



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
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June 13, 2002

EA-01-154
EA-01-231

David L. Wilson, Vice President of
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Nebraska Public Power District
P.O. Box 98
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**SUBJECT: COOPER NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION
REPORT 50-298/02-05**

Dear Mr. Wilson:

On April 18, 2002, the NRC completed a supplemental inspection at your Cooper Nuclear Station. The enclosed report documents the inspection findings which were discussed with you and other members of your staff on May 28, 2002.

The NRC had previously determined that a degraded emergency preparedness cornerstone existed at Cooper Nuclear Station based on two White inspection findings that were documented in NRC Inspection Report 50-298/01-09 and a previous White inspection finding from NRC Inspection Report 50-298/01-04. These findings were: (1) the failure to implement planning standard 10 CFR 50.47(b)(5), resulting in an untimely notification to state and local response organizations following declaration of an Alert on June 25, 2001; (2) the failure to meet emergency planning standard 10 CFR 50.47(b)(2), resulting in untimely activation of the emergency response facilities on June 25, 2001; and (3) a performance weakness that was repeated during an April 11, 2001, drill, resulting in a violation of 10 CFR Part 50, Appendix E, Paragraph IV.F.2.g.

The above findings demonstrated a breakdown in implementation of the Emergency Preparedness Program at the Cooper Nuclear Station. This supplemental inspection was conducted to provide assurance that all root and contributing causes of the White inspection findings were understood and appropriately addressed in your Emergency Preparedness Program. The inspection was also conducted to independently assess the extent of the condition and to provide assurance that the corrective actions to these risk significant performance issues were sufficient to address the root causes and contributing causes in order to prevent recurrence of the problems. Detailed observations, assessments, and conclusions of the inspection are presented in the enclosed inspection report.

Your processes ultimately produced what you determined to be root causes of the findings. However, the root cause evaluation lacked a logical sequence and thoroughness necessary to provide assurance that the corrective actions you developed appropriately addressed the causal factors, were comprehensive, and would prevent recurrence of the problems. The inspectors concluded that several causal factors were not related and/or documented as tied to corrective actions. Details of this weakness are discussed in the enclosed inspection report.

The NRC has concluded that additional inspection effort is required to provide assurance that you fully understand all of the causes that contributed to the breakdown in implementation of the Emergency Preparedness Program and that you tie these to appropriate corrective actions. This conclusion is based on concerns that are discussed in the enclosed report.

In accordance with NRC Manual Chapter 0305, "Operating Reactor Assessment Program," and in concurrence with the Inspection Program Branch Chief, the White findings discussed in this report will continue to be used by the NRC to assess your regulatory performance. The findings will be removed from consideration of future agency actions when you have demonstrated the ability to arrive at corrective actions through the use of a thorough root cause evaluation which demonstrates that you fully understand the nature of a problem. It is expected that additional inspection may be conducted during the upcoming Inspection Procedure 95003 activities or the next Problem Identification and Resolution Inspection.

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/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Ken E. Brockman, Director
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Docket: 50-298
License: DPR-46

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NRC Inspection Report
50-298/02-05

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

License: DPR-46

Report: 50-298/2002-05

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: P. O. Box 98
Brownville, Nebraska

Dates: April 15-18, 2002 (on-site)
April 22 through May 15, 2002 (in-office review)

Inspectors: J. H. Moorman, III, Senior Resident Inspector
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R. E. Moody, Emergency Preparedness Specialist, NRR

Approved by: Jeffrey A. Clark, Chief
Project Branch F
Division of Reactor Projects

SUMMARY OF FINDINGS

Cooper Nuclear Station NRC Inspection Report 50-298/02-05

IR 05000298-02-05, on 04/15-18/2002, Nebraska Public Power District, Cooper Nuclear Station. Supplemental inspection for a degraded emergency preparedness cornerstone in the reactor safety strategic performance area resulting from multiple White inspection findings.

Cornerstone: Emergency Preparedness

This supplemental inspection was primarily performed by the NRC to assess the licensee's evaluations of the following inspection findings: (1) the licensee failed to implement planning standard 10 CFR 50.47(b)(5), resulting in an untimely notification to state and local response organizations following declaration of an Alert on June 25, 2001; (2) the licensee failed to meet emergency planning standard 10 CFR 50.47(b)(2), resulting in untimely activation of the emergency response facilities following declaration of an Alert on June 25, 2001. These performance issues were characterized as having low to moderate risk significance (White). This inspection was also performed to evaluate followup corrective actions for a previous finding documented in NRC Inspection Report 50-298/01-04. This finding was for a performance weakness that was repeated during an April 11, 2001, drill, resulting in a violation of 10 CFR Part 50, Appendix E, Paragraph IV.F.2.g.

During this supplemental inspection, the inspectors evaluated the extent of the condition for both of the 10 CFR 50.47 findings. They found that other problems, with a similar root cause, could exist beyond the original case due to the licensee's weaknesses in identification and resolution of problems.

The licensee determined that the root cause of the Emergency Preparedness Program implementation breakdown was "Overall inadequate program implementation and maintenance of the Emergency Plan." The licensee's root cause evaluation did not fully identify and assess all contributing causes that resulted in the breakdown of the Emergency Preparedness Program. An extensive list of corrective actions was developed to address the Emergency Preparedness Program issues. However, these corrective actions were not supported by a thorough assessment that would ensure the licensee had a detailed understanding of the underlying problems. The inspectors concluded that the licensee did not provide adequate assurance that all causes of the programmatic breakdown were identified and evaluated or that the developed corrective actions would prevent recurrence of future emergency preparedness problems. The licensee had detailed an extensive list of corrective actions in their Emergency Preparedness Improvement Plan Schedule. Most of these actions were complete. However, licensee performance in simulator drills and on a call-out drill was not indicative of a program that had undergone extensive and effective corrective actions. As a result of these concerns, both of the 10 CFR 50.47 White issues will remain open.

