U. S. Nuclear Regulatory Commission

Inspection Report

Cooper Nuclear Station

95003 Supplemental Inspection

NRC Inspection Report 50-298/02-007

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

September 20, 2002

David L. Wilson, Vice President of
Nuclear Energy
Nebraska Public Power District
P.O. Box 98
Brownville, Nebraska 68321

SUBJECT: NRC SUPPLEMENTAL INSPECTION REPORT 50-298/02-07

Dear Mr. Wilson:

On August 22, 2002, the NRC completed an inspection at your Cooper Nuclear Station (CNS). The enclosed report documents the inspection findings which were discussed on August 22, 2002, with you and members of your staff. The inspection was conducted in accordance with the guidance contained in NRC Manual Chapter 0305 and Inspection Procedure 95003 and was performed in response to your facility's designation as having a Repetitive Degraded Cornerstone, as defined by the NRC's reactor oversight process.

On April 1, 2002, CNS entered the Repetitive Degraded Cornerstone Column of the Action Matrix as a result of continuing problems with the implementation of their emergency preparedness program. Upon entry into this column of the Action Matrix, and with oversight by the NRC, Nebraska Public Power District (NPPD) was required to develop an improvement plan. On June 10, 2002, NPPD submitted their improvement plan to the NRC. This inspection evaluated the extent of condition of the performance issues at CNS, as well as the adequacy of the improvement plan in addressing these long-standing performance issues.

The results of our inspection indicate that your facility is being operated safely. However, a number of long-standing performance issues exist at the facility that have resulted in a significant degradation in safety performance. Of greatest concern is the failure of CNS to correct long-standing, recurring performance issues. Despite previous efforts to improve performance with focused improvement plans, NPPD has been unsuccessful in these efforts. The inability to effectively correct problems has resulted in recurring problems with the reliability of safety systems, personnel errors, implementation of the emergency plan, and the quality of engineering, training and maintenance activities.

During our assessment of your plan to improve performance at CNS, the NRC identified that some long-standing performance problems were not addressed by the plan. For example, the improvement plan did not include actions to correct recurring equipment problems, and was not comprehensive in addressing problems with the corrective action program. Other examples are described in the attached report.

The inspection also found that NPPD did not utilize a systematic process for developing the improvement plan. As a result, there was a lack of integration between the problem identification and characterization phase of the process, and the development of the actions to address these problems. In addition, the improvement plan did not prioritize improvement plan actions, did not include adequate measures to evaluate the effectiveness of the action plans in improving plant performance, and did not identify the resources needed to implement the improvement plan.

Significant management attention is needed to develop and implement an effective improvement plan. You are requested to respond to this inspection report by October 20, 2002, and describe the actions you plan to take to address the issues raised during this inspection, and your schedule for submission of Revision 2 of the improvement plan. Once submitted, the NRC will review the adequacy of the revised improvement plan and will oversee NPPD's implementation of the plan. This heightened oversight will include quarterly inspections of your progress in implementing the improvement plan, the effectiveness of the actions in improving plant performance, quarterly assessments by senior regional management, and periodic public management meetings to discuss the results of our inspections. A more detailed oversight plan will be published following receipt of your response.

The details of our inspection findings are provided in the enclosed report. Findings identified during the course of this inspection involving potential enforcement action will be documented in a future NRC inspection.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made 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/

Ellis W. Merschoff
Regional Administrator

Docket: 50-298
License: DPR-46

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NRC Inspection Report
50-298/02-07

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R:_CNS\CN2002-07RP-KMK.wpd
R:_CNS\CN2002-07Appendix.wpd

RIV:DRS/OB	RIV:DRS/EMB	RIV:DRP/D	RIII:DRP	RIV:SRA:DRS
GEWerner	JMMateychick	GWarnick	DEKimble	TWPruett
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RII:DRP	RII:DRP	RIV:DRP/A	RIV:DRS/PSB	RIV:DRP/C
JTMunday	EFGuthrie	CFO'Keefe	PJElkman	KMKennedy
E - TRFarnholtz	***E - TRFarnholtz***	***E - TRFarnholtz***	***E - TRFarnholtz***	***T - TRFarnholtz***
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	50-298
License:	DPR 46
Report:	50-298/02-07
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownville, Nebraska
Dates:	May 28 to August 22, 2002
Onsite:	June 24-28, 2002 July 15-26, 2002
Inspectors:	K. Kennedy, Team Leader, Region IV F. Tobler, Administrative Assistant, NRR T. Pruett, Senior Reactor Analyst, Region IV G. Werner, Operator Licensing Examiner, Region IV N. O'Keefe, Senior Resident Inspector, Region IV J. Mateychick, Reactor Inspector, Region IV E. Guthrie, Resident Inspector, Region II G. Warnick, Resident Inspector, Region IV J. Munday, Senior Resident Inspector, Region II D. Kimble, Resident Inspector, Region III P. Elkmann, Emergency Preparedness Inspector, Region IV
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Approved By:	Elmo Collins, Director Division of Reactor Safety

Executive Summary

On April 1, 2002, Cooper Nuclear Station entered the Repetitive Degraded Cornerstone Column of the Action Matrix. Upon entry into this column of the Action Matrix, and with oversight by the NRC, Nebraska Public Power District was required to develop a comprehensive improvement plan. The purposes of this inspection were to determine the breadth and depth of the performance deficiencies and to assess the adequacy of the licensee's improvement plan (The Strategic Improvement Plan, Revision 1).

Using the results of major licensee assessments and NRC activities conducted at Cooper Nuclear Station, the team evaluated whether the performance problems identified in those assessments had been corrected. If not corrected, the team determined whether the actions in the improvement plan adequately addressed the performance problems. The team also conducted extensive independent inspection of plant activities to verify that the licensee had identified the full scope of major performance problem areas that needed to be addressed by the improvement plan.

The inspectors found that Cooper Nuclear Station is being operated safely; however, a number of long-standing performance problems exist. Of greatest concern is the failure of Cooper Nuclear Station to correct recurring performance issues. For example, the improvement plan did not include actions to correct recurring equipment problems and was not comprehensive in addressing problems with the corrective action program. Nebraska Public Power District has been unsuccessful in efforts to improve performance with focused improvement plans. The inability to effectively correct problems has resulted in recurring problems with the reliability of safety systems, personnel errors, implementation of the emergency plan, and the quality of engineering, training, and maintenance activities.

In the development of the improvement plan, the team found that Cooper Nuclear Station used an informal and evolving process to develop the extent of condition reviews and action plans. Consequently, the development of the improvement plan lacked the requisite coordination between problem characterization and the corrective actions specified to correct the problem. The team found performance problem areas which were not effectively addressed by the improvement plan. The team identified one important performance problem area which was missed in its entirety, the management of spare and replacement parts. Also, the improvement plan actions were not prioritized and integrated.

Performance problem areas not effectively addressed are discussed as follows.

- The improvement plan did not contain actions to correct known equipment reliability problems. Numerous self-assessments and NRC inspections had identified equipment reliability problems, such as those in the service water system, which had been challenges to plant performance. These issues will require significant management attention and resources to address.

- Performance weaknesses associated with the adequacy of operability determinations were not included as part of the improvement plan. This was a known performance problem area. The licensee's extent of condition review, NRC inspection reports, and NRC assessment letters had documented inadequate implementation of the operability

determination program. During this inspection, the team reviewed current operability determinations and found similar problems to those identified in previous assessments and inspection reports.

- The improvement plan did not contain actions to address long-standing problems with the quality and adequacy of plant modification packages. Several self-assessments had identified problems in the quality and completeness of modifications. Although Cooper Nuclear Station had made significant changes to the modification process in May and June of 2002, the effectiveness of these changes had not been determined by the licensee.

- The improvement plan did not contain actions to address ineffective management of component parts used in plant equipment. This performance problem area was identified in the extent of condition review as adversely effecting work planning and work implementation.

- The improvement plan did not include actions to evaluate the scope of known performance problems associated with the use of industry operating experience information. The ineffective use of industry information had been identified during the licensee's extent of condition review. In addition, the team identified that two of five industry information documents reviewed during the inspection were not adequately assessed.

- The improvement plan did not include corrective actions to ensure performance problem trend codes were effectively utilized. The ineffective use of work item trend information was identified during the licensee's extent of condition review. In addition, the team determined that maintenance personnel did not routinely enter the trend codes into the database and that site personnel did not utilize the trend information.

- The improvement plan did not contain actions to address issues which had been identified in the extent of condition review involving the departmental use and accountability of departmental performance indicators.

- The improvement plan did not include corrective actions to address conflicting departmental and station priorities, policies, and goals.

- The improvement plan did not contain steps to address issues which had been identified in the extent of condition reviews associated with a lack of organizational depth and the impact of this issue on the effective implementation of engineering programs.

- The improvement plan did not fully address problems with entering self-assessment findings and observations into the corrective action program to ensure that those items were assigned the correct priority and attention. This issue had been identified in the extent of condition review. While recent actions had been taken to address this issue, no measures to verify the effectiveness of the corrective actions had been specified.

- The improvement plan did not fully address the problems identified in the licensee's extent of condition review associated with prescribing "accountability behaviors" (refer to Section 4.1.1.b) in procedures, guides, or instructions. In addition, the current revision of Procedure 0-CNS-24, "CNS Standards and Expectations," did not include "accountability behaviors."

- The improvement plan did not have actions to correct ineffective coordination and integration among site organizations.

- The improvement plan did not address the lack of a formal process to prioritize, revise, and track to completion procedure change requests. This issue had been identified in the extent of condition review.

The level of detail included in action plans and supporting documentation was frequently not sufficient to assess the effectiveness of planned actions. The team found that over half of the action plans had steps that provided insufficient detail to assess whether they would be effective in resolving the problems.

The team also found that the improvement plan, in general, did not include adequate performance measures to evaluate the effectiveness of the action plans in improving plant performance. In addition, the improvement plan had not been assessed for the resources needed for successful implementation of the planned actions; consequently, the time frames for completing the planned actions could not be reliably assessed.

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Report Details

1 Performance Background

Cooper Nuclear Station (CNS) was a pilot plant for the NRC's revised reactor oversight process, implemented in 1999, and began the process in the Licensee Response Column of the Action Matrix.

In the fourth quarter of 2000, CNS entered the Regulatory Response Column of the Action Matrix, as a result of a White finding in the Emergency Preparedness Cornerstone identified during a biennial emergency preparedness exercise conducted in August 2000 (NRC Inspection Report 50-298/00-16). This White finding resulted from Nebraska Public Power District's (NPPD) failure to identify that the offsite dose assessment staff incorrectly characterized the core condition during the simulated release of radioactive material, causing development of inappropriate protective action recommendations for members of the public living near the plant.

CNS entered the Degraded Cornerstone Column of the Action Matrix in the second quarter of 2001 as a result of a second White finding in the Emergency Preparedness cornerstone, identified in June of 2001. This finding involved the ineffective corrective actions NPPD implemented to prevent recurrence of a dose assessment performance weakness (NRC Inspection Report 50-298/01-04).

Two additional White findings were identified in the Emergency Preparedness cornerstone during the third quarter of 2001 (NRC Inspection Report 50-298/01-09). These White findings related to NPPD's actions following the declaration of an Alert in response to a fire affecting the station startup transformer on June 25, 2001. Specifically, NPPD failed to perform timely offsite notifications and failed to activate their emergency response facilities within approximately one hour. As a result of the White findings identified in the Emergency Preparedness cornerstone, CNS entered the Repetitive Degraded Cornerstone Column of the Action Matrix on April 1, 2002.

