

November 27, 2000

Mr. M. Reddemann  
Site Vice President  
Kewaunee and Point Beach Nuclear Plants  
Wisconsin Electric Power Company  
6610 Nuclear Road  
Two Rivers, WI 54241

SUBJECT: POINT BEACH - NRC SUPPLEMENTAL INSPECTION REPORT  
50-266/00-12(DRS); 50-301/00-12(DRS)

Dear Mr. Reddemann:

On November 3, 2000, the NRC completed a supplemental inspection of your Point Beach Nuclear Power Plant. The results of this inspection were discussed on November 3, 2000, with Mr. A. Cayia and other members of your staff. The enclosed report presents the results of that inspection.

In April of 2000, you reported to the NRC that the performance indicator for reliability of the siren system, intended to alert and notify the public near the Point Beach facility in the event of an emergency, fell below 94 percent. This represented system performance that is at a level that may result in increased NRC oversight (White). Following our evaluation of this issue, we determined that the reduction in siren reliability associated with this performance indicator warranted supplemental NRC inspection and assessment of your actions to improve performance.

The supplemental inspection was an examination of activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection focused on your evaluation of the siren performance problems and the corrective actions implemented and planned to address the performance issues.

On September 13, 2000, we began our supplemental inspection of your evaluation and corrective actions to address siren performance, which you indicated were ready for our review. During this inspection, we identified that your evaluations were not effective in identifying the root causes which resulted in the decline in siren reliability. In addition, we found weaknesses in your staff's understanding of the technical issues which primarily resulted in the siren failures. Your staff attributed the failures to an upgrade in system electronics and software, which replaced a system which had known performance failures. However, your staff did not fully understand the problems with the upgrade nor the continued actions that were implemented by your contractor to correct the problems. Although these modifications appeared to result in improved performance, your staff was uncertain of the long-term reliability of these modifications. In parallel with our inspection, your quality assurance staff also identified similar

deficiencies in your initial approach to the siren reliability issue. As we continued to assess these issues and communicate these deficiencies, your staff performed an additional evaluation to determine the root causes for the decline in siren reliability.

On November 2 and 3, 2000, we continued our inspection and reviewed your revised assessment of the siren system performance. We found this assessment to be thorough and of adequate depth to identify the root causes of the decline in siren reliability, including the weaknesses in your staff's earlier evaluations of the sirens. Primarily, your staff attributed the siren reliability decline to the emergency preparedness staff's failure to use your procurement process for the siren upgrade project. In failing to use this process, the siren upgrade was allowed to progress without the necessary quality assurance measures, system specifications and testing, and project oversight, which should have prevented or minimized the system failures. In addition, you also identified weaknesses in the staff's use of the site corrective action system, in the oversight of the quality assurance organization, and in the staff's oversight of the siren upgrade project, which also contributed to the siren system's performance decline. Finally, this evaluation provided a clearer understanding of the technical issue associated with your new components and software.

We also reviewed your corrective actions that were assigned to the siren performance issues. Although the priority and schedule for these actions were not final, we found that the actions appeared to address the root causes identified in your evaluation. However, you had not yet determined what measures would be employed to ensure the effectiveness of these planned corrective actions, nor had your staff completed its extent of condition review. We plan to review your resolution to these issues in future NRC inspections.

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/*

John A. Grobe, Director  
Division of Reactor Safety

Docket Nos. 50-266; 50-301  
License Nos. DPR-24; DPR-27

Enclosure: Inspection Report 50-266/00-12(DRS);  
50-301/00-12(DRS)

See Attached Distribution

cc w/encl: R. Grigg, President and Chief  
Operating Officer, WEPCo  
M. Wadley, Chief Nuclear Officer, NMC  
J. Gadzala, Licensing Manager  
D. Weaver, Nuclear Asset Manager  
F. Cayia, Plant Manager  
J. O'Neill, Jr., Shaw, Pittman,  
Potts & Trowbridge  
K. Duveneck, Town Chairman  
Town of Two Creeks  
B. Burks, P.E., Director  
Bureau of Field Operations  
A. Bie, Chairperson, Wisconsin  
Public Service Commission  
S. Jenkins, Electric Division  
Wisconsin Public Service Commission  
State Liaison Officer

deficiencies in your initial approach to the siren reliability issue. As we continued to assess these issues and communicate these deficiencies, your staff performed an additional evaluation to determine the root causes for the decline in siren reliability.