The inspectors also reviewed the corrective actions for a previous finding, "Corrective actions implemented to prevent recurrence of a dose assessment performance weakness identified during the August 29, 2000, biennial exercise were not fully effective in that they were narrowly focused and failed to prevent recurrence of the performance weakness (Inspection Report 50-298/2001-04)." The inspectors concluded that actions after an NRC supplemental inspection (NRC Supplemental Inspection Report 50-298/2001-011) corrected the specific

aspects of problems identified during that inspection. However, other Emergency Preparedness Program problems were missed when the licensee failed to conduct a thorough root cause evaluation and identify deficiencies similar to those identified during the inspection. The inspectors concluded that this finding involved similar aspects of problem identification and resolution to the other emergency preparedness findings. Since these problems are of a similar nature, and the expected resolution is common, this finding will also remain open.

Report Details

01 Inspection Scope

This supplemental inspection was performed by the NRC to assess the licensee's evaluation of the following inspection findings from NRC Inspection Report 50-298/01-09:

- (1) The licensee failed to implement planning standard 10 CFR 50.47(b)(5), resulting in an untimely notification to state and local response organizations following declaration of an Alert on June 25, 2001.
- (2) The licensee failed to meet emergency planning standard 10 CFR 50.47(b)(2), resulting in untimely activation of the emergency response facilities following declaration of an Alert on June 25, 2001.

These performance issues were characterized as having low to moderate risk significance (White) and are related to the emergency preparedness (EP) cornerstone in the reactor safety strategic performance area. This supplemental inspection was conducted to provide assurance that the root causes and contributing causes of the two White findings are understood, to independently assess the extent of the condition, to provide assurance that the corrective actions for risk significant performance issues are sufficient to address the root causes and contributing causes, and to prevent recurrence of the problems. To accomplish these objectives, the inspectors conducted the following inspection activities:

- Reviewed the root cause analysis associated with both of the findings. This was documented in Significant Condition Report (SCR) 2001-0577, "Untimely Notification, Staff Augmentation, and Facility Activation," Revision 1.
- Evaluated the licensee's extent of the condition for the root cause associated with SCR 2001-0577.
- Evaluated the adequacy of planned and completed corrective actions associated with SCR 2001-0577.
- Performed a limited independent extent of the condition review for the root cause associated with SCR 2001-0577.

A previous supplemental inspection for a degraded EP cornerstone was performed to assess two White inspection findings documented in NRC Inspection Reports 50-298/01-04 and -00-16. This inspection was documented in NRC Inspection Report 50-298/01-11. This report identified that some licensee corrective actions were incomplete and required further assessment. The first White inspection finding was closed, but the second remained open, pending assessment of those corrective actions. The items requiring additional inspection were associated with two licensee evaluations: (1) Resolve Condition Report 2001-0331, "Failure to Determine Degraded Core Condition During EP Drill," and (2) SCR 2001-0624, "Failure to Implement Effective Corrective Actions in the Area of EP." To complete the inspection of these activities, the inspectors conducted the following:

- Evaluated licensee performance in dose assessment drills.
- Evaluated the adequacy of licensee dose assessment procedures.
- Evaluated the licensee's use of the corrective action program (CAP) for issues related to EP.
- Evaluated the licensee's revision to the extent-of-condition evaluation in SCR-0624.
- Evaluated actions in the licensee's EP self-assessment (performance improvement initiative).

02 Evaluation of Inspection Requirements

The licensee conducted one investigation for the two White findings identified during the June 25 alert declaration. The following section of the report documents the review of the SCR that evaluated both findings and presents a summary conclusion.

02.01 Problem Identification

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

The licensee's evaluation stated that the two findings were self-identified by the licensee. However, a September 2001 NRC inspection (Inspection Report 50-298/01-10) of the licensee's problem identification and resolution program noted that the findings were self-revealing and that the programmatic aspects of the issues were identified by the NRC.

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

The licensee's evaluation did not address this question specifically. However, the root cause evaluation identified that EP implementation problems, some similar to those that occurred during the June 25 Alert declaration, had been identified during EP drills and exercises dating back several years. The earliest document referenced was SCR 98-0239. This SCR documented and evaluated the licensee's failure to properly implement the emergency plan during an NRC EP inspection on March 18, 1998. The inspectors determined that the licensee had prior opportunities to identify many of the specific issues that occurred during the June 25 Alert, as well as programmatic issues that existed.

- c. Determination of the plant-specific risk consequences (as applicable) and compliance concerns associated with the issue.

The evaluation included an assessment of the safety significance, which provided a qualitative and quantitative assessment of the affect of the issues on the plant operators and the public. The evaluation focused on the consequences of the poor execution of the emergency response actions and concluded that there were no actual consequences.

02.02 Root Cause and Extent-of-Condition Evaluation

The licensee determined the root cause to be “Overall inadequate program implementation and maintenance of the emergency plan.”

- a. Evaluation of method(s) used to identify root cause(s) and contributing cause(s).

The licensee used the TapRoot® methodology to conduct a root cause analysis. This method consisted of constructing an Event and Causal Factor Chart. This was accomplished by creating an event time line and assigning causal factors to the events. Causal factors were analyzed using the TapRoot Root Cause Tree®. This analysis provided possible root causes, which were then analyzed to make a final root cause determination. The inspectors determined this method was adequate for root cause determination in this case.

- b. Level of detail of the root cause evaluation.