In addition to the findings described above, a White finding was identified in the Mitigating System cornerstone in December 2001 (NRC Inspection Report 50-298/01-12). This finding involved NPPD's failure to take immediate compensatory actions following identification of a compromise of the 2000 Biennial Requalification Written Examinations.

The NRC's annual assessment letters dated May 29, 2001, and March 4, 2002, also identified adverse trends in the crosscutting area of Problem Identification and Resolution during the last two assessment periods and in the crosscutting area of Human Performance during the last assessment period.

When a licensee enters the Repetitive Degraded Cornerstone Column of the Action Matrix, NRC Manual Chapter 0305, "Operating Reactor Assessment Program," requires the NRC to conduct a supplemental inspection using NRC Inspection Procedure 95003, "Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input." The purpose of this inspection is to determine the breadth and depth of the performance deficiencies. In addition, the licensee is required to develop an improvement plan with NRC oversight.

2 Description of Improvement Plan

On June 10, 2002, Nebraska Public Power District submitted Revision 1 of a plan to improve performance at CNS. The plan, titled "The Strategic Improvement Plan," also known as TIP, was developed as a result of CNS entering the Repetitive Degraded Cornerstone Column of the Action Matrix on April 1, 2002.

The first step for NPPD in developing the improvement plan was to identify the scope of performance problems that existed at CNS. To accomplish this, NPPD conducted a review of significant internal and external assessments of performance at CNS conducted since 1993, NRC inspection reports, previous improvement plans, and data from the corrective action program. The licensee developed a database of performance issues identified during the review, evaluated the causal factors for these individual issues, and grouped them into 42 causal factor categories. These causal factor categories were further analyzed to identify and characterize the extent of condition associated with the causal factors and to determine whether or not the specific performance issue still existed at CNS. This extent of condition analysis was organized in a system the licensee called the work breakdown structure (WBS) and documented in WBS folders.

The licensee also developed TIP Revision 1 action plans in parallel with the conduct of the extent of condition reviews. The areas for improvement identified during the extent of condition review were compared to action plans developed for TIP Revision 0, and additional actions were identified for the development of TIP Revision 1.

The TIP Revision 1 consisted of 40 action plans divided into four "Pillars of Excellence." The four pillars were: (1) Organizational Excellence; (2) Operational Excellence; (3) Equipment Excellence; and (4) Training Excellence. The pillars of excellence were further divided into 18 focus areas. The action plans within the 18 focus areas were developed to address a broad scope of performance issues that existed at CNS. The action plans were developed with input from the extent of condition reviews, TIP Revision 0, and performance problems known to CNS management. Each of the 40 action plans had a problem statement, a list of causal factors, a cross-reference to the WBS folders that the action plan addressed, action plan steps, and performance indicators. Each action plan step listed the action to be taken, the individual responsible for implementing the step, a start and end date, and a description of the desired outcome for that step. Each action plan identified an owner, responsible for the overall implementation of the action plan. NPPD planned to track the performance problems and action plan steps using their corrective action program. In their submittal of TIP Revision 1, NPPD indicated that one action plan, Action Plan 5.1.4.3, "Teamwork," had not yet been developed and would be included in Revision 2.

TIP Revision 1 also included an overview of individual responsibilities associated with implementation of the plan and steps for management review of the progress, effectiveness, and closure of action plans.

In developing TIP Revision 1, NPPD did not prioritize the actions within the plan and did not identify the resources required to implement the plan. In their letter to the NRC dated June 10, 2002, NPPD stated that these would be included in TIP Revision 2. As a result, NPPD indicated that the start and end dates for the action plan steps were subject to change.

3 Inspection Methodology

The NRC's inspection team consisted of 10 NRC inspectors, 2 contractors, and an administrative assistant. The team conducted 3 weeks of onsite inspection at CNS, and 5 weeks in the Region IV office reviewing documents, preparing for the inspection, and documenting the results of the inspection.

The inspection was conducted using the guidance provided in Inspection Procedure 95003, "Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input." Since NPPD entered the Repetitive Degraded Cornerstone Column of the Action Matrix as a result of White findings in the Emergency Preparedness Cornerstone, the inspection assessed performance in the Reactor Safety Strategic Performance Area (Initiating Events, Mitigation Systems, Barrier Integrity, and Emergency Preparedness Cornerstones).

The focus of the inspection was the assessment of the adequacy of the TIP in addressing current plant performance problems. The team found that an extensive history of well founded independent assessments of the plant's performance had been conducted in the past that likely captured the full spectrum of problem types that existed at CNS. Therefore, the team reviewed the results of major assessments and NRC activities conducted at CNS since 1993, evaluated whether or not the problems identified in those assessments had been corrected, and determined if the actions in the improvement plan addressed problems that still existed at CNS. The following major assessments were included in the sample used by the team:

- 1993 Strategic Plan for Performance Improvement
- 1993 Common Cause Analysis
- 1993 Enforcement Issues Inspection Team
- 1993 Enercon Study
- 1993 Corrective Action Program Study
- 1994 Integrated Enhancement Program
- 1994 Diagnostic Safety Assessment Team Report
- 1994 Safety Evaluation Team Report
- 1996 Engineering Self-Assessment
- 1998 Engineering Excellence Plan
- 1998 Common Cause Analysis (NRC)
- 1999 Maintenance Self-Assessment

The team reviewed the issues identified in these assessments to determine if NPPD accurately defined the extent of condition of performance issues at CNS. The team also

conducted extensive independent inspection of plant activities to verify that the licensee had identified the full scope of performance issues that needed to be included in the improvement plan.

The team utilized the following review criteria to assess the adequacy of the action plans:

- Are the action plan objective statement, problem statement, and causal factors appropriately aligned?
- Do the steps in the action plan address the problem statement, causal factors, and the extent of condition described in the WBS folders?
- Do the action plan steps provide sufficient detail to define the action to be taken?
- Are the deliverable statements for each action plan step well defined and consistent with the action being taken?
- Do the performance measures provide an adequate means to monitor improved performance?
- Have the actions in the action plan been entered into the corrective action program?

The detailed results of the team's reviews of the action plans using this criteria is included in the appendix to this report.

The team assessed 39 of the 40 action plans submitted with TIP Revision 1. Action Plan 5.1.6.1, "Fiscal Policy Improvement," was not assessed because it did not address performance issues that were of regulatory concern.

4 The Strategic Improvement Plan (TIP)

4.0 Observations Applicable to All Sections of the Improvement Plan

The team reviewed the process used by NPPD to identify the performance problems at CNS, characterize the extent of the performance problems as documented in the WBS folders, and develop the action plans included in TIP Revision 1.

The team determined that the licensee used an informal process to conduct the extent of condition reviews and to develop TIP Revision 1 action plans. The informal process resulted in numerous deficiencies that are described in subsequent sections of the report. The deficiencies included:

- The process used by NPPD to identify issues from the various major assessments and other sources, and then group those performance issues into

causal factor groups, was not proceduralized, personnel did not receive training on how to conduct the reviews, and common standards or checklists were not utilized to conduct the reviews or validate the results.

- The 42 causal factor categories developed from the problems identified in previous assessments were not prioritized based on risk or safety significance. In addition, NPPD did not perform a formal root cause analysis for even the most safety significant causal factor categories.

- Development of TIP Revision 1 occurred at the same time that the extent of condition reviews were being conducted. A formal process did not exist to assure that the probable causes and corrective actions listed in the action plans were consistent with and addressed the performance problems identified during the extent of condition reviews.

- The extent of condition reviews often identified several causal factors. Corrective actions for these causal factors could often be found in more than one action plan. However, there was no formal process to link the steps in the action plans to the causal factors identified in the extent of condition reviews. In addition, action plan owners who relied on the satisfactory implementation of another action plan for success did not establish a link to assure the associated items were not revised or deleted.

- Best practices and strengths were not identified during the extent of condition reviews. Therefore, no consideration was given during the development of the action plans to ensure strengths were not affected.

- Mission and purpose statements were not aligned in TIP Revision 1 or in the letters to the NRC and licensee personnel. The TIP Revision 1 mission statement was the same as the TIP Revision 0 statement. The mission statement was focused on the Phase 1 activities in TIP Revision 0, which were developed to enable the board of directors to make business decisions. In addition, the mission statement was intended to establish regulatory margin, maintain or increase performance, and meet production and financial goals. The mission statement did not reflect a desire to achieve continued improvement via the successful implementation of subsequent phases of the TIP.

- No process was developed to assure that effectiveness reviews were completed for corrective actions which could not be measured by a performance indicator.

- WBS guidance document “Review of Corrective Actions,” Section 3.7, “Describe Corrective Action, Describe CA Document,” specified that members of the support team shall review the corrective action program database to determine if issues from subject inspection reports were entered into the corrective action program. Following discussions with personnel who conducted the extent of

condition reviews, the team determined that this activity was not performed. In addition, the licensee did not ensure that issues described in TIP Revision 0 were included in TIP Revision 1.

- The action plans were not resource loaded or prioritized. In addition, action item steps within the action plans were not effectively prioritized.

- No formal process for the conduct of the effectiveness reviews for closeout of action items and action plans had been developed.

- Numerous action plan deliverable statements (anticipated outcome for the actions taken to address action plan problems and causal factors) did not specify the desired result or change.

The team determined that the lack of a formal process contributed to the development of action plans which will require significant revision before implementation.

4.1 Organizational Excellence

4.1.1 Management Effectiveness

a. Focus Area Description

Focus Area 5.1.1, "Management Effectiveness," included the following action plans and WBS folders:

- Action Plan 5.1.1.1, "Organizational Alignment"
- Action Plan 5.1.1.2, "Accountability"
- Action Plan 5.1.1.3, "Prioritization and Planning"
- Action Plan 5.1.1.4, "Organizational/Human Behaviors"
- Action Plan 5.1.1.5, "Management Observation Program"
- Action Plan 5.1.1.6, "Performance Monitoring"
- Action Plan 5.1.1.7, "Succession Planning"
- Action Plan 5.1.1.8, "Learning Organization and Industry Participation"
- Action Plan 5.1.1.9, "Program Management"
- WBS Folder 1.1.1, "Vision/Mission/Goals/Standards"
- WBS Folder 1.1.2, "Empowerment/Style/Charters/Roles & Responsibilities"
- WBS Folder 1.1.3, "Priorities"
- WBS Folder 1.1.4, "Succession Planning"
- WBS Folder 1.2.1, "Pride"
- WBS Folder 1.2.2, "Trust"
- WBS Folder 1.2.3, "Culture"
- WBS Folder 1.2.4, "Teamwork"
- WBS Folder 1.4.1, "Personnel Changes"
- WBS Folder 2.3.1, "Outage Management"
- WBS Folder 2.3.2, "Planning/Timeliness"
- WBS Folder 2.3.3, "Scheduling/Monitoring"

- WBS Folder 2.4.2, “Restraints/Unknowns”
- WBS Folder 2.4.3, “Monitoring”
- WBS Folder 3.3.1, “Self-Assessment”
- WBS Folder 3.4.4, “Program Maintenance”
- WBS Folder 3.5.2, “OER”

The team's assessment of Action Plan 5.1.1.9, “Program Management,” and WBS Folder 3.4.4, "Program Maintenance," is documented in Section 4.3.2 of this report.