On November 2 and 3, 2000, we continued our inspection and reviewed your revised assessment of the siren system performance. We found this assessment to be thorough and of adequate depth to identify the root causes of the decline in siren reliability, including the weaknesses in your staff's earlier evaluations of the sirens. Primarily, your staff attributed the siren reliability decline to the emergency preparedness staff's failure to use your procurement process for the siren upgrade project. In failing to use this process, the siren upgrade was allowed to progress without the necessary quality assurance measures, system specifications and testing, and project oversight, which should have prevented or minimized the system failures. In addition, you also identified weaknesses in the staff's use of the site corrective action system, in the oversight of the quality assurance organization, and in the staff's oversight of the siren upgrade project, which also contributed to the siren system's performance decline. Finally, this evaluation provided a clearer understanding of the technical issue associated with your new components and software.

We also reviewed your corrective actions that were assigned to the siren performance issues. Although the priority and schedule for these actions were not final, we found that the actions appeared to address the root causes identified in your evaluation. However, you had not yet determined what measures would be employed to ensure the effectiveness of these planned corrective actions, nor had your staff completed its extent of condition review. We plan to review your resolution to these issues in future NRC inspections.

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/**  
 John A. Grobe, Director  
 Division of Reactor Safety

Docket Nos. 50-266; 50-301  
 License Nos. DPR-24; DPR-27

Enclosure: Inspection Report 50-266/00-12(DRS);  
 50-301/00-12(DRS)

See Attached Distribution

DOCUMENT NAME: G:DRS\poi00-12drs.wpd

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII	RIII	RIII	RIII
NAME	SOrth:sd	GShear	MKunowski for RLanksbury	JGrobe
DATE	11/27/00	11/27/00	11/27/00	11/27/00

**OFFICIAL RECORD COPY**

cc w/encl: R. Grigg, President and Chief  
Operating Officer, WEPCo  
M. Wadley, Chief Nuclear Officer, NMC  
J. Gadzala, Licensing Manager  
D. Weaver, Nuclear Asset Manager  
F. Cayia, Plant Manager  
J. O'Neill, Jr., Shaw, Pittman,  
Potts & Trowbridge  
K. Duveneck, Town Chairman  
Town of Two Creeks  
B. Burks, P.E., Director  
Bureau of Field Operations  
A. Bie, Chairperson, Wisconsin  
Public Service Commission  
S. Jenkins, Electric Division  
Wisconsin Public Service Commission  
State Liaison Officer

ADAMS Distribution:

CMC1  
DFT  
BAW (Project Mgr.)  
J. Caldwell, RIII  
G. Grant, RIII  
B. Clayton, RIII  
SRI Point Beach  
C. Ariano (hard copy)  
DRP  
DRSIII  
PLB1  
JRK1  
BAH3

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-266; 50-301  
License Nos: DPR-24; DPR-27

Report No: 50-266/00-12(DRS); 50-301/00-12(DRS)

Licensee: Wisconsin Electric Power Company

Facility: Point Beach Nuclear Plant, Units 1 and 2

Location: 6610 Nuclear Road  
Two Rivers, WI 54241

Dates: September 13 - 15, 2000 and November 2 - 3, 2000

Inspector: Steven K. Orth, Senior Radiation Specialist

Observer: Ronald V. Schmitt, Radiation Specialist

Approved by: Gary L. Shear, Chief  
Plant Support Branch  
Division of Reactor Safety

# 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:

- | <b>Reactor Safety</b>   | <b>Radiation Safety</b>   | <b>Safeguards</b>   |
|---|---|---|
| <ul style="list-style-type: none"><li>● Initiating Events</li><li>● Mitigating Systems</li><li>● Barrier Integrity</li><li>● Emergency Preparedness</li></ul> | <ul style="list-style-type: none"><li>● Occupational</li><li>● Public</li></ul> | <ul style="list-style-type: none"><li>● Physical Protection</li></ul> |

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. And 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 05000266/00-12(DRS); 05000301/00-12(DRS), on 09/13/2000 - 9/15/2000 and 11/02 - 11/03/2000, Wisconsin Electric Power Company, Point Beach Nuclear Power Plant, Units 1 and 2. Supplemental Inspection - Emergency Preparedness Cornerstone.