The licensee analyzed two event time lines using the TapRoot® methodology to arrive at the root cause. The first analysis was of the June 25 event only. The result of this analysis directed the licensee toward a root cause that was focused on equipment that failed during the event. However, the licensee recognized that other issues existed, due to the past problems in the EP area, and performed a second TapRoot® analysis. This analysis consisted of a time line of high level problems that had been identified in the EP area, beginning with the licensee’s poor performance during an NRC EP inspection on March 18, 1998. The licensee arrived at a root cause from this analysis.

The root cause evaluation report was issued on August 6, 2001. The report documented that there had been an overall programmatic breakdown, but it did not contain a specific assessment of the extent of the problems affecting the adequacy of EP Program implementation and maintenance. The report did not fully identify and assess all contributing causes that resulted in the programmatic breakdown. The report simply summarized that problems had existed in the past without an understanding of their cumulative affect on program implementation.

Given the narrow scope of the root cause, the inspectors concluded that a weakness existed in the level of detail of the licensee’s root cause evaluation. The weakness was the lack of identification, assessment, and logical documentation of all root and contributing causes that resulted in the breakdown

of the EP Program. Without a thoroughly supported assessment of the weaknesses that led to the EP Program breakdown, the inspectors could not determine if specified corrective actions were associated with causal factors, and would correct the problem and prevent recurrence.

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

The licensee reviewed issues that resulted from the March 18, 1998, NRC EP inspection. These issues were documented in SCR 98-0239. There were many similarities between the problems seen during this evaluated exercise and the June 25 event. The report states that a back-end review assessed SCR 98-0239 for effectiveness and determined that it did not address all conditions identified and that the extent-of-condition review was inadequate.

The report states that EP drill critiques, NRC inspection reports and Quality Assurance (QA) audits were also reviewed, but does not provide specifics of the review. The licensee determined that a significant number of past problems existed in the EP Program. As discussed above, the licensee used two time lines in their root cause evaluation. The time line used to determine the root cause was constructed of 14 high-level events. An example event is: "3/18/98 - During an NRC EP inspection an Ops crew failed to adequately implement the Emergency Plan." The causal factor assigned to the event was "root cause and corrective action inadequate." Other events in the time line were problems that occurred during a series of emergency response organization (ERO) drills. For nine of these events, the time line states that no corrective actions were taken.

The licensee's consideration of prior occurrences of the problem, and knowledge of prior operating experience at a high level, was adequate to determine the root cause for the method used. However, as stated above, the licensee did not fully utilize their previous operating experience to determine the contributing causes and provide a detailed assessment of the programmatic breakdown. Without a full understanding of previous operating history, the inspectors could not determine if the licensee had considered all issues that resulted in the breakdown of the EP Program. The failure to document the full knowledge and understanding of the causes contributing to the programmatic breakdown was a significant weakness in the licensee's evaluation.

- d. Consideration of potential common causes and extent of the condition of the problem.

On April 5, 2002, the licensee reopened the extent-of-condition review to include an assessment of other major programs. The revised extent-of-condition assessment acknowledged that the root cause had the potential to affect every program onsite. The revised extent of the condition contained high level reviews of other programs such as Operations, Maintenance, Radiation Protection, and Training. The reviews were produced from within the departments. As such, they lacked the independence that is sometimes necessary for a comprehensive

and critical review. The licensee has implemented "The Strategic Improvement Plan" to provide for performance improvement in all site programs. An NRC assessment of other CNS programs will be conducted in an upcoming supplemental inspection for the repetitive degraded cornerstone in EP (NRC Inspection Report 50-298/02-07).

02.03 Corrective Actions

a. Appropriateness of corrective actions

.1 Long-term corrective action

Due to EP problems in the recent past, corrective actions to address performance issues in EP were already underway when the June 25 event occurred. The "action to prevent root cause" as specified in SCR 2001-0577 was:

Develop an "Emergency Preparedness Improvement Plan" identifying actions to correct deficiencies in the areas of organizational effectiveness, accountability and EP infrastructure to ensure an effective Emergency Preparedness Program at CNS. Due Date 9/30/01.

The "Emergency Preparedness Improvement Plan" developed from this action was a tracking matrix titled "Emergency Preparedness Improvement Plan Schedule." This matrix was populated with corrective actions specified in various documents. One of these documents, titled "Emergency Preparedness Improvement Initiative," was issued on June 29, 2001. This document was a high level list of activities designed to correct identified problems and was not supported by a documented assessment. Another document was an independent assessment of the EP Program titled "Emergency Preparedness Program Assessment." This assessment was performed by industry peers on August 12-17, 2001. Its purpose was to review the CNS EP Program against industry policies, procedures, and practices. Also included were corrective actions identified in previous QA audits.

The inspectors reviewed the EP Improvement Plan Schedule and determined that the recommendations, if implemented, could be reasonably expected to improve implementation of EP Program requirements. However, since the licensee had not documented a thorough evaluation of the root cause and contributing causes to the June 25 event, and had no other assessment that did, the inspectors could not determine if the corrective actions in the matrix were comprehensive. Shortly after the completion of the on-site inspection, the inspectors became aware that the CNS manager who developed the Emergency Preparedness Improvement Initiative was no longer employed at CNS. The inspectors were concerned that his absence, along with insufficient documentation of causal factors, presented another void between causal factors and developed corrective actions.

.2 Short-term corrective actions

The licensee also took immediate corrective actions to address procedural and equipment deficiencies that were determined to be contributing causes to the June 25 event. A number of corrective actions were taken to upgrade the pager notification system to reduce the time to alert the ERO. A speed dial assembly (Automated Notification System (ANS)) had been installed and tested for the control room and simulator. Simplified pager notification codes were developed, new wallet cards were distributed, and ERO personnel were briefed on the changes.

To assess the effectiveness of the short term corrective actions, the inspectors observed three drills in the simulator during which state/local agencies were required to be notified. In all drills, the state/local agencies were notified within 15 minutes. However, some additional problems were noted.