The action plans included in Focus Area 5.1.1 addressed long-standing performance problems associated with the failure of CNS to implement common goals and priorities, a lack of ownership and accountability, ineffective change initiatives, poor prioritization of activities, a lack of integration between departments, a culture which did not support sustained performance improvement, ineffective observations of work activities by supervisors and managers, inadequate performance measures, a high turnover of management personnel, ineffective utilization of industry information, and poor oversight of significant programs.

The purposes of the nine action plans included in Focus Area 5.1.1 were to: (1) establish and communicate standards, expectations, goals, and priorities; (2) monitor and observe established standards, expectations, goals, and priorities; (3) improve accountability and ownership; and (4) develop a succession plan.

b. TIP Action Plan Assessment

The team independently reviewed memoranda, procedures, and notifications involving management oversight, accountability, and performance monitoring. In addition, interviews were conducted with the action plan owners and licensee personnel responsible for implementing specific action plan items. The team determined that the WBS folders in Focus Area 5.1.1 appropriately addressed the significant areas of concern identified during the extent of condition review.

Establishment and Communication of Standards

The team determined that Action Plan 5.1.1.1, "Organizational Alignment," did not address problems identified in the WBS extent of condition review. Specifically, the actions did not include the development of a guide on how to write departmental expectations and standards, requirements to ensure coordination among departments, provisions to ensure line responsibilities were compatible among departments, requirements to assess the consistency of interdepartmental and organizational priorities, or a directive to assure that station personnel comply with Procedure 0-CNS-24, “CNS Standards and Expectations.” The performance measures for Action Plan 5.1.1.1 were incomplete in that no effectiveness reviews were developed to monitor corrective actions to improve coordination of activities between departments.

The team determined that Action Plan 5.1.1.3, “Prioritization and Planning,” did not address weaknesses in the coordination and prioritization of departmental priorities

described in the WBS extent of condition review. Specifically, WBS 1.1.3 included several examples of inconsistent alignment of station priorities between departments. However, Action Plan 5.1.1.3 did not include corrective actions to ensure departmental issues were communicated and prioritized throughout the station. In addition, the team conducted several interviews with action plan owners and determined that station personnel continued to be ineffective in communicating priorities between departments. For example, in May 2002, a new integrated site-wide scheduling tool was released for use. However, the licensee did not identify the critical users of the new scheduling tool, communicated the new tool to site personnel using e-mail, and did not require station personnel to use the new tool. As a result, many station personnel were unaware of the existence of the new tool. The team determined that the deliverable statements for the specified action items did not specify the desired outcome. In addition, no effectiveness reviews had been established to monitor the development and integration of station priorities.

The team determined that Action Plan 5.1.1.4, “Organizational/Human Behaviors,” was not sufficiently developed for the team to be able to determine its effectiveness. Specifically, the action plan included the following problematic issues: (1) the action plan focused on organizational and not individual behaviors; (2) there was no station procedure, policy statement, or guide to address the importance of human behaviors or organizational climate; and (3) the behaviors determined to be critical for success were not identified. The performance measures developed to monitor the success of the action plans included the number of NRC allegations, station personnel turnover rate, and management changes. None of these provided a direct measure of either individual behaviors or organizational behaviors. The team determined that the measures were affected by multiple variables and would not adequately monitor improved performance. For example, turnover rate, according to the licensee’s human resource representative, was approximately 7 percent annually and was driven predominately by market conditions and not by plant culture.

Action Plan 5.1.1.8, “Learning Organization and Industry Participation,” was written to address concerns that the licensee was not using industry resources and lessons-learned to contribute to and improve station performance. The team found that the action plan steps addressed the action plan problem statement and causal factors. However, the action plan did not contain effectiveness reviews or adequate performance indicators to measure changes in the use of industry information to improve station performance. The performance indicator, “Industry Involvement Activities,” measured the number of industry activities that the station was involved in for the previous 12 months. The indicator did not measure how these industry involvement activities were being used to improve site performance.

Monitoring and Observing Established Standards

The team determined that Action Plan 5.1.1.5, "Management Observation Program," addressed the issues described in the associated WBS folders. However, the licensee's initial implementation of the plan's actions was not effective. In April 2002, the licensee initiated actions to improve the quality of management observations. These actions

involved requiring 80 of the 130 supervisors and managers to perform at least one observation per month of plant work activities and providing training to the designated management observation program participants. The team reviewed the results of the initial actions and determined that the licensee had not been effective in improving the management observation program. Specifically, of the 80 assigned managers and supervisors, only 31 completed the one required observation in May 2002 and only 56 completed the required observation in June 2002. As of June 25, 2002, 21 of the 80 designated participants had not signed up for the required management observation program training. In addition, due to shifting personnel assignments, 9 managers were removed from the observation program list; however, additional personnel were not added. The performance monitoring for the management observation program was not well established and no formal process had been established to trend performance observations.

The team determined that Action Plan 5.1.1.6, “Performance Monitoring,” did not address weaknesses in the development, use, and accountability of departmental performance indicators identified in the licensee's extent of condition review. Specifically, WBS 1.1.1 included several examples of ineffective use of performance indicators and performance monitoring. Action Plan 5.1.1.6 addressed improvements in site-wide indicators and monitoring methods; however, no corrective actions were developed for improvement in departmental indicators.

The team determined that the action plan lacked sufficient detail to adequately assess proposed changes to the licensee’s performance monitoring methods. In particular, the details associated with a planned revision to Procedure 0-PI-01, “Performance Indicator Program,” were not developed. The team found that the current procedure did not provide sufficient guidance on the following critical elements of a performance monitoring program: (1) establishment of thresholds; (2) actions to take when thresholds are exceeded; (3) accountability measures; and (4) performance indicator development.

The measures for completion of specific action items did not specify the desired outcome. The team determined that performance indicators and measures had not been developed for monitoring outage activities. No effectiveness reviews were planned to ensure licensee personnel were developing performance indicators that met the requirements of the current and proposed revisions of Procedure 0-PI-01.

Accountability and Ownership

The team determined that Action Plan 5.1.1.2, "Accountability," did not fully address the problems identified in the licensee's extent of condition review. The action plan did not include provisions to prescribe accountability behaviors in procedures, guides, or instructions. In addition, the current revision of Procedure 0-CNS-24, “CNS Standards and Expectations,” did not include accountability behaviors.

The action plan specified that a self-assessment of the accountability model would be performed. However, the details associated with the assessment were not developed.

In addition, there was a lack of integration among some of the action plan steps. The action plan included provisions to train personnel on individual and organizational accountability. However, the licensee did not have steps to ensure that the behaviors taught in the training would be consistent with the behaviors outlined in a series of ongoing management team meetings. None of the three performance indicators (CAP performance index, OSHA recordable events, and department event free clock resets) provided a direct means of monitoring accountability behavior improvements.

The team determined that Action Plan 5.1.1.7, "Succession Planning," appropriately addressed the problems identified in the licensee's extent of condition review. The action plan owner indicated that the site procedure for succession planning, Procedure 0-CNS-01, "Core Leadership Development Program (CLDP)," had been in place since 1999 but the procedure had not been followed. The new site succession plan was developed by following the systematic steps prescribed in the procedure. The performance indicators (employee turnover rate, number of key management positions filled in accordance with succession plan, and successful completion of development plans) provided an appropriate measure of performance improvement.

c. Conclusions

Four of the eight focus area action plans did not address all of the issues identified during the licensee's extent of condition review. The issues involved development and alignment of organizational priorities, use of departmental performance measures, and implementation of accountability behaviors.

Three of the eight action plans lacked sufficient detail to assess the adequacy of the steps in improving performance. Seven of the eight action plans did not have performance measures which would accurately monitor the effectiveness of actions. The initial actions associated with the implementation of the management observation program were ineffective in that numerous supervisors and managers were not participating.

4.1.2 Change Management

a. Focus Area Description

Focus Area 5.1.2, "Change Management," included the following action plan and WBS folders:

- Action Plan 5.1.2.1, "Programmatic/Process Changes"
- WBS Folder 1.3.2, "External Communications"
- WBS Folder 1.4.2, "Program/Process Changes"

The action plan in Focus Area 5.1.2 addressed long-standing performance problems, associated with CNS management's implementation of a change management process, and ineffective internal communications.

The purpose of the action plan in Focus Area 5.1.2 was to improve the management of changes in order to sustain performance improvements.

b. TIP Action Plan Assessment

The team independently reviewed memoranda, procedures, and notifications involving change management. In addition, interviews were conducted with the focus area owner and other licensee personnel.

The team determined that the licensee's extent of condition review, as described in WBS Folders 1.3.2 and 1.4.2, appropriately identified the significant areas of concern.

The team determined that Action Plan 5.1.2.1 appropriately addressed the problems identified in the licensee's extent of condition review. However, the team identified several weaknesses associated with the CNS Change Management Guide. The purpose of the Change Management Guide was to provide instructions on the implementation of new processes and programs. However, the Change Management Guide did not include prioritization of activities using risk insights, consideration of multiple alternatives for implementing changes, or coordination between or among departments.

The team determined that the licensee had not developed a methodology for conducting effectiveness reviews associated with the implementation of individual change initiatives.

The team assessed the licensee's ability to successfully implement new or revised programs and determined that the initial implementation of action items was ineffective. This was due, in part, to delays in the implementation of initiatives to improve management of change at the station. As a result, the licensee's recent efforts to improve the quality of root cause evaluations, the management observation program, and operability determinations and implement a site-wide scheduling tool were not effective.

c. Conclusions

Action Plan 5.1.2.1 appropriately addressed the performance issues identified in the extent of condition review. However, the action plan relied on the CNS Change Management Guide, which had several weaknesses, including the lack of prioritization of activities using risk insights and coordination between or among departments. The initial implementation of some TIP Revision 1 action items were ineffective due, in part, to a delay in implementing effective change management initiatives.

4.1.3 Communications

a. Focus Area Description

Focus Area 5.1.3, “Communications,” included the following action plan and WBS folder:

- Action Plan 5.1.3.1, “External Communications”
- WBS Folder 1.3.1, “External Communications”

The action plan included in Focus Area 5.1.3 addressed long-standing performance problems associated with the lack of coordination in licensee communications with outside agencies. Additionally, in many cases, reports and submittals to external regulators have contained errors, requiring correction and resubmission of the material. These problems have resulted from a failure on the part of CNS management to consistently communicate expectations and standards for external communications, and a lack of clear roles and responsibilities regarding communications with external agencies.

The purpose of this action plan in Focus Area 5.1.3 was to improve communications with the NRC and other outside agencies by clearly defining departmental roles, establishing appropriate management expectations, improving the guidance documents which direct the conduct of interfacing with outside organizations, and self-assessment of licensee performance in this area.

b. TIP Action Plan Assessment

The team reviewed the action plan, the licensee's extent of condition review, numerous corrective action notifications, and a variety of previous assessments and inspection reports from sources both internal and external to the station. The team verified that the results of the licensee's extent of condition analysis were correctly translated into the problem statement and the various causal factors for the action plan. Additionally, the team conducted several interviews with key personnel involved with the development of the action plan, including the action plan owner.

The action plan steps were largely a series of procedural enhancements followed by some form of assessment. The team found that the extent of condition review identified a lack of coordination (i.e., "siloing effect") between workgroups. This was not addressed in the action plan. Prior to the inspection, the licensee had identified this discrepancy and instituted plans to add Action Plan 5.1.4.3, “Teamwork,” to the next revision of the TIP.

