," Revision 6

1015.022, "EOP Verification and Validation," Revision 3

1015.029, "Unit 1 EOP Writer's Guide," Revision 3

2106.006, "Emergency Feedwater," Revision 50

### **ENGINEERING REQUESTS**

ER-991642, "Seismic Analysis Reconciliation for MS-271 and 272," July 5, 1999

ER-992003, "Run to Failure" Evaluation of Agastat Relays in EDG & EFW alarm circuits, September 16, 1999

ER-941010, "Update ANO-1 Setpoint Basis Document, Report No. 91-R1018-01," May 5, 1997

ER-980401, "Unit 1 EOP Setpoint Basis Additions," April 9, 1998

ER-974796, "Revise ANO-1 EOP Basis Document for Increased EFW Flow Error," August 12, 1997

ER-991369, "Reference Changes to EOP Setpoint Basis Document," January 20, 1999

ER-974786, "Revise NaOH Tank Level Calculation to Support EOP Setpoints," August 8, 1997

### **CONDITION REPORTS INVOLVING REPORT FINDINGS**

CR-C-1999-0058, Magenta Painted tool found in desk drawer, February 12, 1999

CR-C-1999-0105, Accuracy of gamma spectrum analyses, April 14, 1999

CR-C-1999-0116, Unposted radiation area in Unit 1 354' auxiliary building, April 26, 1999

CR-C-1999-0119, Industry experience shows possible unplanned exposure due to working in high noise areas, April 28, 1999

CR-C-1999-0162, Some unexpected contamination identified when lowering MSB into VCC 13, June 17, 1999

CR-C-1999-0211, Concern over possible loss of service water biocide injection with a design bases accident leading to fouling of heat exchangers, August 17, 1999

CR-C-1999-0227, Discrete radioactive particle found on individual, September 9, 1995

CR-C-1999-0253, Hot Particle found near Unit 1 Reactor Building Personnel Hatch, September 28, 1999

CR-C-1999-0273, Discrete Particle found in clean tool room

CR-C-1999-0274, PCE [Personnel Contamination Event] Goal for 1R15 exceeded, October 12, 1999

CR-1-1999-0044, Power reduction due to high level in "A" MSR, February 18, 1999



CR-1-1999-0077, Unanticipated turbine governor valve cycling during planned downpower, March 24, 1999

CR-1-1999-0079, High particulate samples from both diesel fuel oil tanks, January 29, 1999

CR-1-1999-0304, Entry into Locked High Radiation Area Door, September 14, 1999

CR-1-1999-0343, Contamination of clean areas in Upper North Piping penetration room and "A" DHR vault, September 20, 1999

CR-1-1999-0385, Freeze Seal Failure on Isolation of CV-1213, CV 1214 & CV 1215, September 23, 1999

CR-1-1999-0409, High radiation area posting found laying on flow in Lower North Piping Room, September 28, 1999

CR-2-1999-0418, RCS letdown flow control valve packing leak contaminates piping penetration room, May 8, 1999

CR-2-1999-0500, Possible contamination in fan housing to 2VSF-8B, July 12, 1999

CR-2-1999-0663, Standing water found on Boric Acid Concentrator skid, November 4, 1999

CR-1-1999-0566, "CV-2648 failed to stroke closed in manual," December 6, 1999

CR-1-1999-0509, "CV-2648 failed to close on vector signal," October 20, 1999

CR-1-1999-0462, "CV-2648 level controller failure," October 5, 1999

CR-1-1999-0247, "Agastat relays beyond 10 year qualified life," August 18, 1999

CR-2-1999-0655, "Turbine Driven Emergency Feedwater Pump unexpected sentinel valve lift and hot start profile," October 28, 1999

CR-2-1999-0737, "Venting of EFW pressure switches following system maintenance," November 22, 1999

CR-2-1999-0691, "2P-7B rotating assembly replacement," November 10, 1999

CR-2-1999-0674, "EFW suction piping overpressure due to discharge stop check backleakage," November 8, 1999