During this inspection, the licensee performed three drills supported by the simulator. The scenarios used included a plant transient which prompted emergency classification by the crew and the use of the ANS system to demonstrate its effectiveness. Two different scenarios were used and three different operating crews were observed.

Each operating crew accurately classified each event in a timely manner. The primary ANS system was effectively used to notify the ERO of the Notification of Unusual Event during each scenario, and the state/local notifications were timely. However, the inspectors noted some difficulty in the Shift Communicator conducting ERO call outs in series with state and local notifications.

When the drill event classification was upgraded from Notification of Unusual Event to Alert, delays in completing the notification of the ERO occurred during two of the three drills. These delays occurred when the primary method of notifying the ERO was intentionally failed as part of the scenario. Failing the primary notification method required the Shift Communicator to use the backup notification method to notify the ERO. The backup notification method was described in Emergency Plan and Implementing Procedures (EPIP) Procedure 5.7.6, "Notification," Attachment 5. Each Shift Communicator had Attachment 5 in hand when making the required notifications. One telephone in the Shift Manager's office was used to notify both the ERO and state/local agencies. The phone also had the ANS push button panels attached. Consequently, the Shift Communicator used the phone to notify the ERO first to optimize the response time for ERO, as noted in step 5.1 of EPIP Procedure 5.7.6. However, after notifying the ERO, each Shift Communicator started the state/local agency notification without waiting approximately 2 minutes for the confirmation pager feedback as stated in Procedure 5.7.6, "Notification," Attachment 5. A step in Attachment 5 states that, if the pagers do not activate within 2 minutes, the Shift Communicator should notify the

Emergency Director and use another backup method described in the attachment. These delays could result in delays in the timely activation of the emergency response facilities.

One artificiality identified with the way the drills were conducted was the need for the Shift Communicator to ask the drill controller whether his beeper had been activated. In a real event, the Shift Manager's pager would activate and, presumably, the Shift Communicator would hear that pager activation. In the simulator, only the controller has a pager, so that the entire ERO is not alerted during simulator drills. Prior to each drill, the controller clearly explained that the Shift Communicator must come to him in order to verify pager activation. Consequently, the Shift Communicator must remember to ask the controller about the status of his pager within the 2 minutes. The inspectors did not consider this issue significant, since the Shift Communicator must remember to verify the pagers have activated in either a real or simulated event.

During each scenario, the Shift Communicator is responsible for notifying the ERO and state/local agencies of emergencies from the same phone. During two of the three drills, in an effort to notify state/local agencies within 15 minutes, the Shift Communicator proceeded to notify the state/local agencies before checking on the status of the controller's pager (completion of ERO notification). Consequently, both Shift Communicators did not verify the activation of pagers within 2 minutes as specified in Attachment 5. The inspectors concluded that this failure to follow implementing procedures, in this case, was minor.

During the first drill, following the declaration of an Alert, the Shift Communicator promptly activated the ANS to activate the ERO and started to contact the state/local agencies. After completing the notification to the state/local agencies, the Shift Communicator again attempted to activate the pagers using the backup process. However, the Shift Communicator entered the pager code using the keypad on the telephone (the method that was used by the Shift Communicators before the new ANS system was installed) as opposed to depressing the appropriate buttons (two) on the automatic dialing system as specified in Attachment 5. Consequently, only the code to respond to the plant was transmitted to the ERO without the callback number to identify that the individual is reporting.

The Shift Communicator immediately recognized his mistake and notified the Shift Manager, who was acting as the Emergency Director. The Shift Manager then directed the Shift Communicator to transmit another notification using the backup method, since he thought some responders might think the paging system was malfunctioning. The second notification of the ERO was successful. The need to notify the ERO twice resulted in an approximately 13-minute delay in alerting the ERO. Procedure 5.7.6, "Notification," Revision 34, became effective on April 13, 2002, 3 days before the inspectors observation. Shift Communicators had just recently been familiarized with the new procedure and equipment. Consequently, the Shift Communicators had little experience using

the new equipment and procedure. Again, the inspectors concluded that the failure to follow implementing procedures, in this case, was minor.

There were no issues identified during the second drill.

During the third drill, the primary pager activation system was intentionally failed during the upgrade from a Notification of Unusual Event to an Alert. This required the Shift Communicator to use the backup pager activation method. Following the Alert declaration, the Shift Communicator used the primary pager activation method to notify the ERO. Rather than waiting to ask the controller about the status of the pagers, the Shift Communicator proceeded to contact state and local agencies. While waiting for the four state and local agencies to answer his call (using the same phone as used for ERO notification) the controller approached. At this time, the Shift Communicator realized that he had not asked the controller about the pager status. When the controller answered that the pagers had not activated, the Shift Communicator notified the Shift Technical Engineer of the problem. The Shift Technical Engineer was also a qualified Shift Communicator. He then attempted to notify the ERO by using another phone in the Shift Manager's office and another backup method that is contained in Attachment 5. However, unknown to the shift crew, the phone is connected to the simulator control booth and the call could not be completed. After the Shift Communicator completed his call to the state/local agencies, he successfully used the backup pager activation method to notify the ERO. The total delay time for notifying the ERO was approximately 10 minutes from the time of the classification upgrade.

The licensee took immediate corrective actions based on drill observations. The day following the third drill, the licensee installed another notification phone in the control room. This would ensure that the ERO notification and the state/local notification did not need to be performed using the same phone and/or person.