The performance indicators associated with this action plan were not fully developed. Thus, a complete assessment regarding the potential effectiveness of these indicators could not be completed during this inspection.

c. Conclusions

The licensee's extent of condition analysis was correctly translated into the problem statement and causal factors for the action plan. In general, the action plan steps addressed the issues and problems pertaining to external communications, and the detail provided in these steps was sufficient to permit the team to assess the plan. The performance indicators for the action plan were not fully developed.

4.1.4 Human Performance

a. Focus Area Description

Focus Area 5.1.4, "Human Performance," included the following action plans and WBS folders:

- Action Plan 5.1.4.1, "Pride/Excellence"
- Action Plan 5.1.4.2, "Trust/Culture"
- WBS Folder 1.2.1, "Pride/Excellence/Human Errors"
- WBS Folder 1.2.2, "Trust"
- WBS Folder 1.2.3, "Management/Culture"

The action plans included in Focus Area 5.1.4 addressed long-standing problems associated with human performance. Previous management initiatives to communicate and reinforce expectations for adherence to procedural requirements, high industry work practice standards, attention to detail when performing work, and a desire for excellence in all aspects of plant performance had not been effective in reducing the number of human errors.

The purpose of the action plans in Focus Area 5.1.4 was to reduce the number of long-standing human performance problems. The licensee identified that the workforce had become complacent in their daily work activities, which resulted in the continuation of work being improperly performed. Examples included failure to follow required Technical Specification action steps, failure to properly align plant equipment, inadequate performance of operability assessments, and poor communications in the main control room. Additionally, a breakdown in trust within the workforce had resulted in poor communication and forthrightness of employees when errors were made. Therefore, the licensee developed these two action plans to develop standards of excellence that would clearly define the behaviors on which the site would focus and revise the site policies regarding problem identification and human performance event investigation.

b. TIP Action Plan Assessment

The team reviewed the action plans, the licensee's extent of condition reviews, and previous assessments to verify that the performance issues were appropriately identified in the action plans and to verify that the action plans contained steps to address each of

the problem areas. The team also conducted interviews with key personnel involved with the development of the action plans, including the action plan owner.

The team also verified that the licensee had adequately identified the extent of condition of the problems associated with human performance. The team observed the following activities to assess the formality of communication, the use of human error prevention techniques, and procedure usage:

- Main control room operations during both dayshift and backshift, including shift turnovers
- Reactor protection system surveillance
- Licensed operator training in the control room simulator
- Nonlicensed operator conduct of routine reactor building rounds

In addition, portions of the high pressure coolant injection (HPCI) system, emergency diesel generators, the 4160 Vac power system, and the 480 Vac power system were walked down to verify that the valve and electrical alignment was correct, that the systems did not have equipment problems that would impact their safety performance, and that equipment deficiencies had previously been identified by the licensee. Operator logs, operator workarounds, and control room deficiencies were evaluated for their individual as well as cumulative impact on plant operations, with an emphasis on the potential for them to result in an operator error.

The licensee's extent of condition review indicated that previous initiatives to reduce human performance errors had been insufficient and concluded that the failure to reduce errors was associated with ineffective leadership in defining and reinforcing expectations. The team determined that the licensee's extent of condition review appropriately identified the significant areas of concern.

The team determined that action plan steps addressed the issues identified during the licensee’s review, with one exception. One of the causal factors identified in Action Plan 5.1.4.2, involving a lack of visibility of senior management with the workforce, was identified as being addressed in Action Plan 5.1.1.5, "Management Observation Program." The team reviewed Action Plan 5.1.1.5 and determined that the steps to address this issue lacked detail and did not specifically address the issue. Discussions with the action plan owner revealed that one of the objectives of the step was to increase management visibility and that the step would be clarified.

The team also observed that the action plans were not completely developed and in some cases lacked sufficient detail to determine if the actions fully addressed the identified performance issues. For example, Action Plan 5.1.4.1 contained a step to develop a peer observation program; however, there was no detail regarding to whom the program would apply, what observations would be included, what actions would be taken based on the observations, or how the observations would be tracked and

trended. Action Plan 5.1.4.2 contained four steps to improve the human performance event investigation program at CNS. The plan simply was to review the existing policies regarding human performance event investigation, evaluate other utilities' programs, and then improve the CNS program. The licensee indicated that additional actions were planned, including developing plans for benchmarking other utilities, interviewing station personnel, reviewing publications which specialize in human error prevention, and training station personnel on the new policies and procedures.

The team also determined that the performance measures to monitor the adequacy of these action plans were not fully developed. Not all performance measures had been identified, some already selected had not been completely defined, thresholds for performance indicators had not been established in all cases, and corrective actions based on exceeding thresholds had not yet been established.

c. Conclusions

The extent of condition review accurately characterized the performance issues identified in previous assessments. In addition, action plans addressed the long-standing issue involving human performance errors. However, action plan steps lacked sufficient detail to determine if the actions would adequately address the performance issues. In addition, the performance measures for the action plans were not fully developed.

4.1.5 Oversight and Assessment

a. Focus Area Description

Focus Area 5.1.5, "Oversight and Assessment," included the following action plan and WBS folders:

- Action Plan 5.1.5.1, Revision 1A, "Oversight and Assessment"
- WBS Folder 3.3.1, "Self-Assessments"
- WBS Folder 3.3.2, "Boards and Oversight"

The action plan included in Focus Area 5.1.5 addressed long-standing performance issues involving: the failure to conduct self-assessment activities, not using the corrective action program to properly disposition the findings and implement actions to improve performance, and not ensuring that significant findings identified by the various oversight groups (Quality Assurance, Corrective Action Review Board, Station Operations Review Committee, and Safety Review and Audit Board) were properly dispositioned.

The purpose of the action plan in Focus Area 5.1.5 was to effectively use the self-assessment process to improve plant performance and to ensure oversight groups and line management properly administer the management and implementation of oversight findings.

b. TIP Action Plan Assessment

The team reviewed various self-assessment documents and procedures and interviewed the individuals responsible for the development of the action plan and self-assessment program.

The team determined that the extent of condition review, as described in WBS 3.3.1, “Self-Assessments,” appropriately identified the significant areas of concern.

The team determined that Action Plan 5.1.5.1 did not address one of the performance issues described in the extent of condition review. The extent of condition identified that self-assessment findings and observations were not being entered into the corrective action program to ensure that those items were assigned the correct priority and attention. In July 2001, the licensee revised Procedure 0-CNS-25, “Self-Assessments,” to require that all findings and recommendations be entered into the Nuclear Action Item Tracking System. The licensee determined that changing the procedure in July 2001 had not improved the dispositioning of self-assessment issues because the issues were not being resolved as part of the corrective action program and licensee personnel were not entering items into the Nuclear Action Item Tracking System. On June 21, 2002, the licensee issued Procedure 0-CNS-25, Revision 7, to require that a notification be written for self-assessment findings and recommendations to facilitate tracking and resolution of these items. The team determined that the initiation of a notification did not ensure the issue would be resolved as part of the corrective action program. Additionally, the team determined that the action plan did not have an action to verify the effectiveness of the procedure changes in ensuring that self-assessment findings and recommendations were actually entered and resolved by the corrective action program.

The team also determined that the action plan did not address ineffective self-assessments resulting from a lack of ownership, commitment, and support. The team determined that this issue was attributed to a lack of accountability of personnel responsible for implementing assessment activities. The licensee indicated that accountability concerns were specifically covered by Action Plan 5.1.1.2, "Accountability"; however, the dependency on Action Plan 5.1.1.2 was not referenced as part of Action Plan 5.1.5.1.

As part of Action Plan 5.1.5.1, the licensee either developed or was in the process of developing performance indicators and effectiveness reviews. The effectiveness reviews and three of the performance indicators had not been developed. As a result, the team was unable to assess the adequacy of the effectiveness reviews and future performance indicators. The licensee credited two recently developed (February 2002) performance indicators, “Monthly Average Number of Open Self-Assessment Actions” and “Self-Assessment Open Item Average Age.” Neither of these performance indicators addressed the issues associated with self-assessment improvement activities.

c. Conclusions

Action Plan 5.1.5.1 did not address one of the issues identified during the extent of condition review. The issue involved the verification that previous corrective actions associated with self-assessment findings were being effectively tracked and implemented. The action plan did not have performance measures which would accurately monitor the effectiveness of corrective actions. The extent of condition review appropriately identified the significant performance issues.

4.2 Operational Excellence

4.2.1 Operationally Focused and Aligned Organization

a. Focus Area Description

Focus Area 5.2.1, "Operationally Focused and Aligned Organization," included the following action plan and WBS folders:

- Action Plan 5.2.1.1, "Create an Operationally Focused and Aligned Organizational Culture"
- WBS Folder 3.4.2, "Equipment Aging"
- WBS Folder 3.4.3, "System Performance"

The action plan included in Focus Area 5.2.1 addressed long-standing performance issues involving the acceptance by station personnel of degraded plant equipment. Previous assessments had identified that the facility had long accepted reduced performance of systems and components, which had resulted in a backlog of repetitive deficiencies. Examples of this included long-standing equipment reliability issues involving the main control room chart recorders, the service water system, and reactor recirculation system controllers.

The purpose of the action plan in Focus Area 5.2.1 was to address the inappropriate acceptance of long-standing equipment issues by site organizations. The goal of this focus area was to establish management expectations and processes that will improve overall station performance by first recognizing reduced system performance as adverse, which will then lead to correcting the deficiencies.

b. TIP Action Plan Assessment

The team reviewed the action plan, the licensee's extent of condition review, numerous corrective action notifications, and a variety of previous assessments and NRC inspection reports. In addition, the team conducted several interviews with key personnel involved with the development of the action plan, including the action plan owner. The team concluded that the extent of condition analysis had been accurately translated into the problem statement and the various causal factors for the action plan.

In reviewing the action plan steps, the team observed that many were not fully developed. For example, although the lack of operational focus was identified as being exhibited site-wide, the majority of the action plan steps were focused primarily in the Operations Department. In addition, steps such as benchmarking other facilities, providing training, or revising procedures did not include sufficient detail to determine what was involved in completing the action. In addition, the measures for completion of the action plan steps were not fully developed. For example, one step would result in "introducing a process for interdepartmental interactions . . ." and another would result in "enhanced operator performance assessments . . . ." Neither of these examples described a definitive product that would ensure the original issue was adequately resolved. The licensee indicated that this action plan was still in the early stages of development and would contain additional detail with implementation of TIP Revision 2.

The team noted that the performance indicators did not provide a direct measure of the success of the action plan. Fourteen indicators were established, mainly from existing performance measures being used for other purposes. These 14 indicators provided a narrow focus and limited feedback on the success or failure of the action plan. As an example, one indicator tracked the total number of operator workarounds in the plant, while another tracked the number of unplanned limiting condition for operation (LCO) action statements that were entered. Individually, these indicators provided a measure of one issue. As a group, these indicators would provide some indication of the site's willingness to work around problems. However, the performance measures would not determine if the action plan was achieving the intended objectives.

c. Conclusions

The extent of condition analysis was accurately translated into the problem statement and the various causal factors for the action plan. However, the action plan steps were not fully developed. The steps lacked sufficient detail to determine if they would correct the identified deficiency. Similarly, several of the measures for completion of action plan steps lacked enough detail to determine if they would be sufficient to ensure success. Finally, the performance measures for this focus area did not provide a direct measure of the success of this action plan.