### **Cornerstone: Emergency Preparedness**

The licensee's initial evaluations and corrective actions associated with the White alert and notification system (ANS) performance indicator (PI) were not adequate:

- Following two significant siren testing failures in February and May of 2000, the licensee performed evaluations to identify the causes of the failures and to determine the appropriate corrective actions. The inspector concluded that these evaluations were of insufficient depth to identify the root causes of the siren failures. Generally, the licensee attributed the failures to a recent upgrade in telemetry components, which was completed in January of 2000. Although the licensee believed that there were errors in the software, the licensee did not fully understand the errors or the cause of the unexpected system responses.
- Following the initial siren failures in February of 2000, the licensee's contractor modified the siren telemetry software. However, the licensee did not fully understand the scope of this modification and did not determine why these corrective actions were not effective in preventing similar siren failures in March and May of 2000.
- Although the final corrective actions (removing a software test logic) improved siren test results, the licensee had not evaluated the long-term effects of removing the test logic. Specifically, the licensee did not determine if the modification may have reduced its ability to identify a long-term failure mode of the equipment. Based on this lack of certainty, the inspector could not conclude that the licensee's corrective actions were adequate to prevent recurrence.

Following the initial NRC onsite inspection and a parallel review by the licensee's quality assurance staff, the licensee performed a comprehensive root cause evaluation of ANS performance. The inspector determined that this evaluation was thorough and effectively identified the root causes of the siren system performance issues. In addition, the licensee fully determined the technical issue that resulted in siren test failures. As a root cause, the licensee concluded that the siren upgrade project was performed outside of the licensee's normal procurement process, which would have provided additional quality assurance, software testing and verification, and project oversight. In addition, the staff did not consistently use the licensee's corrective action system to document system failures. The licensee attributed these failures to a "mindset" among the emergency preparedness staff that resulted in the staff using internal processes instead of normal plant processes.

In terms of corrective actions, the inspector found that the licensee's final planned corrective actions appeared to address the root causes identified in its evaluation. However, the licensee had not yet defined what measures would be implemented to ensure that the effectiveness of these corrective measures were reviewed, nor had the licensee completed its extent of condition review. The licensee's resolution of these issues will be reviewed in future NRC inspections.

## Report Details

### 01 Inspection Scope

This supplemental inspection was performed by the NRC in accordance with Inspection Procedure (IP) 95001 to assess the licensee's evaluation of the white performance indicator associated with its alert and notification system (ANS) in the Manitowoc County portion of the licensee's emergency planning zone. The white performance indicator means that the licensee's sirens did not function as expected during 6-to-10 percent of the bimonthly test opportunities. During the four-quarter period from July 1, 1999, through June 30, 2000, the licensee's ANS indicator (successful siren tests) fell to 93.5 percent. Most notably, the decline in the indicator occurred during the first two quarters of calendar year 2000, which the licensee primarily attributed to the installation of a new telemetry system. Since this supplemental inspection was conducted using the requirements of IP 95001, the following details are organized by the specific inspection requirements of IP 95001 which are noted in italics in the following sections.

### 02 Evaluation of Inspection Requirements

#### 02.1 Problem Identification

- a. *Determine that the evaluation identifies who (i.e. licensee, self-revealing, or NRC), and under what conditions the issue was identified.*

On February 3, 2000, the licensee conducted a routine bimonthly test of its alert and notification system (ANS). Of the licensee's 14 sirens, eight sirens failed to actuate during the test. On the following day, all sirens were found to be inoperable. The licensee initiated a condition report to identify the significant test failure (CR No. 00-0392).

On May 3, 2000, the licensee conducted a routine bimonthly test of its ANS and, 6-of-14 sirens failed to actuate. The licensee initiated another condition report to document the significant test failure (CR No. 00-1412). The licensee also predicted that the combined test failures (February 3, 2000, and May 3, 2000) and other minor failures encountered during the four-quarter period would likely result in the ANS performance indicator crossing the white threshold.

On August 24, 2000, the licensee initiated a condition report to document the ANS indicator crossing the white threshold (CR No. 00-2554).

- b. *Determine that the evaluation documents how long the issue existed, and prior opportunities for identification.*

In the early 1990's, the licensee identified problems with the equipment used to monitor siren actuations in the field. Specifically, the licensee identified that the current telemetry system was not providing accurate feedback of siren performance. Subsequently, the licensee placed tape recorders at each siren location to provide positive verification of siren actuation. Based on this method, the licensee was confident in the results of siren tests (1993 - 2000). During this time, the licensee also

identified and corrected other issues attributed to aging equipment -- siren batteries (1996-7), coaxial cables and heaters (1996-7), and computer and encoder clock crystals (1996).