The inspectors determined that the Shift Communicators had been provided opportunities to become more familiar with the recently revised procedure for handling calls to state/local agencies and coordinating them with other calls they are required to make. Licensee personnel were able to successfully notify state and local authorities within the required 15 minutes, even with the problems experienced during the drills. However, in two of the three drills observed by the inspectors, the Shift Communicator did not follow the guidance for using the backup pager activation method in Attachment 5 of Procedure 5.7.6, "Notification." The licensee had taken several corrective actions to enhance their ability to activate the ERO pagers. Even after having taken corrective actions, the licensee had difficulty using procedures to activate the ERO pagers, which is the preliminary step to notifying state and local authorities. The inspectors were concerned that licensee performance in these drills was not at the expected level of that which would result from effective corrective actions. The inspectors could not positively conclude that corrective actions taken for the performance deficiency were adequate and would prevent recurrence of the problem.

To assess the effectiveness of the short-term corrective actions for ERO facility augmentation, the licensee conducted an off-hours ERO augmentation call-in drill on April 17 at approximately 9 p.m. The drill consisted of activating the ANS and having an ERO team member respond to the notification by phoning in an estimated arrival time at the site. The drill resulted in 21 of 22 designated minimum staff positions being filled within the goal of 60 minutes. The last position, an Operations Support Center electrician, responded within 67 minutes. Had this been an actual activation, this position could have been filled by the Operations Support Center electrical lead. This individual would have arrived within 38 minutes. The licensee documented this issue in Notification 10156112. The licensee has experienced problems staffing ERO positions that were filled using the "pool coverage approach." The personnel who filled these positions do not have pagers and received a telephone call at home when the ERO was activated. As an immediate corrective action, the licensee established on-duty personnel and issued pagers to personnel who would fill the ERO positions that were previously filled using the pool coverage approach.

The designated minimum staff positions were filled within the one hour requirement. In order to accomplish this, one position was filled with a person assigned to a nonminimum staff position. This substitution would not have caused inadequate staffing of the ERO in a real emergency. The inspectors were concerned that licensee performance in these drills was not at the expected level of that which would result from effective corrective actions. The inspectors could not positively conclude that corrective actions taken for the performance deficiency were adequate and would prevent recurrence of the problem.

b. Prioritization of corrective actions.

The inspectors reviewed the schedule for completion of the EP Improvement Plan Schedule and determined that they were properly prioritized. Actions of an immediate nature were given the highest priority. A completion date and a responsible manager were assigned for each corrective action.

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

The licensee's evaluation established a schedule for the completion of the SCR-0577 long-term corrective actions by the end of Calendar Year 2001. The inspectors concluded that this schedule was acceptable, given the competing priorities that existed for the emergency planning department at the time the evaluation was issued.

The licensee had completed most of the over 240 actions in the Emergency Preparedness Improvement Plan Schedule. The majority of the remaining actions were effectiveness reviews for actions in each of the 13 areas. Each action had been assigned a responsible department and due date. The inspectors concluded that the schedule for implementation of the Emergency Preparedness Improvement Plan Schedule was acceptable

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

The licensee had scheduled effectiveness reviews for each of the 13 areas of the Emergency Preparedness Improvement Plan Schedule. Most of these reviews were still pending at the time of this inspection.

02.04 Independent Assessment of the Extent of the Condition (71152 and 82001.01)

The root cause of “overall inadequate program implementation and maintenance of the Emergency Plan” is at the highest level of implementation of the EP Program. A programmatic failure carries significance beyond the EP area. Further assessment will occur in the upcoming supplemental inspection for the repetitive degraded cornerstone in EP (NRC Supplemental Inspection Report 50-298/02-07).

To assess the extent of the condition for this root cause, the inspectors reviewed licensee assessments of other major programs and recently issued NRC inspection reports. This limited review was conducted to determine if precursors similar to those identified in EP, such as failure to identify and correct problems, existed or have existed in other major program areas.

The inspectors reviewed SCR 2000-0423, “Environmental Qualification Programmatic Issues,” dated July 12, 2000. This SCR addressed the failure of CNS to implement the requirements of 10 CFR 50.49, environmental qualification (EQ) of electric equipment important to safety for nuclear power plants. Problems in this program area resulted in a forced outage from April 18 to May 26, 2000, to bring some components back into compliance. The SCR documented the root cause of the noncompliance as “Lack of commitment to EQ program implementation in that existing EQ program standards and expectations were not effectively communicated, implemented, and enforced.” This root cause is similar to that identified in SCR-0577. The extent-of-condition review for SCR-0423 identified other program areas in engineering, with problems similar to those found in EQ. In addition, SCR-0423 noted that a similar lack of commitment to program implementation could exist for other programs at CNS.

The inspectors reviewed Self Assessment SA-01077, “Program Implementation Review Project,” dated September 26, 2001. The Program Implementation Review Project was initiated as a result of the problems identified in the EQ program by SCR-0423. This review did not identify any noncompliant programs. However, it identified issues similar to those in EP which could cause programs to cross a regulatory threshold. Issues were identified, such as failing to initiate problem identification reports (PIR) when required and incomplete or inadequate translation and implementation of program requirements into the field for such areas as maintenance practices and configuration control.

NRC Inspection Report 50-298/01-10 documents an inspection of the licensee’s program to identify and resolve problems. This inspection found that the licensee’s process for the identification, prioritization, evaluation, and correction of problems was acceptable. However, the inspection found a number of broad implementation problems with the CAP, such as issues being improperly characterized and classified,

management meetings associated with the corrective action process that were less than fully effective, poor documentation of planned and completed corrective actions, weak engineering justification for changes to the facility, the development of unrealistic issue resolution dates, ineffective corrective actions associated with conducting operability determinations and evaluations, and ineffective corrective actions associated with repeated implementation issues of the licensee's scaffolding program. Licensee QA audits and assessments were critical of the problem identification and resolution program. However, the inspectors noted that issues identified by these audits were not being corrected effectively, as evidenced by repeat findings in similar areas.