4.2.2 Emergency Preparedness

a. Focus Area Description

Focus Area 5.2.2, "Emergency Preparedness," included the following action plan and WBS folder:

- Action Plan 5.2.2.1, "Emergency Response," Revision 1
- WBS Folder 3.5.1, "Emergency Preparedness," Revision 0

The action plan included in Focus Area 5.2.2 addressed long-standing performance issues involving the emergency preparedness program. During a June 25, 2001, Alert declaration, station personnel also failed to appropriately activate emergency response

facilities and failed to notify offsite authorities of the Alert classification in a timely manner. Historical problems identified by the licensee included weak implementation of the emergency plan by control room crews, failure to use the corrective action process for drill and exercise issues, issues with emergency worker protection, and a failure to resolve issues identified in Quality Assurance audits. The primary causal factors for this declining performance were identified as an inadequate training program for the emergency response organization, outdated communications hardware, a lack of benchmarking, ineffective programmatic performance monitoring, ineffective emergency plan implementing procedures, and a failure by management to enforce standards of accountability. Station management did not recognize and correct this declining performance prior to the station entering the Multiple/Repetitive Degraded Cornerstone(s) Column of the NRC Action Matrix.

The purpose of the action plan in Focus Area 5.2.2 was to produce a consistently high performing emergency response organization (ERO) by having: (1) well defined roles and responsibilities for each member of the ERO; (2) a training program for ERO members based on a systematic approach to training; and (3) a modern, capable public interface. The action plan incorporated elements of the September 2001 Emergency Preparedness Tactical Improvement Plan, such as completion of the conversion from the [offsite] Emergency Broadcast System to the Emergency Alerting System and an overhaul and upgrade to the plant public address system.

b. TIP Action Plan Assessment

The team reviewed the action plan and the licensee's extent of condition review. The team also independently assessed the extent of problems in the emergency preparedness functional area through: (1) a walkdown of the emergency response capabilities in the Control Room; (2) walkdowns of the Technical Support Center, Operations Support Center, Emergency Operations Facility, and Alternate Emergency Operations Facility; (3) a walkdown of emergency ventilation systems for the Control Room, Technical Support Center, and Emergency Operations Facility; (4) observation of two simulator training scenarios and a Technical Support Center training walkthrough; (5) a review of ERO training documents, self-study modules, and records; (6) interviews with ERO members; (7) review of five ERO augmentation drills conducted in May and June 2002; and (8) review of emergency preparedness documents such as the station emergency plan, selected implementing procedures, the training program guide, selected significant condition reports, station responses to selected NRC generic communications, and departmental-level performance indicators.

The team found that the licensee had not completed their extent of condition review prior to developing the action plan. During their review of 34 assessment reports, only eight performance problems were identified. However, two root cause evaluations (SCR 2002-0572 and 2001-0577) were in progress that would provide the licensee with a more complete extent of condition of emergency preparedness problems. These root cause analyses were not complete at the time of the extent of condition review.

The steps in Action Plan 5.2.2.1 generally addressed the action plan problem statement, objective, and causal factors for the plant performance issues identified by the licensee. Individual action plan steps were clear, concise, and focused. The steps in Action Plan 5.2.2.1 were generally well-integrated; however, the assigned completion date for some steps, such as implementation of the systems approach to training, were not based on a complete understanding of the task's complexity. The expected outcomes for each step were detailed, focused, and well aligned with the actions to be taken; however, clear acceptance criteria were not well defined for some outcomes. The team noted that Action Plan 5.2.2.1 did not include planned longer-term emergency preparedness department actions, such as performing self-assessments.

The performance measures listed in Action Plan 5.2.2.1 did not provide a direct measure of the effectiveness of the action plan steps. The action plan included three performance indicators to track the completeness and effectiveness of Action Plan 5.2.2.1. These performance indicators measured the ERO performance and aligned closely with the action plan objective; however, no specific performance measures were developed for the steps related to maintaining and upgrading emergency preparedness equipment. The performance indicator "ERO Staffing (Vacancies)," intended to measure whether the overall ERO was fully staffed, was not an effective measure because the input parameters were poorly defined and the red threshold could not be exceeded regardless of the number of vacancies in some emergency response positions. Also, the licensee had not proceduralized definitions and calculational methods for any of the performance indicators intended to measure the effectiveness of the action plan.

c. Conclusions

The licensee's extent of condition review was incomplete in that only a small number of performance issues were identified and critical root cause analyses were still in progress. The steps in Action Plan 5.2.2.1 generally addressed plant performance issues identified by the licensee. Individual action plan steps were clear, concise, and generally well-integrated, with expected outcomes that were detailed and well aligned with the actions. The performance measures for Action Plan 5.2.2.1 were neither well-defined nor complete. Activities which were not directly associated with the ERO did not have associated performance measures.

4.2.3 Outage Plan Development

a. Focus Area Description

Focus Area 5.2.3, "Outage Plan Development," included the following action plans and WBS folders:

- Action Plan 5.2.3.1, "Outage Management"
- Action Plan 5.2.3.2, "Planning/Timeliness"
- Action Plan 5.2.3.3, "Scheduling/Monitoring"
- WBS Folder 2.3.1, "Outage Management"

- WBS Folder 2.3.2, "Planning/Timeliness"
- WBS Folder 2.3.3, "Scheduling/Monitoring"

The action plans included in Focus Area 5.2.3 addressed long-standing performance issues involving outage performance. The extent of condition review identified numerous contributors to the licensee's inability to implement and execute an outage as planned. One of the primary problems identified was that management expectations and standards for the preparation and execution of outages have not been effective. Additionally, personnel in key outage positions frequently changed and therefore lacked the consistency necessary to establish and implement outage assignments. Areas needing improvement, as identified by the causal factors developed within these action plans, included focusing the station's attention on the outage by establishing a formal outage organization, defining roles and responsibilities for the outage organization, establishing an outage milestone schedule for outage preparation tracking and accountability, and improving the tools used to plan and monitor the outage schedule.

The purpose of the action plans in Focus Area 5.2.3 was to improve outage performance by addressing long-standing problems with outage preparations, including the development of a comprehensive and credible outage schedule.

b. TIP Action Plan Assessment

The team reviewed the action plans and the licensee's extent of condition reviews that were used to develop the plans. Additionally, several WBS folders were reviewed from the action plan cross-reference that contained issues associated with this focus area. Interviews with the action plan owner were also performed. The inspectors reviewed Resolve Condition Report (RCR) 2002-0051, which addressed performance issues identified in the Refueling Outage (RFO)-20 Outage Critique, to assess the completeness of the licensee's extent of condition review using the most recent information available. The Outage Organization Chart and Outage Milestone Schedule for RFO-21 were also reviewed to assess the adequacy of completed corrective actions.

The team determined that the licensee's extent of condition review was effective in identifying plant performance issues with two exceptions. The RFO-20 Outage Critique, RCR 2002-0051, listed numerous weaknesses that contributed to poor outage performance. All but two of these weaknesses were captured by the extent of condition review for incorporation into the Outage Plan Development action plans. The weaknesses not addressed in the extent of condition review were numerous human performance errors and an unacceptably large amount of rework (repeated equipment maintenance). Both weaknesses had a significant impact on outage duration. After additional review and interviews with the action plan owner, the team determined that action plans in Focus Area 5.1.4, "Human Performance" (Action Plan 5.1.4.1), and Focus Area 5.2.5, "Work Package/Online Schedule Development" (Action Plan 5.2.5.2), had actions that addressed the human performance issues. The problems associated with excessive rework were addressed by Action Plan 5.2.6.1, "Work Practices." However, the action plans in the Outage Plan Development focus area did not reference these other action plans. Additionally, the team determined that the actions specified in

Action Plans 5.1.4.1 and 5.2.5.2 did not have enough detail to determine whether fully developed actions would actually correct the problems identified in this focus area.

The team determined that the action plan steps effectively addressed the performance issues that were identified by the extent of condition reviews. Additionally, the actions in the action plan generally had sufficient detail to conclude that the steps reasonably addressed the issues and causal factors identified.

The action plans within this focus area generally contained the details necessary to evaluate the measures used by the licensee to assess progress and performance in accomplishing the plan. For example, the primary performance indicator used by the action plans, Pre-outage Milestone Schedule Adherence, was well defined and had appropriate thresholds and actions required when these thresholds were exceeded.

c. Conclusions

The licensee's extent of condition review identified the appropriate plant performance issues with two exceptions. Two weaknesses identified in the RFO-20 Outage Critique, human performance errors and an unacceptably large amount of rework, were not identified in the licensee's extent of condition review for incorporation into this focus area. The team found that these performance issues were addressed in other focus areas. The action plan steps effectively addressed the performance issues that were identified by the extent of condition reviews. Additionally, the actions in the action plan generally had sufficient detail to conclude that the steps reasonably addressed the issues and causal factors identified. The action plans within this focus area generally contained the details necessary to evaluate the measures used by the licensee to assess progress and performance in accomplishing the plan.

4.2.4 Outage Execution

a. Focus Area Description

Focus Area 5.2.4, "Outage Execution," included the following action plans and WBS folders:

- Action Plan 5.2.4.3, "Monitoring"
- Action Plan 5.2.4.4, "Contract Administration"
- WBS Folder 2.4.3, "Monitoring"
- WBS Folder 2.4.4, "Contractor Management"

The action plans included in Focus Area 5.2.4 addressed long-standing performance issues involving inadequate monitoring by management of outage planning, scheduling, implementation, and contractor performance at the station. The extent of condition review identified that management's monitoring of outage planning, scheduling, and implementation was inadequate to ensure that the conduct of the outage met the established standards and expectations of the station. Station management did not have accurate and current outage performance information to address emergent issues

or restraints to provide timely resolution. The extent of condition review also identified that contractor performance was not efficient or meeting high standards. The issues pertained to lack of adequate monitoring by the station, contractors performing work without appropriate qualifications, and the quality of their work being substandard. These performance issues resulted in poor work practices, human errors, and a reduction in the quality of work on risk-significant equipment. In addition, these issues resulted in delays and changes to outage schedules.

The purpose of the action plans in Focus Area 5.2.4 was to improve management's oversight of outage planning and implementation and to improve the station's oversight and utilization of contractors.

b. TIP Action Plan Assessment

The team reviewed the action plans and the licensee's extent of condition reviews to assess the improvement plan for this focus area. The team reviewed corrective action program documents and conducted interviews of plant personnel.

As a result of a lack of formal procedures for developing the TIP action plans, the team found that Action Plan 5.2.4.3 incorrectly referenced WBS Folder 2.4.3 as an input to the plan. Based on interviews, the team determined that the plan was developed based on known problems with the monitoring of outage activities by station management, rather than on the extent of condition review in WBS Folder 2.4.3.

The team determined that the extent of condition review documented in WBS Folder 2.4.4 did not identify the performance issues related to human performance errors. Upon further review of the TIP it was determined by the team that the Work Package Development focus area, specifically Action Plan 5.2.5.2, and TIP Human Performance Action Plan 5.1.4.1, had actions that would address human performance errors. However, Action Plan 5.2.4.4 did not provide a cross-reference to the other action plans. Additionally, the team determined that the actions specified in Action Plans 5.1.4.1 and 5.2.5.2 did not have enough detail to determine whether they would actually correct the problems identified in this focus area.

The team determined that the action steps in the action plan addressed the performance issues that were identified by the extent of condition reviews.