During 1998, the licensee began the process of upgrading the siren telemetry system. In June of 1999, the licensee submitted specifications to potential vendors, and a vendor was selected in August of 1999. The licensee's original schedule was to have the equipment shipped to the site in October of 1999, and installed in November of 1999. However, availability of parts/components and weather issues delayed the installation to January of 2000. In January of 2000, the vendor completed installation, and the vendor and licensee completed post-installation testing.

On February 3, March 1, and May 3, 2000, the licensee documented failures of sirens to activate during routine testing. In each of these tests, the software identified a difference between the time on the siren clocks and the time encoded in the activation (i.e., the time on the encoder clocks). Once a synchronization mismatch was identified, the system regarded the signal as unauthenticated and did not activate the sirens. The licensee associated the failure to a previously unknown synchronization feature of the new system and primarily attributed these failures to the adequacy of the software provided by the vendor. During this period of time, the licensee worked with the vendor and installed a number of software modifications to modify and, finally, to bypass the synchronization logic test results.

On May 24, 2000, the licensee performed extensive testing of the software modifications. Siren testing demonstrated successful performance from that date to the time of this inspection.

- c. *Determine that the evaluation documents the plant specific risk consequences (as applicable) and compliance concerns associated with the issue.*

The licensee identified some of the ANS failures in its corrective action system. In each documented failure, the licensee adequately evaluated the ability of the system to warn the public in the case of an emergency. In addition, the licensee performed the required NRC notifications when a significant loss of the ANS capabilities was identified.

## 02.2 Root Cause and Extent of Condition Evaluation

During the initial onsite inspection, the licensee had not completed its evaluation that assessed the overall issue of the ANS performance indicator crossing the white threshold. However, the inspector reviewed the licensee's two condition reports documenting significant ANS testing failures in February and May of 2000. Based on weaknesses identified by the inspector and the licensee's quality assurance organization, the licensee performed a root cause evaluation that reviewed the February and May 2000 condition reports and provided a comprehensive review of the ANS reliability issues, which was approved on November 2, 2000.

.1 Root Cause and Extent of Condition Evaluation: February 3, 2000 Test Failure Evaluation

- a. *Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).*

The licensee initiated a level “B” condition report to document the significant siren failures on February 3 (bi-weekly testing) and 4 (routine daily poll), 2000. Normally, level “B” condition reports require the licensee to perform a root cause evaluation of the problem. However, the licensee performed an apparent cause evaluation and used the results of that evaluation to justify not performing the root cause evaluation, per procedure NP 5.3.1 (Revision 16), “Condition Reporting System.” The inspector reviewed the apparent cause evaluation and determined that it was not performed in a systematic manner to identify root causes or contributing causes. Since the licensee’s historical data and troubleshooting indicated that the sirens were properly performing, the licensee broadly associated the errors with the installation of the new software system. Specifically, the licensee indicated that the failure was due to “incomplete and/or inaccurate programming by the vendor” and/or a failure to provide unique addresses to each encoder following a software upgrade (which the licensee attributed to personnel error).

- b. *Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.*

The inspector reviewed the licensee’s evaluation of the February 3, 2000, ANS failure and identified that the licensee did not fully evaluate the problem. Specifically, the licensee did not evaluate the potential that the software was properly functioning but the siren and/or encoder clocks were not functioning correctly, which may have an impact on future system performance. Although broadly stated as a software system problem, the licensee did not clearly identify an “error” in the software, an error in the features of the software, or why the error occurred. In addition, the licensee failed to fully evaluate its limited understanding of the software features and limitations.

- c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

Prior to the February 3, 2000, test failure the licensee indicated that no other problems with the system were associated with this feature/failure mode.

- d. *Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.*

In the condition report, the licensee indicated that the problem affected all of the licensee’s ANS sirens. However, the licensee did not evaluate how the root causes from this problem could have affected other plant systems or programs.

.2 Root Cause and Extent of Condition Evaluation: May 3, 2000 Test Failure Evaluation

- a. *Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).*

The licensee initiated a level "C" condition report to document the significant siren failures on May 3, 2000. In accordance with the licensee's procedure, an apparent cause evaluation was performed. The inspector noted that the licensee did not perform a systematic evaluation of the problem to identify the root cause(s) of the failures. The licensee continued to document that the failures were due to synchronization problems between the sirens and the encoder systems. However, the licensee did not determine why these errors continued to occur.