Engineering Support Department Self-Assessment SA-01-04, "ASME Section XI In-service Inspection Program," was performed May 7 through June 8, 2001, by contractors. This self-assessment determined that the CNS ASME Section XI program was effective in meeting regulatory requirements, but documented several findings. Adverse findings were classified as either deficiencies or areas for improvement. Ten deficiencies and 12 areas for improvement were documented. Deficiency 7 stated, "The Cycle 18 Self-Assessment (12/17/98) identified the need for dedicated resources. This assessment has identified the same concern. This could be indicative of a lack of management support and follow-up of assessment identified issues." Area of Improvement 4 stated, in part, "The lack of CNS audits and assessments indicates a weakness at best. Management follow-up to concerns identified by the ISI engineer in 1998 were not apparent."

Nothing reviewed by the inspectors identified a program with "overall inadequate program implementation and maintenance." However, recent independent assessments and self-assessments of CNS programs documented instances where problems were either not identified or corrected. Because of this similarity with the EP Program, the inspectors concluded that other problems with a similar root could exist beyond the original case.

02.05 Conclusions

The licensee determined the root cause to be "Overall inadequate program implementation and maintenance of the Emergency Plan." The licensee's root cause evaluation did not fully identify and assess all contributing causes that resulted in the breakdown of the Emergency Preparedness Program. An extensive list of corrective actions was developed to address the root cause. However, these corrective actions were not supported by a documented assessment that would ensure the licensee had a detailed understanding of the underlying problems. The inspectors were not confident that all causes of the programmatic breakdown were identified and evaluated or that the developed corrective actions would prevent recurrence of future EP Program problems.

The licensee had detailed an extensive list of corrective actions in their Emergency Preparedness Improvement Plan Schedule. Most of the actions were complete. However, licensee performance in simulator drills and on a call-out drill was not indicative of a program that had undergone extensive and effective corrective actions.

As a result of these concerns, the two 10 CFR 50.47 White issues will remain open.

03 Followup Inspection for Issues in NRC Supplemental Inspection Report 50-298/01-11

A previous supplemental inspection was conducted to assess two issues having low to moderate risk significance ("White") that were related to the EP cornerstone in the reactor safety strategic performance area. The inspectors who performed this inspection identified four issues that required followup inspection to determine the extent of the condition of the performance issues being inspected.

03.01 Dose Assessment

a. Scope

The following was included in the "Summary of Findings" section of NRC Supplemental Inspection Report 50-298/01-11:

Problems were noted with one emergency operations facility team's determination of degraded core status. This indicated that a more thorough evaluation of dose assessment team performance was needed to assess the adequacy of the corrective actions for the underlying performance weakness.

Licensee dose assessment teams did not correctly determine that the reactor core was degraded during NRC-evaluated drills on August 29, 2000, and April 11, 2001, resulting in the incorrect recommendation of protective actions for members of the public in the emergency planning zone. These performance weaknesses consisted of an inability to use reactor coolant sample results to determine the condition of the reactor core and were documented in NRC Inspection Reports 50-298/00-16 and -01-04. Additional NRC-evaluated dose assessment team drills were performed in December 2001. The inspectors determined that one of four emergency operations facility dose assessment teams also did not correctly determine that the reactor core was degraded during a scenario which presented conflicting and ambiguous plant instrument data. This performance weakness was documented in NRC Inspection Report 50-298/01-11.

b. Issues and Findings

The inspectors evaluated the performance of two emergency operations facility dose assessment teams during dynamic simulator-driven walkthrough scenarios to determine the effectiveness of corrective actions for the failure to correctly assess a degraded core condition. One dose assessment scenario consisted of a containment bypass through a failed-open main steam line with an environmental release through the steam jet air ejectors via the plant elevated release point. The second scenario consisted of a loss of coolant accident followed by emergency depressurization of containment with a failure of valves in the emergency depressurization line to close. Each dose assessment team performed one scenario. Each scenario was constructed so that a degraded core was indicated by a single plant radiation monitor crossing a threshold value and required both an initial and upgraded protective action recommendation.

Both dose assessment teams demonstrated familiarity with procedural requirements for determining a degraded core, effectively identified and trended plant parameters associated with determining a degraded core according to EPIP 5.7.17, "Dose Assessment," Revision 17, and established critical action levels. Team members collectively demonstrated professional knowledge of core damage and dose assessment techniques. Each team promptly identified a degraded core condition when plant instruments exceeded the threshold value and developed appropriate dose assessment results. The initial protective action recommendations were correctly developed and conditions requiring changes to existing protective action recommendations were promptly recognized. Protective action recommendation upgrades were also correctly determined.

The licensee identified procedural inadequacies as contributing causes to the performance weaknesses observed on August 29, 2000, and April 11, 2001. EPIP 5.7.17, "Dose Assessment," was revised following the initial performance weaknesses and revised twice between walkthrough scenarios conducted in December 2001 and those conducted in April 2002. The revisions simplified the process for determining a degraded core condition and provided additional guidance pertaining to instrument threshold values used to recognize a degraded core. The inspectors reviewed EPIP 5.7.17 and determined that it was adequate for dose assessment. The dose assessment teams each demonstrated familiarity with the current revision and applied it effectively to their scenario. However, the inspectors noted that the walkthrough scenarios did not present the same challenges as did scenarios in which performance problems were previously noted. Neither scenario required the interpretation of reactor coolant sample data, required the resolution of conflicting plant indications, nor required the use of environmental monitoring data to confirm or adjust the status of the reactor core.

The inspectors concluded that, although the dose assessment walkthrough scenarios did not directly address the previously observed performance weaknesses, the scenarios did require dose assessment teams to determine the degraded core indications associated with the accident scenario, effectively monitor and trend plant indications, recognize when indications of a degraded core were present, and apply the correct reactor core status to dose projections. The inspectors concluded that revisions to the release rate determination and dose assessment procedures had been effective in addressing previous performance weaknesses. The observed dose assessment teams appropriately performed all observed dose assessment activities.