CR-2-1999-0525, "Overspeed Trip of 2P-7A," August 2, 1999

CR-2-1999-0374, "Sentinel relief valve setpoint adjusting screw locknut loose," April 12, 1999

CR-2-1999-0337, "Sentinel relief valve lift during 2P-7A start," March 16, 1999

CR-2-1999-0324, "EFW Sample Isolation valves out of position," March 6, 1999

CR-C-1989-0050, "Agastat Time Delay Relays utilized in Unit 1 and Unit 2 have been in service beyond vendor specified qualified life," April 3, 1989

CR-C-1998-0198, "ANO Preventive Maintenance Program," August 10, 1998

CR-C-1997-0289, "IN-97-013 Documents instances in which protective coatings [that are] not properly, maintained/qualified for their intended use and have jeopardized OP [operations] of Safety-Related Equipment. Concern at ANO is coatings in Reactor Buildings and effect on ECCS [to] Perform," September 18, 1997

CR-C-2000-0060, "Components installed in the U1 and U2 reactor buildings under the MAI/JO [Maintenance Action Initiation/Job Order] process may not have acceptable coatings as required under Specification A-2437," March 9, 2000

CR-1-1997-0039, "Engineering Report 93-R-1002-01 does not include instrument error in the evaluation of vortexing in the BWST [borated water storage tank]," February 6, 1997

CR-2-1998-0405, "While addressing CR action item 1-97-0039-03, it was discovered that the level in the RWT [refueling water tank] could fall below the minimum which was assumed in the setpoint Calculation 93-EQ-2001-01

#### **CONDITION REPORTS AND ENGINEERING REQUESTS REVIEWED THAT DID NOT INVOLVE INSPECTION FINDINGS**

CR-2-1999-0471	CR-C-1999-0148	CR-1-1999-0485	CR-2-2000-0067
CR-2-1999-0158	CR-C-1999-0235	CR-1-1999-0467	CR-2-1999-0783
CR-2-1999-0441	CR-C-1999-0192	CR-1-1999-0449	CR-2-1999-0747
CR-2-1999-0059	CR-1-2000-0039	CR-1-1999-0447	CR-2-1999-0499
CR-2-1999-0197	CR-1-2000-0061	CR-1-1999-0423	CR-2-1999-0491
CR-2-1999-0324	CR-1-2000-0092	CR-1-1999-0426	CR-2-1999-0356
CR-1-1999-0004	CR-1-2000-0026	CR-1-1999-0358	CR-C-2000-0161
CR-1-1999-0186	CR-1-1999-0565	CR-1-1999-0221	
CR-1-1999-0178	CR-1-1999-0562	CR-1-1999-0518	

#### **SELF-ASSESSMENTS AND QA AUDITS**

Plant Assessment Quarterly Report, No. LIC-99-050, May 26, 1999

Plant Assessment Quarterly Report, No. LIC-99-073, August 10, 1999

Plant Assessment Quarterly Report, No. LIC-99-100, November 19, 1999

"Self-Evaluation and Corrective Action," May 10-14, 1999

"Assessment of Late Corrective Actions," November 2, 1999

QA Audit: QAP-10-99, "Corrective Actions"

## **MAINTENANCE ACTION INITIATIONS (MAIs)**

### **Unit 1**

MAI-6910, "Unit 1 EFWP P-7A Discharge Pressure," April 12, 1999  
MAI-19100, "Unit 1 EFWP P-7A Discharge Pressure," December 9, 1999  
MAI-16080, "CV-2648 failure to close," October 2, 1999  
MAI-17119, "CV-2648 failure to close," October 20, 1999

### **Unit 2**

MAI 13096, "EFWP 2P-7A Driver Assembly, Speed control and indication," August 3, 1999  
MAI 13103, "EFWP 2P-7A Driver Assembly, Overspeed trip," August 3, 1999  
MAI 13158, "EFWP 2P-7A Driver Assembly, Turbine Casing Leak," August 3, 1999  
MAI 18938, "EFWP 2P-7A Driver Assembly, Pump Start Profile Anomalies," November 30, 1999