The team found that the steps in Action Plan 5.2.4.3 lacked sufficient detail to determine if the actions would adequately address the performance issues. The steps essentially restated the action plan causal factors and did not provide specific detail on the actions to be taken.

The team found that performance measures had not yet been developed for these action plans.

c. Conclusions

The action plans addressed the performance issues that were identified by the extent of condition reviews. The actions specified in Action Plan 5.2.4.3 generally did not provide sufficient detail to assess whether the actions would fully correct the problems they were addressing. Performance measures had not yet been developed for these action plans.

4.2.5 Work Package/Online Schedule Development

a. Focus Area Description

Focus Area 5.2.5, “Work Package/Online Schedule Development,” included the following action plans and WBS folders:

- Action Plan 5.2.5.1, "Purpose/Accountability"
- Action Plan 5.2.5.2, "Completeness/Accuracy/Timeliness"
- WBS Folder 2.1.1, "Accountability/Purpose"
- WBS Folder 2.1.2, "Completeness/Accuracy/Timeliness"

The action plans included in Focus Area 5.2.5 addressed long-standing performance issues involving the station's ineffective implementation of the work control process and the inability to develop consistent, quality work packages. Significant contributing factors to these ongoing problems included a lack of organizational ownership, commitment, and support; roles, standards, expectations, and infrastructure for the work control process were not adequately developed; a lack of alignment in priorities between the work control process and the engineering work management activities; and a failure to effectively communicate the status of work planning in order to identify and resolve restraints. The licensee determined that improvement was needed in establishing expectations for the development of quality work packages, prioritization of work activities between organizations supporting the development of work packages, and reinforcement of requirements through management oversight.

The purpose of the action plans in Focus Area 5.2.5 was to: (1) improve the work planning and scheduling process; and (2) improve the quality, completeness, and timeliness of maintenance work packages.

b. TIP Action Plan Assessment

The team reviewed the action plans and the licensee's extent of condition reviews to assess the improvement plan for this focus area. Interviews with the focus area and action plan owners were also performed. Further, the team reviewed corrective action program documents, work process implementation procedures, and work packages and interviewed maintenance personnel to assess the completeness of the licensee’s extent of condition review.

The licensee failed to identify during their extent of condition review that the station’s ineffective management of component parts used in plant equipment was adversely

effecting work planning and work implementation. Based on a review of the results of previous assessments and corrective action program documents, the team determined that a lack of adequate parts management had a detrimental effect on the station's ability to effectively and efficiently plan and implement work activities. The team found that the station's poor management of parts resulted in lengthening the amount of time that safety-related equipment was removed from service. An example of this was observed during the team's inspection when the licensee did not have the correct part for a modification associated with the core spray and reactor core isolation cooling systems. The problem was identified after the equipment had been removed from service and work had begun. This resulted in increased unavailability time for these systems. The team also found many examples of problems entered into the licensee's corrective action program involving the incorrect use of what was considered to be equivalent replacement parts.

As a result of failing to identify performance issues associated with the management of parts, the licensee did not develop plans to improve performance in this area. The team determined that this performance issue needed to be addressed in order for CNS to improve in this focus area.

The team determined that the action plan steps were generally effective in addressing performance issues identified in the extent of condition reviews and the action plan causal factors. However, the team identified some inconsistencies between the action plan causal factors and the steps in the plans. Causal Factor 2 in Action Plan 5.2.5.2 stated, "Prioritization of work activities is inconsistent between organizations supporting the development of work packages." The causal factor also indicated that action plan Steps 4 and 6 addressed this problem. The team found that Steps 4 and 6 did not relate to Causal Factor 2 and determined that the action plan did not have an action to address prioritization and coordination of departmental work activities. Upon further review and discussion with the action plan owner, the team determined that Action Plan 5.2.5.1 had steps that addressed this issue. However, there was no clear tie between Causal Factor 2 and the steps in Action Plan 5.2.5.1 that addressed this problem.

The actions specified in the action plans generally did not provide sufficient detail to assess whether the actions would correct the problems they were addressing. For example, Action Plan 5.2.5.2 had an action to develop a prototype "Quality Work Package"; however, there were no specifics regarding the level of detail and guidance this model would contain.

The action plans within this focus area lacked the details necessary to evaluate the measures used by the licensee to assess progress and performance in accomplishing the plans. For example, four out of the eight performance indicators used by these plans had not been developed. The remaining performance indicators lacked information regarding thresholds and associated actions taken by the licensee when thresholds were crossed.

c. Conclusions

The licensee failed to identify that the ineffective management of replacement component parts used in plant equipment was adversely effecting work planning and work implementation. A lack of adequate parts management had a detrimental effect on the station's ability to effectively and efficiently plan and implement work activities. The action plans generally captured issues identified by the extent of condition reviews in the problem statement and causal factors and identified action plan steps that addressed each of the causal factors. Two WBS folders identified issues in the extent of condition reviews that were applicable to this focus area but were not characterized in the action plan causal factors. Steps specified in the action plans generally did not provide sufficient detail to assess whether the actions would correct the problems they were addressing. The action plans lacked the details necessary to evaluate the measures used by the licensee to assess progress and performance in accomplishing the plan.

4.2.6 Work Package Implementation

a. Focus Area Description

Focus Area 5.2.6, "Work Package Implementation," included the following action plans and WBS folders:

- Action Plan 5.2.6.1, "Work Practices"
- Action Plan 5.2.6.2, "First Line Supervision"
- Action Plan 5.2.6.3, "Technical Support/Lessons Learned"
- WBS Folder 2.2.1, "Work Practices/Briefings"
- WBS Folder 2.2.2, "First Line Supervision"
- WBS Folder 2.2.3, "Unknowns/Lessons Learned"

The action plans included in Focus Area 5.2.6 addressed long-standing performance problems associated with work implementation. Action Plan 5.2.6.1 focused on the lack of management effectiveness to resolve substandard work practices and human performance errors. The factors identified as contributing to poor work practices were the lack of management oversight to enforce expectations and standards for performing work, over-reliance on the skill of the craft for performing maintenance work, and inconsistent performance of formal prejob briefings. Action Plan 5.2.6.2 focused on supervisors ineffectively enforcing standards for planning and performing work at the station. This problem was attributed to the station not clearly defining the roles and responsibilities of the supervisor, supervisors not effectively reinforcing performance expectations, and weaknesses in supervisory knowledge and skills. Action Plan 5.2.6.3 focused on poor preplanning and support, which resulted in untimely completion of work. Work was not effectively implemented, primarily due to a failure to identify and apply lessons learned to improve the quality of work packages. In addition, expectations for technical field support associated with unknown problems that arise while performing work were not established or communicated.

The purposes of the action plans in Focus Area 5.2.6 were to: (1) improve work practices and reduce human errors; (2) improve oversight of activities by crew leaders and first line supervisors; and (3) improve the quality of work packages by identifying work restraints and required technical support.

b. TIP Action Plan Assessment

The team reviewed action plans and licensee extent of condition reviews. In an effort to determine the extent of condition and assess current plant performance, the team reviewed and/or observed: corrective maintenance, preventive maintenance (PM), total work inventory/routine work, and surveillance maintenance backlogs; maintenance activities associated with service water Strainer B examination and refurbishment, suppression pool water temperature recorder calibration, essential 4160 Volt undervoltage relay testing, service water motor-operated flow control valve testing, and two HPCI instrument calibrations; reviewed weekly and daily work schedules; attended daily planning and weekly work week critique meetings; and reviewed the licensee's maintenance risk assessment for one work week, which included emergent work items.

The team determined that the licensee's extent of condition review for this focus area identified the appropriate plant performance issues. The team also determined that the action plan steps addressed the performance issues that were identified by the extent of condition reviews. Several performance issues identified in this focus area were addressed by action plans in other focus areas. For example, Action Plan 5.2.6.1 identified the following contributors to poor work practices: industrial safety issues, inappropriate implementation of procedures, improper or unsuccessful repairs to equipment, low housekeeping standards, and an unacceptable level of human performance errors. The plan did not have actions to correct human performance errors and improper or unsuccessful repairs to equipment. Actions to address human performance errors and improper or unsuccessful repairs to equipment were addressed in Action Plan 5.2.5.2, "Completeness/Accuracy/ Timeliness," and Action Plan 5.1.4.1, "Human Performance." The team found that Action Plan 5.2.6.1 did not reference these other action plans as having steps necessary to improve station work practices.

The actions specified in the action plans generally did not provide sufficient detail to assess whether the actions would correct the problems they were addressing.

Action Plan 5.2.6.3 did not consider all of the sources available to develop lessons learned as a feedback mechanism to improve work performance. The examples of station sources that could be used for feedback were weekly work critiques, daily work critiques, and notifications that identified work problems. The action plan only considered postjob critiques as the mechanism for feedback.

The team determined that the performance measures for two action plans were not adequate. Three of the action plans had measures that were not developed as of the start of the inspection. Action Plan 5.2.6.1 listed a performance indicator for equipment rework that the team determined was not effective. Since the licensee was not

implementing their process for tracking and evaluating equipment rework activities. Action Plan 5.2.6.2 listed two performance indicators that were not yet developed. Additionally, there were no indicators that would measure the supervisor's improvement in knowledge and skills or their effectiveness at enforcing standards and expectations, which was the objective of the action plan.

c. Conclusions

The extent of condition reviews identified the appropriate plant performance issues. The action plan steps addressed the performance issues that were identified by the extent of condition reviews. However, two action plans did not indicate that the completion of steps in other action plans were necessary for improvement in this area. The actions in the plans did not have enough detail in the action descriptions to determine whether they would correct the problems identified in the focus area. The action plan performance measures in two action plans were not adequate to measure performance and all three of the action plans had performance measures that had not been developed.

4.2.7 Corrective Action, Operating Experience, Self-Assessment

a. Focus Area Purpose

Focus Area 5.2.7, "Corrective Action, Operating Experience, Self-Assessment," included the following action plans and WBS folders:

- Action Plan 5.2.7.1, "Improve Reinforcement of CAP [Corrective Action Program] Standards and Expectations"
- Action Plan 5.2.7.2, "Root Cause"
- Action Plan 5.2.7.3, "Improve Utilization of OER [Operating Experience Review]"
- WBS Folder 3.1.1, "Purpose/Priorities"
- WBS Folder 3.1.2, "Root Cause"
- WBS Folder 3.1.3, "Closure/Validation"
- WBS Folder 3.1.4, "Programmatic"
- WBS Folder 3.5.2, "Operating Experience Review"

The action plans in Focus Area 5.2.7 addressed long-standing performance problems associated with corrective action program standards and expectations, utilization of the corrective action program, ineffective apparent cause analyses, ineffective root cause analyses, poor corrective action process training, ineffective trending of deficiencies, and ineffective use of industry operating experience.

The purposes of the action plans in Focus Area 5.2.7 were to develop corrective action program standards and expectations, increase management and supervisory ownership, improve the quality of corrective actions implemented for apparent and root cause analyses, and improve the use of operating experience by work groups.

b. TIP Action Plan Assessment

The team reviewed Action Plans 5.2.7.1, 5.2.7.2, and 5.2.7.3 and the extent of condition reviews associated with these action plans. The team completed an independent review of the corrective action and operating experience programs. The independent review included an assessment of corrective actions and operating experience program procedures, training plans, numerous operating experience reviews, and performance indicators. The team also evaluated three RCR root cause evaluations completed in April and May 2002.