03.02 Effective Use of the Corrective Action Program for EP Issues

a. Scope

The following was included in the "Summary of Findings" section of NRC Supplemental Inspection Report 50-298/01-11:

The licensee's backlog of unentered drill performance issues into the CAP indicated that the emergency planning department was not utilizing

the CAP to its full capability. Additional inspection effort was needed to evaluate if the CAP is being effectively implemented for EP issues.

The independent assessment of the extent-of-condition review for SCR 2001-0624, "Failure to Implement Effective Corrective Actions in the Area of Emergency Preparedness," identified that the licensee had not entered into the CAP many of the weaknesses identified during drill critiques. As a result, the inspectors were unable to make a determination as to the long-term effectiveness of the proper use of the correction action program by the EP organization.

The inspectors interviewed emergency planning personnel and reviewed QA audit reports and lists of EP-related action items to determine whether the licensee's backlog of unentered drill performance issues had been entered into the CAP.

b. Issues and Findings

Based upon a review of the tracking status list provided by the licensee, all drill/exercise issues for 2000/2001 had been entered into the CAP. The licensee had not expended, and had no plans to expend, resources to identify drill/exercise issues that had not been entered into the CAP prior to the beginning of 2000. The list contained 93 items which were all designated as closed. None of the items was classified as a "deficiency." A deficiency is defined in Revision 38 of the CNS Emergency Plan as "a demonstrated or observed inadequacy, whether a single isolated case or a collection of observations, that indicate the state of EP is not adequate to protect health and safety of the public."

QA EP Audit Report 01-01, dated April 5, 2001, stated that a PIR (notification) had been generated for all 2000 EP drill weaknesses that previously did not have a PIR generated in the Nuclear Action Items Tracking (NAIT) System. During interviews with EP personnel, it was determined that the remaining improvement items (drill items that did not meet the PIR threshold) would be entered in NAIT for individual department managers to handle as they deemed appropriate.

The current process for handling drill and exercise critique items involved the preparation of a drill critique report, which captured all issues identified by participants and observers/evaluators. The report included the notifications initiated and a brief description of each. The report also included a list of improvement items entered into the CAP.

Based on the interviews conducted and reviews of action tracking lists and QA audit reports, the inspectors concluded that the CAP was currently being used by the EP department to identify problems, screen them for significance, and track them to completion.

Although the licensee's use of the corrective action program to identify, screen, and track EP problems had recently increased, their use of historical information was still limited. As documented in Section 02.02 c of this report, inspectors could not conclude that the licensee was effectively using the corrective action program to disposition EP issues.

03.03 Extent-of-Condition Review for SCR 2001-0624

a. Scope

The following was included in the "Summary of Findings" section of NRC Supplemental Inspection Report 50-298/2001-11:

Because the licensee did not perform a historical search of condition reports and notifications as part of its extent of condition analysis for SCR 2001-0624, that a more extensive independent review, including historical sampling, was required to adequately assess the extent of condition of the root cause.

The "Consideration of prior occurrences of the problem and knowledge of prior operating experience" review for SCR 2001-0624, "Failure to Implement Effective Corrective Actions in the Area of Emergency Preparedness," identified that the licensee had not adequately considered prior occurrences of the problem in their evaluation.

The inspectors interviewed EP personnel and reviewed Revision 3 to SCR 2001-0624, "Failure to Implement Effective Corrective Actions in the Area of Emergency Preparedness (Notification 10094219)," to determine whether a historical review of CAP documents had been performed.

b. Issues and Findings

Interviews with EP personnel identified that a historical review of events applicable to this SCR had been conducted, but had not been documented in the original SCR. The licensee provided a copy of the amended SCR, which included the additional documentation of the search of the CAP database in the "Extent of Condition" section of the root cause report. Three events were identified in the additional documentation and the root cause team members found them to be appropriately classified based on their risk significance.

The inspectors determined that the licensee's revised extent-of-condition review for SCR 2001-0624 was adequate.

Although the licensee's revised extent-of-condition review for SCR 2001-0624 was adequate, their use of historical information was still limited. As documented in Section 02.02.c of this report, inspectors could not conclude that the licensee was effectively using operating experience as part of the corrective action program.

03.04 Adequacy of the Self-Assessment Plan Recommendations on Improving the EP Program

a. Scope

The following was included in the "Summary of Findings" section of NRC Supplemental Inspection Report 50-298/01-11:

“The licensee’s EP self-assessment (performance improvement initiative) was initiated in response to the Alert declaration on June 25, 2001. The primary purpose of the self-assessment was to resolve three issues associated with the Alert declaration; consequently, the self-assessment did not thoroughly evaluate the issues associated with the White inspection findings from reports 50-298/2000-16 and 2001-04. Additional inspection effort was needed to evaluate the adequacy of the self-assessment plan recommendations on improving the EP program.

b. Issues and Findings

An evaluation of the licensee’s plan to improve their performance in EP can be found in Section 02.03.a.1 of this report. (In Section 02.03.a.1, the “EP self-assessment (performance improvement initiative)” is referred to as the “Emergency Preparedness Program Assessment.”)

03.05 Conclusions

Licensee actions to correct specific problems with offsite dose assessments were adequate. However, the inspectors noted that the level of difficulty in interpreting plant conditions was not the same in this inspection as during drills where problems were noted. The licensee had entered the backlog of EP drill/exercise issues into the corrective action program. They had also performed a historical search of condition reports and notifications for the extent-of-condition review for SCR 2001-0624. However, as documented in Section 02.02.c of this report, inspectors could not conclude that the licensee was effectively using the corrective action program to disposition EP issues.

As a result of these concerns, and the similar aspect of problem identification and resolution of EP Program issues, this White finding will also remain open.