## **RADIATION INCIDENT REPORTS (RIRs)**

RIR 99-006, Screwdriver with Magenta Paint found in desk drawer at CA-3  
RIR 99-032, Scaffold Pole found outside Sallyport

## **EMERGENCY PREPAREDNESS DRILL AND EXERCISE REPORTS**

EP-99-0030, May 12 and May 19 Integrated Drill Report  
EP-99-0040, June 9, 1999 Drill Report, August 16, 1999  
EP-99-0044, July 21, 1999 Off Year Exercise Report, August 19, 1999

## **PERSONNEL CONTAMINATION EVENT RECORDS**

PCE 1999-0092  
PCE 1999-0101  
PCE 1999-0125  
PCE 1999-0126  
PCE 1999-0287

## **NRC INFORMATION NOTICES (IN)**

99-01, Deterioration of High-Efficiency Particulate Air Filters in a Pressurized Water Reactor Containment Cooler Unit, January 20, 1999

99-13, Insights From NRC Inspections of Low and Medium Voltage Circuit Breaker Maintenance Programs, April 29, 1999

99-17, Problems Associated With Post-Fire Safe-Shutdown Circuit Analysis, June 3, 1999

99-19, Rupture of the Shell Side of a Feedwater Heater at the Point Beach Nuclear Plant, June 23, 1999

### **NRC GENERIC LETTERS (GL)**

99-02, Laboratory Testing of Nuclear-Grade Activated Charcoal, June 3, 1999 and ERRATA, August 23, 1999

98-04, Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment, July 14, 1998

### **PART 21 REPORTS**

- "Potential for the malfunctioning of the Eaton Cutler-Hammer DS and DSL class 1E circuit breakers due to the application of incorrect torque values during breaker reconditioning," November 15, 1999
- "Potential safety concern involving potential for the malfunction of the Eaton Cutler-Hammer DS and DSL class 1E circuit breakers due to improper application of zinc chromate plating to hardened parts during breaker reconditioning," November 15, 1999
- "Reporting of defects and non-compliance Engine Systems, Inc. Report 10 CFR 21-0078 Synchrostart Model ESSB-4AT speed switch (p/n SA-2110)," January 26, 1999
- "Possible material defect in a Swagelok pipe fitting tee," January 29, 1999
- "Potential manufacturing deviation in fuel assembly guide tube wear sleeves," February 5, 1999
- "Incorrectly mounted shutter roll pin on circuit breaker chassis," May 27, 1999
- "Defective relays provided to Foxboro by vendor," September 7, 1999

### **OPERATING EVENT EVALUATION**

99-1513, Outside Design Basis, March 30, 1999

99-1585, LTOP [Low Temperature Overpressure] with Nitrogen Operation, May 13, 1999

99-1610, Manual Reactor Trip Resulting from High Pressure due to the Loss of Reactor Coolant System Letdown Capacity, June 1, 1999

99-1631, Feedwater Heater Shell Rupture, June 14, 1999

99-1642, Rupture of Shell Side of Feedwater Heater at the Point Beach Nuclear Plant, June 25, 1999

99-1688, Feedwater Heater Shell Rupture, Revision 1, July 19, 1999

99-1874, Oscillating Primary-to-Secondary Steam Generator Leak Rate, September 22, 1999

99-1884, Recurring Event, BWR [boiling water reactor] Operation in Region of Potential Core Instability, September 30, 1999

99-1898, Reactor Scram Followed by Loss of a Class 1E AC and DC Bus, October 6, 1999

**MISCELLANEOUS DOCUMENTS**

Procedure Improvement Form to Procedure 1102.015, "Filling and Draining the Fuel Canal"

Radiation Protection Logs, May 1, 1999 through December 31, 1999.

Preventive Maintenance Engineering Evaluation No. 139, "Control Relays," Revision 10

Preventive Maintenance Change Document 99-0295, "PMEE revision for Agastat relays," October 30, 1999

Engineering Calculation 99-E-0044-01, "Justification for Agastat alarm relays run to failure," July 13, 1999

Engineering Calculation 91-R-1018-02, "ANO-1 EOP Setpoint Basis Document," Revision 8