The team determined that the licensee's extent of condition review that related to the corrective action and operating experience programs appropriately identified the significant areas of concern. However, the team determined that four of the issues identified during the extent of condition review (operability determinations, trending, use of industry operating experience, and sharing in-house lessons with industry) were not adequately addressed by the applicable action plans. In addition, the team identified implementation concerns associated with performance monitoring and interim corrective actions for root cause analyses.

Operability Determinations

The licensee did not include steps in the action plan to improve the operability determination program. The team reviewed the licensee's extent of condition reviews, NRC inspection reports, and NRC assessment letters and determined that the licensee had demonstrated a sustained period of inadequate implementation of the operability determination program. However, the licensee did not include improvements in the operability determination program as an area for improvement in TIP Revision 1. The licensee indicated that corrective actions had been implemented to improve the quality of the operability determination program and that the operability determination program was not included in TIP Revision 1 because improvement had been noted. However, during the inspection, the team identified that the licensee failed to implement the requirements of the operability determination program for degraded conditions involving a service water strainer, 250 Vdc batteries, and residual heat removal heat exchanger leakage. These examples, which occurred following the implementation of corrective actions by the licensee, were indicative of continued performance problems associated with the operability determination program.

Trending

The team determined that a causal factor described in Action Plan 5.2.7.1, involving trending of performance deficiencies, was not addressed by an action item. Ineffective trending of equipment reliability issues was also identified in the licensee's extent of

condition reviews. In addition, in March 2002, the licensee completed a self-assessment of equipment reliability issues and determined that the work item trend information was not being utilized.

The team determined that action items in Action Plan 5.2.7.1 addressed improvements in the corrective action program database trending but did not address improved trending of equipment reliability issues identified in the licensee's work item database. At the request of the team, the licensee searched the work item database for the month of June 2002 to determine if maintenance personnel were actually entering equipment damage and cause codes in the appropriate database fields. Of the 111 activities statused as closed, 53 included the trend codes and 58 did not. The team determined that the cause code for the equipment deficiency was derived from the maintenance technician's understanding of the probable failure mechanisms instead of a more structured apparent or root cause analysis. The team also interviewed performance analysis, maintenance, and engineering personnel and determined that the licensee was not utilizing the work item database to trend equipment reliability issues.

The team identified additional vulnerabilities associated with the trending process, including a lack of periodic assessments of the effectiveness of the trending process, and the existence of a large number of trend codes, many of which were seldom if ever used.

Operating Experience

The team determined that Action Plan 5.2.7.3 did not address two performance issues described in the licensee's extent of condition review. The first performance issue involved the licensee not communicating in-house lessons learned with industry. In their extent of condition review, the licensee stated that a procedure had been modified to process lessons learned more efficiently and that the process was on track to meet their established goal of issuing reports within 50 days (average). As a result, the licensee determined that no action plan steps were needed to address this issue. However, there was no verification of the effectiveness of the changes and the action plan did not contain an effectiveness review of the current program to share in-house lessons learned with industry.

The second performance issue that the action plan did not address was the utilization of industry operating experience and information. The failure of the licensee to utilize industry operating experience and information was identified in numerous NRC and licensee assessment reports. The licensee believed this item was addressed by previous corrective actions; however, the licensee had not evaluated, and had no plans to evaluate, the adequacy of reviews and actions taken in response to previously issued operating experience information (NRC and industry). The team conducted an independent extent of condition review of seven NRC issued generic letters or information notices and approximately 25 industry operating experience notices issued in 2001 and 2002. The team identified problems with the implementation of previous NRC and industry issued operating experience notices. Specifically:

- Information Notice (IN) 94-24, “Inadequate Maintenance of Uninterruptible Power Supplies and Inverters,” and by reference IN 87-24, “Operational Experience Involving Losses of Electrical Inverters,” discussed reducing inverter failures by replacing selected components (capacitors and circuit boards) as part of a PM program. The licensee reviewed IN 94-24 and inappropriately determined that it was not applicable to CNS. The team reviewed the PM activities for both the no-break power panel and plant monitoring and information system (PMIS) inverters (both nonsafety-related). The no-break power panel inverter had PM scheduled to replace the capacitors and various circuit boards in the inverter; however, the PMIS inverter did not have a similar PM requirement. The licensee initiated Notification 10179457 to create a PM item for the PMIS inverter and to conduct the maintenance within 6 months.

- Generic Letter 88-14, “Instrument Air Supply Problems Affecting Safety-Related Equipment,” discussed problems associated with the instrument air system that could impact safety-related equipment. As part of the licensee’s response to the NRC, they described their program for maintaining proper instrument air quality. The team identified that a PM item associated with the cleaning of “dedicated air filters” for major equipment each RFO was not defined or documented. The licensee was unable to determine which air filters were “dedicated.” The licensee initiated Notification 10179514 to identify and document the instrument air dedicated filters.

  The system engineer indicated that there were approximately 500 equipment air filters located in the plant and that there was a PM item to replace these filters. However, there was no formal requirement that the filters be inspected to ensure the quality of the air system was being properly maintained, and no documentation of the inspection results were included as part of the work package.

- Information Notice 92-33, “Increased Instrument Response Time When Pressure Dampening Devices are Installed,” discussed a possible increase in instrument response times when pressure dampening devices were installed in sensing lines due to an accumulation of debris in the dampening device. On May 14, 2002, during a cooldown and depressurization of the reactor coolant system, an inadvertent containment isolation signal was generated by a reactor core isolation cooling high steam flow signal from Differential Pressure Switch RCIC-DPIS-83. The licensee concluded that the cause for the isolation signal was a clogged pressure dampening device (corrosion products) in the instrument line for the differential pressure switch. This issue was documented in NRC Special Inspection Report 50-298/02-08.

  Information Notice 92-33 was reviewed by the licensee in 1993 and determined to be applicable at CNS since multiple safety-related pressure instruments, including instruments in the main steam system, reactor recirculation system, HPCI system, and reactor core isolation cooling system had installed pressure dampening devices. However, the information described in IN 92-33 was never

entered into the corrective action system. The licensee originally proposed that a PM procedure be generated to flush all the pressure dampening devices; however, the work request was closed in 1997 with no actions taken to address the original concern.

The team determined that the measures for completion of the steps in Action Plan 5.2.7.3 did not reflect the desired outcome, and that the action plan did not have adequate indicators or effectiveness reviews to monitor performance improvement.

Root Cause Analyses

In January 2002, the licensee implemented an interim corrective action which reduced the number of root cause investigators from 200 to 50. The licensee believed that decreasing the number of analysts would improve the quality of root cause analyses because each investigator would be required to perform more analyses. The team independently evaluated three root causes completed after April 1, 2002, to determine if the interim corrective actions implemented in January 2002 had improved the quality of root cause evaluations. The inspectors determined that each of the root cause analyses was inadequate.

RCR 2002-0492 involved the improper installation of a service water pump high pressure trip relay. The licensee determined that the root cause was "The QC [quality control] inspector failed to maintain his focus on his QC task." The team identified several inadequacies associated with the analysis:

(1) The root cause investigator did not determine if the QC inspector was knowledgeable of the procedural requirements or management expectations related to maintaining independence during work activities. Consequently, the basis for why the QC inspector did not maintain a degree of acceptable independence was not addressed.

(2) The investigator did not interview all personnel involved in the maintenance activity (plant manager, crew leader, and task performer). In addition, limited scope interviews were completed with the QC inspector and the electrical maintenance supervisor.

(3) No investigation was performed to determine why the individual performing the task, or others involved in the activity, failed to challenge the QC inspector on the need to maintain independence.

(4) The corrective actions to prevent recurrence were inadequate in that not all maintenance personnel were trained on the QC inspector requirements.

(5) The inadequacy of the prejob walkdown was not identified as a contributing factor.

(6) Work package quality issues (inadequate configuration drawing, no schematic in the package, and cumbersome work steps) described in the root cause report details were not entered in the corrective action program.

RCR 2002-0546 involved the failure to document the basis for operability decisions. The licensee determined that the root cause involved a lack of communication of management expectations for documenting the basis of decisions made as part of the operations department review of notifications. The team identified several deficiencies associated with the root cause investigation:

(1) The investigator did not assess the quality of the oversight provided by the shift manager.

(2) The extent of condition review was limited to the documentation of issues by the affected shift technical engineer (STE) and did not include a review of the work product of other personnel that could perform the operations department review of notifications.

(3) The extent of condition review did not include an assessment of the generic implications of the root cause.

(4) The investigator selected a 30-day period for the review of the STE's work product. The review identified that two of seven assessments completed by the STE had deficiencies. However, an additional sample of the STE's work was not conducted.

(5) Even though any STE or senior reactor operator could complete the operations department review, only the STEs and shift managers were provided a management briefing regarding the issue.

RCR 2002-0899 involved the collection of a process radiation monitoring sample from an incorrect sample location in the Radwaste Building. The licensee determined that the root cause for this issue was ineffective implementation of corrective actions from 1992 which did not identify all of the potential system configurations which would invalidate a sample. The team determined that the corrective actions taken in 1992 were adequate. However, a revision to plant procedures in 1996 invalidated these corrective actions. The later revision to plant procedures could not have reasonably been anticipated in 1992. As a result, the licensee's root cause for RCR 2002-0899 was incorrect. The investigator did not evaluate why the procedure change review process failed to identify that a configuration change, created by a revised procedure, invalidated the corrective actions implemented in 1992. In addition, the extent of condition review was inadequate in that the investigator did not determine if additional invalid samples had been collected.

No corrective actions were initiated to resolve the licensee's causal factor because the investigator believed that sufficient changes had been made to the corrective action program since 1992. However, following the 1992 issue, continued performance

deficiencies were identified which involved the adequacy of the licensee's corrective action program. Therefore, the team determined that the analyst's determination that additional corrective actions were not warranted because of improvements in the corrective action program were invalid.

The team questioned the licensee to determine what QC measures were implemented to verify the quality of root cause investigations following the reduction in the number of root cause investigators. The licensee indicated that no QC measures were implemented even though they expected the initial quality of root cause analyses to decrease. The decrease in quality was due, in part, to the selection of some individuals who had not recently performed a root cause investigation. During the July 18, 2002, condition review group meeting, the licensee indicated that a review of RCR root causes completed after July 1, 2002, would be performed to determine the extent of condition of deficient root cause evaluations. The team determined that the review would be inadequate because it did not assess the quality of each of the root cause investigators and because it did not address the quality of root cause investigations performed since the reduction in the number of root cause investigators in January 2002.

The team identified several discrepancies associated with the action plan performance measures:

(1) The measures for completion of action plan steps did not describe the desired change in plant performance.

(2) No performance indicator existed for tracking and trending RCR root cause quality.

(3) The SCR recurrence indicator did not measure performance issues which repeat on multiple occasions. For example, there were three recurrences of an SCR regarding deficiencies in the corrective action program in the previous 36 months. However, the indicator only reflected one of the occurrences because the "same issue" was repeated.

(4) A 12-month rolling average value was reported in the performance indicators. This method of data reporting normalizes the data over a 12-month period and may disguise adverse/positive results which may occur in a given month. Consequently, corrective actions were not taken to investigate a negative result.

(5) The performance indicator for SCR root cause quality represented the quality of the analysis following review and revision by the performance analysis department. The performance indicator did not represent the quality of the analysis submitted by the departments. As a result, departmental root cause investigators continued to submit unsatisfactory root cause analyses.

The team reviewed the corrective action program procedures and identified the following vulnerabilities:

(1) There were no provisions to consider/evaluate the independence of the root cause investigator.