- b. *Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.*

The inspector reviewed the licensee's evaluation of the May 3, 2000, ANS siren failures and identified that the licensee did not fully evaluate the problem. Similar to the February 2000 failure evaluation, the licensee did not evaluate the potential that the software was properly functioning but the siren and/or encoder clocks were not functioning correctly, which may have an impact on future system performance. Although broadly stated as a software system problem, the licensee did not clearly identify an "error" in the software, an error in the features of the software, or why the error occurred. In addition, the licensee failed to fully evaluate its lack of understanding of the software features and limitations.

- c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

Prior to the May 3, 2000, ANS siren failure, the licensee had additional system failures that were not fully considered. In particular, the assessment did not address why the apparent cause and corrective actions implemented for the February 3, 2000, test failures did not prevent future test failures. For example, the licensee had not identified why a software modification following the February 2000 test did not eliminate the synchronization errors. During the inspection, the licensee and inspector speculated on the reasons for the ongoing synchronization errors; however, the licensee was not confident of the cause. Consequently, the licensee planned to obtain additional information from the vendor.

In March of 2000, the licensee also identified that two sirens reported synchronization failures and noted that the encoder units did not have the proper addresses. However, the May 3, 2000, evaluation did not consider or document these similar issues.

- d. *Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.*

In the condition report, the licensee indicated that the problem could potentially affect all of the licensee's ANS sirens. However, the licensee did not evaluate how the root causes from this problem could have affected other plant systems or programs.

.3 Root Cause and Extent of Condition Evaluation: November 2, 2000 Root Cause Evaluation No. RCE 00-076

- a. *Determine that the problem was evaluated using a systematic method(s) to identify root cause(s) and contributing cause(s).*

The licensee's root cause team implemented procedure NP 5.3.1 (Revision 16), "Condition Reporting System," and the guidance contained in OEG 001 (Revision 4), "Root Cause Evaluations." The inspector reviewed these documents and found adequate instructions for performing systematic evaluations of issues. For the ANS performance issues, the licensee used events and causal factors charting, interviewing, and an industry recognized failure mode charting technique to determine the root causes. The inspector reviewed the team's data and documentation and concluded that the team's approach was performed in accordance with the above techniques.

- b. *Determine that the root cause evaluation was conducted to a level of detail commensurate with the significance of the problem.*

The inspector concluded that the licensee's evaluation was conducted to an adequate level of detail to identify the root causes of the ANS performance issues. The licensee determined that the primary root cause for the decline in ANS reliability resulted from the emergency preparedness staff's failure to use the licensee's procurement process for the siren system telemetry upgrade. Had the process been adequately used, the evaluation concluded that the staff would have implemented the appropriate quality assurance measures, system specifications and testing, and project oversight, which should have prevented or minimized the ANS failures in February, March, and April of 2000. In addition, the licensee identified deficiencies in the staff's use of the site corrective action system (which included the evaluation of the February, March, and April of 2000 ANS failures), in the routine oversight provided by the quality assurance organization, and in the staff's oversight of the siren upgrade project, which also contributed to the siren system's performance decline. Finally, the root cause evaluation provided a clearer understanding of the technical issues associated with the upgraded ANS components and software.

The licensee attributed the underlying causes of the performance failures to a "mindset" on the part of the emergency preparedness staff, which resulted in the staff using emergency preparedness internal processes instead of normal plant processes. For example, the staff documented issues in the emergency preparedness internal files and did not consistently use the plant corrective action system. In addition, the evaluation concluded that an overconfidence was present in the ANS upgrade project that precluded assistance from other plant organizations and limited contingency planning.

- c. *Determine that the root cause evaluation included a consideration of prior occurrences of the problem and knowledge of prior operating experience.*

The root cause team developed an extensive time-line that captured the historical problems with the ANS and weaknesses in the licensee's ANS evaluations performed in February and April of 2000. In addition, the team effectively considered historical issues concerning the emergency preparedness program. In particular, the evaluation

documented similar issues identified during the staff's upgrade to its emergency response call-out system and in the staff's use of the corrective action program. The inspector found that the root cause evaluation effectively documented these issues and considered the common causes in determining the root causes for the ANS reliability issues.

- d. *Determine that the root cause evaluation included consideration of potential common cause(s) and extent of condition of the problem.*

The licensee had not performed a complete extent of condition review for the ANS reliability decline. However, the licensee's corrective actions contained directions to perform such an evaluation. Therefore, the inspector could not conclude if the licensee had adequately determined the extent of condition of the problem.