03.06 Management Meetings

Exit Meeting Summary

On April 18, 2002, at the conclusion of the on-site inspection effort, the inspectors provided a debrief of the inspection with Mr. D. Wilson, Site Vice President, and other members of site management. After additional office review of licensee provided material, the inspectors conducted another debriefing with Mr. P. Fleming and Mr. D. Cook on May 20, 2002. A final exit interview, via telephone, was conducted on May 28, 2002, with Mr. D. Wilson, Site Vice President, and other members of site management.

The inspectors asked the licensee whether any of the material they had been presented during the inspection was proprietary. None was identified.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Bednar, Coordinator, Emergency Preparedness Training
N. Carns, Consultant
G. Casto, Manager, Emergency Planning
P. Caudill, General Manager, Engineering and Technical Services
T. Chard, Manager, Chemistry and Radiation Protection
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R. Gardner, Senior Manager, Quality Assurance
M. Gillan, Outage Manager
R. Hayden, EP, Contractor
T. Haynes, Specialist, EP
B. Houston, Manager, Quality Assurance Operations
J. Hutton, Plant Manager
A. Jacobs, Acting Manager, Performance Analysis
D. Johnson, Nuclear Management Corporation
K. Jones, Manager, Design Engineering
D. Kimball, Manager, Radiation Protection
D. Kunsemiller, Manager, Risk and Regulatory Affairs
W. Macecevic, Manager, Operations
D. Meyers, Senior Manager, Site Support
D. Pease, Assistant Operations Manager
J. Ranalli, Senior Manager, Engineering
S. Rezab, Onsite Coordinator, EP
B. Rothery, Consultant
J. Sumpter, Project Manager, Licensing
C. Sunderman, Radiation Protection
N. Wetherell, Maintenance Manager, Maintenance
D. Wilson, Vice President, Nuclear

NRC

M. Hay, Resident Inspector

DOCUMENTS REVIEWED

Emergency Plan and Implementing Procedures:

Procedure	Title	Revision
N/A	Cooper Nuclear Station Emergency Plan	38
EPIP 5.7.2	Shift Supervisor EPIP	16
EPIP 5.7.6	Notification	34
EPIP 5.7.9	Activation of EOF	22
EPIP 5.7.16	Release Rate Determination	21
EPIP 5.7.17	Dose Assessment	27
EPIP 5.7.17	Dose Assessment	26
EPIP 5.7.20	Protective Action Recommendations	13

Other Licensee Procedures:

Procedure	Title	Revision
0.5	Conduct of the Problem Identification and Resolution Process	30
0.5CAER	Corrective Action Effectiveness Reviews	3
0.5CLSS	Classification of Problem Identification Reports (PIRs)	8
0.5CRG	Condition Review Group (CRG)	3
0.5NAIT	Corrective Action Implementation and Nuclear Action Item Tracking	9
0.5SCR	Preparation of Significant Condition Reports	5
0.5SUPV	Supervisory Review of Problem Identification Reports (PIRS)	2

0.5TRND

Trending of Problem Identification Report Results

0

Position Instruction Manual TSC04, "Chemistry/RP Coordinator," Revision 10
Administrative Procedure 0.4, "Procedure Change Process," Revision 32, 1/16/02
Administrative Procedure 0.4A, "Procedure Change Process Supplement," Revision 7, 1/16/02
Chemistry Procedure 8.4.1.2, "Gaseous Release Emergency Sampling," Revision 12, 10/5/99
Emergency Procedure 2.4OG, "Off-Gas Abnormal," Revision 1, 1/7/02
Emergency Procedure 5.2FUEL, "Fuel Failure," Revision 0, 5/10/01
Emergency Procedure 5.3EMPWR, "Emergency Power," Revision 0, 2/15/01

Miscellaneous Documents:

Lesson Plan COR001-16-01, "Off Gas," Revision 17
Lesson Plan COR001-18-01, Revision 13

ERF Appraisal EQP-050, "Review of the Current Design and Licensing Basis of the Emergency Response Facilities," 8/9/01

Assessment 082001, "Cooper Nuclear Station Emergency Preparedness Program Assessment," August 12-17, 2001

Memorandum, "Completion of EP Improvement Plan Item EPL-027," 9/26/01

Nebraska Public Power District Letter NLS2002037, dated April 1, 2002, "Reply to a Notice of Violation, NRC Letter No. EA-01-231"

Engineering Support Department Self-Assessment SA-01-004, "ASME Section XI Inservice Inspection (ISI) Program

Significant Condition Report 2000-0423, "Environmental Qualification Programmatic Issues," dated July 12, 2000

Resolve Condition Report 2001-0331 Root Cause Evaluation, "Failure to Determine Degraded Core Condition During EP Drill," dated April 17, 2001

Resolve Condition Report 2000-0909 Root Cause Evaluation, "Dose Assessment Process Failure to Identify a Degraded Core Condition," dated November 2, 2000

Significant Condition Report 2001-0624 Root Cause Evaluation, "Failure to Implement Effective Corrective Actions in the Area of Emergency Preparedness," dated June 28, 2001

Significant Condition Report 2001-0577, "Untimely Notification, Staff Augmentation, and Facility Activation," dated April 5, 2002

Cooper Nuclear Station Quality Assurance Audit Reports 00-02 and 01-01, "Emergency Preparedness"

Acronyms Used

ANS	automated notification system
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CFR	Code of Federal Regulations
CNS	Cooper Nuclear Station
EP	emergency preparedness
EPIP	Emergency Plan and Implementing Procedures
EQ	environmental qualification
ERO	emergency response organization
NAIT	nuclear action items tracking
NRC	U.S. Nuclear Regulatory Commission
PIR	problem identification reports
QA	quality assurance
SCR	significant condition report