### 02.3 Corrective Actions

- a. *Determine that appropriate corrective action(s) are specified for each root/contributing cause or that there is an evaluation that no actions are necessary.*

The inspector determined that the licensee had developed corrective actions that addressed the root causes of the performance issue. As immediate corrective actions, the licensee's contractor modified the software to remove the effects of the synchronization test and to provide additional assurance that the system would perform as expected. Following the change in the software configuration (May 24, 2000), the licensee performed extensive testing to ensure that the synchronization logic had been circumvented. Although some additional technical issues were identified during this inspection, the ANS reliability has shown a marked improvement.

With respect to the root causes for the ANS performance decline, the licensee assigned a number of corrective actions focused at the use of procurement process, the qualification of the ANS software, the emergency preparedness staff's use of the corrective action program, and the oversight provided by the quality assurance organization. In addition, licensee management indicated that supervisory oversight of the emergency preparedness function would focus on the "mindset" issues raised by the evaluation. The inspector concluded that these corrective actions appeared to address the root causes identified in the licensee's evaluation.

- b. *Determine that the corrective actions have been prioritized with consideration of the risk significance and regulatory compliance.*

The licensee provided a preliminary prioritization of the corrective actions (i.e., schedule). However, licensee management indicated that the root cause evaluation and corrective actions would be further reviewed by the corrective actions review board and that the proposed schedule may be revised. Nonetheless, the inspector concluded that the licensee provided unique completion dates for each of the assigned corrective actions, which appeared commensurate with risk significance.

- c. *Determine that a schedule has been established for implementing and completing the corrective actions.*

Described in Section 02.3.b.

- d. *Determine that quantitative or qualitative measures of success have been developed for determining the effectiveness of the corrective actions to prevent recurrence.*

The inspector reviewed the licensee's procedures and discussed with licensee management its method of determining the effectiveness of corrective actions. In accordance with its procedures, the corrective actions review board determines the manner in which corrective action effectiveness is evaluated, if applicable. Since the ANS root cause evaluation had not yet been reviewed by the board, the licensee could not provide the inspector defined measures of success for the assigned corrective actions. Therefore, the inspector could not evaluate this aspect of the corrective actions.

### 03 Exit Meeting Summary

On November 3, 2000, the inspector presented the inspection results to the Mr. A. Cayia and other members of the Point Beach staff. The licensee acknowledged the findings presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. The licensee indicated that the specifics of its contractor's computer code was proprietary; however, the licensee indicated that the information contained in its root cause evaluation and discussed with the inspector was not proprietary, as long as the contractor was not named in the NRC report.

## PARTIAL LIST OF PERSONS CONTACTED

### Licensee

M. B. Arnold	Corrective Action Program Specialist
J. R. Anderson	Process Improvement Manager
A. J. Cayia	Plant Manager - Point Beach
F. A. Flentje	Senior Regulatory Compliance Specialist
R. W. Hayden	Emergency Preparedness Supervisor
D. A. Hettick	Corrective Action Program Manager
C. J. Kleiman	Information Consultant
J. E. Knorr	Regulatory Compliance Manager
B. J. O'Grady	Operations Manager
S. A. Pfaff	Corrective Action Program Supervisor
A. Z. Puszta	Senior Oversight Assessment Specialist
R. P. Repshas	Site Services Manager

### NRC

M. Kunowski, Acting Senior Resident Inspector  
R. Powell, Resident Inspector  
S. Reynolds, Deputy Director, Division of Reactor Projects  
G. Shear, Chief, Plant Support Branch

## LIST OF DOCUMENTS REVIEWED

### Condition Report Nos.:

00-0392, 00-1412, 00-2554, and 00-2812

### Miscellaneous:

"Alert and Notification System (ANS) Self-Assessment," July 1 -12, 2000  
Memorandum from R. Hayden to A. Cayia, "CR 00-0392/RCE 00-015," dated March 8, 2000  
Organizational Assessment Surveillance Report, "EP/ERO Alert and Notification System (ANS) Surveillance," dated October 10, 2000  
Root Cause Evaluation No. RCE 00-076, "ANS Siren Failures," approved November 2, 2000

### Procedures:

OEG1 (Revision 4), "Root Cause Evaluation"  
NP 5.3.1 (Revision 16), "Condition Reporting System"