(2) Extent of condition reviews were not required for RCR root causes.

(3) The licensee's root cause methodology table specified that TAP ROOT (TAP ROOT is a root cause analysis method developed by System Improvements, Incorporated) was limited to evaluating human performance issues. In actuality, TAP ROOT also includes equipment investigation.

(4) The corrective action program procedures frequently specified that the evaluator should determine the root "cause(s)." During interviews, personnel indicated that there should only be one root cause per evaluation. This mind-set could limit the identification of all causes leading to performance problems and therefore inhibit the development of effective corrective actions.

(5) The corrective action program procedures did not encourage the use of multiple root cause analysis methods during a root cause investigation. The procedure indicated that "any credible technique" may be used. The use of one technique for root cause analysis may limit the identification of all credible root causes.

(6) There were no provisions to perform a collective assessment of root cause determinations.

c. Conclusions

The action plans did not address all of the issues identified during the licensee's extent of condition review. The issues involved implementation of the operability determination program, trending of equipment deficiencies, and utilization of industry information. In addition, the action plans did not include sufficient detail to assess the adequacy of some steps in improving performance and did not have performance measures which would accurately monitor the effectiveness of corrective actions. Recently implemented corrective actions to improve long-standing performance deficiencies in the operability determination program were ineffective. QC measures were not implemented concurrent with the reduction in the number of root cause analysts. Consequently, unsatisfactory root cause evaluations continued to be performed.

4.2.8 Functions and Services

a. Focus Area Description

Focus Area 5.2.8, "Functions and Services," included the following action plans and WBS folders:

- Action Plan 5.2.8.1, "Vendor Manual Upgrade Program"
- Action Plan 5.2.8.3, "Procedure Change Process"

- WBS Folder 3.2.1, “Administrative Support”
- WBS Folder 3.2.3, “Procedural System”

The action plans included in Focus Area 5.2.8 addressed long-standing performance issues involving the quality of vendor manuals. Previous assessments had concluded that many of the vendor manuals were not well organized and were difficult to use. In addition, issues had previously been identified concerning procedure adequacy as well as the difficulty and time necessary to approve a procedure revision.

The purposes of the action plans in Focus Area 5.2.8 were to: (1) improve the quality of vendor manuals by reviewing the existing manuals, updating them as necessary, and scanning them for online viewing from the licensee’s internal computer network; and (2) improve the procedure revision process, and to determine if a procedure adequacy issue existed.

b. TIP Action Plan Assessment

The team reviewed the action plans and the licensee's extent of condition reviews. In addition, the team verified that the licensee adequately identified the extent of condition of the problems associated with this focus area. The team reviewed procedures associated with the procedure change process; approximately 400 pending procedure revisions in the Operations, Engineering, and Maintenance Departments; approximately 200 notifications generated over the last 2 years related to procedure issues; and, assessments which documented issues associated with procedures. Portions of a residual heat removal service water system and reactor protection system surveillance were observed with emphasis placed on the quality of the procedures and procedure usage. In addition, the team conducted several interviews with key personnel involved with the development of the action plans, including the action plan owners. The team concluded that the performance issues identified in previous assessments had been appropriately addressed in the licensee's extent of condition reviews.

The team reviewed the action plans to determine if the issues identified in the licensee's extent of condition reviews had been appropriately translated into action plan steps. One issue, the lack of a suitable process for addressing needed procedure changes, was not addressed in Action Plan 5.2.8.3. The team reviewed the licensee’s procedure change process and determined that a single process did not exist, but rather an informal and unique process was used in each department. The individual processes were discussed with the Operations, Engineering, and Maintenance Departments. In addition, the team selected approximately 50 procedure change requests from these departments to determine the significance and status of the requested changes. Although representatives from each department indicated that a significance determination had been made in each case, it had not always been documented. Additionally, pending procedure revisions were not tracked as to when the request was received, whether the change warranted a high priority, what procedure was involved, or when the change would be incorporated. As a result, there were approximately 400 procedure changes pending in these three departments. The team identified several examples of procedure change requests which were over 3 years old.

Additionally, one PM procedure, MP 7.3.29.1, “Solid State Controls Uninterruptible Power Supply Preventive Maintenance,” had not been performed since 1995, because the procedure was on hold awaiting revision, even though it was to be performed every 3 years. This issue is discussed in more detail in Section 4.3.1 of this inspection report. The team concluded that the licensee did not have a formal process to prioritize, revise, and track to completion procedure change requests.

The team also determined that several steps in both action plans were not fully developed and, in some cases, lacked sufficient detail to determine if the actions would fully address the identified performance issue. For example, Action Plan 5.2.8.1 contained a step to develop a plan to address potential PM and vendor manual compatibility issues. However, the step did not identify what research would be necessary to determine if a problem actually existed in this area, what the scope of the plan would be, what departments would be involved in developing the plan, or what would be done with the plan once it was complete. Likewise, Action Plan 5.2.8.3 contained a step to perform followon assessments of the implementation of a planned independent qualified reviewer/approver process. The reviewer/approver process would provide an independent review of procedure revisions, which, in some cases, would replace a required review by the Site Operations Review Committee. The licensee indicated that this would result in a more efficient review of procedure revisions while also reducing the burden of the Site Operations Review Committee. However, the action plan step did not state what the objectives of the assessment would be, who would perform the assessment, or which departments would be involved in the assessment. The team discussed the lack of detail with the action plan owners who indicated that additional detail would be provided in TIP Revision 2.

The team reviewed the performance measures for these action plans and determined that they were either inadequate or had not yet been developed. Action Plan 5.2.8.3 used two performance measures that evaluated procedure processing time, but which did not account for the entire period that a procedure revision was in process. As a result of these performance measures being inaccurate, the thresholds were also inaccurate and in need of revision. Actions to be taken upon exceeding a threshold were also not defined. Performance measures for Action Plan 5.2.8.1 had not yet been developed. The team was, therefore, unable to completely assess the performance measures for this focus area.

c. Conclusions

The extent of condition review identified the appropriate performance issues. The action plan steps addressed the performance issues with one exception. Action Plan 5.2.8.3 did not provide steps to address problems associated with the procedure change process. In addition, several steps in both action plans did not provide sufficient detail to determine if the action plan would correct the problem identified. Furthermore, the action plans’ performance measures were either not adequate to measure performance or had not yet been developed.

4.3 Equipment Excellence

4.3.1 Material Condition and Equipment Reliability

a. Focus Area Description

Focus Area 5.3.1, "Material Condition and Equipment Reliability," included the following action plan and WBS folders:

- Action Plan 5.3.1.1, "System/Equipment Performance"
- WBS Folder 3.4.2, "Equipment Aging"
- WBS Folder 3.4.3, "System Performance"

The action plan included in Focus Area 5.3.1 addressed long-standing performance issues involving the ability of systems to achieve the required or desired level of performance. A total of 25 specific instances of long-standing equipment or system performance issues were identified by the extent of condition review for the period between 1994 and 2002. The bulk of these issues involved repetitive equipment failures due to a lack of integrated action to address the causes and acceptance by station personnel of long-standing problems. The repetitive nature of the issues demonstrated ineffective use by the licensee of their corrective action program.

The purpose of the action plan in Focus Area 5.3.1 was to improve equipment reliability by implementing a system health team process, upgrading station processes to be consistent with identified industry best practices, developing a program to address equipment obsolescence, and upgrading the PM process.

b. TIP Action Plan Assessment

Scope of the Review and Inspection

The team performed independent inspections to assess the condition and performance of the following systems:

- Service water
- HPCI
- Emergency ac power

The independent inspections included: walking down the systems with the system engineer; reviewing notifications, corrective actions, and work orders for the systems; reviewing documentation of the maintenance rule treatment of the systems; and reviewing system health reports.

Additionally, the team assessed the licensee's previous corrective actions and plans to address long-standing problems with the following:

- Repeated local leak rate testing failures of the feedwater containment isolation check valves
- 125 Vdc and 250 Vdc batteries degraded/nonconforming positive plates
- Service water system (various problems)
- Residual heat removal service water radiation monitor sample flow problems

The team reviewed the licensee's processes to identify, track, and correct equipment reliability issues. This included the system walkdown process, the system health team pilot project, the operability determination process, and use of the corrective action process. The team also reviewed the licensee's plan to evaluate the differences between station practices and industry best practices.

The team reviewed the items in the licensee's preventive maintenance (PM) backlog. The team discussed the process with the PM program coordinator, and reviewed Procedure 7.0.2, "Preventive Maintenance Process," Revision 5.

Extent of Condition

The team determined that the licensee's extent of condition review, related to equipment reliability problems, appropriately identified the significant areas of concern.

The team found that long-standing equipment reliability problems existed which had not been adequately addressed by the licensee. For example, the team reviewed the performance of the service water system, which had a long history of problems, ineffective corrective actions, and repeat corrective maintenance. Nine functions provided by this system were being monitored by the licensee in accordance with their maintenance rule program and 10 CFR 50.65(a)(1). The licensee formed a system health team in 1998 to improve system reliability, but few of the actions were implemented until recently. This effort was done without utilizing a systematic approach or defined objectives. An extent of condition review for the service water problems was performed in 1998 but was not documented, so it was difficult to assess whether the individual actions in numerous corrective action documents were comprehensive. The individual actions appeared to have sound technical bases, but the team was unable to assess whether the planned actions comprehensively addressed all the system reliability issues.

The team identified recent examples where the licensee tolerated less than optimum equipment performance. In 1999, the licensee identified a degraded, nonconforming condition with safety-related battery cells in the 125 Vdc and 250 Vdc safety-related batteries. The licensee and the vendor concluded that the cause was excessive calcium content on the positive plates causing accelerated plate swelling which could lead to loss of battery capacity. The licensee promptly replaced the 22 cells that exhibited swelling and planned to replace the remaining cells in the 125 Vdc and 250 Vdc battery banks during the following outage. While the cells in the 125 Vdc battery banks were

replaced during the next outage, the majority of the cells in the 250 Vdc battery banks were not. In April 2002, the licensee identified that five of the original nonconforming cells in the 250 Vdc battery banks exhibited plate swelling. The team identified that only then did the licensee initiate action to replace the remaining cells, scheduled to be completed by 2006. In addition, the licensee had not performed an operability determination for the degraded condition identified in April 2002 until the team questioned the impact that the degraded condition had on the operability of the battery. The licensee performed an operability determination and found that the batteries remained operable.

On July 11, 2002, during the performance of inservice testing of the Train B residual heat removal pumps, operators observed that flange leakage increased from previously observed levels. Leakage from the Train B residual heat removal heat exchanger flange had been identified in 1997, but no action had been taken to correct the leakage. With both residual heat removal pumps running during the test on July 11, leakage from the flange was characterized as a "steady stream." After the pumps were secured, the leak rate was described as 200 drops per minute (dpm), which was equivalent to 16.5 cc/min. Using the leak rate observed after the pumps were secured, 16.5 cc/min, the licensee determined that the leakage did not exceed the total allowed leakage of 602 cc/min established in Procedure 13.1, “ECCS Leakage Evaluation,” Revision 6, and did not exceed the administrative limit (100 cc/min) requiring corrective maintenance. The limit on total allowed leakage assured that control room dose during an accident was within design limits. The team questioned the validity of the licensee's conclusion, since it was based on the leakage that existed after both pumps were secured (200 dpm equivalent to 16.5 cc/min), rather than the higher leak rate that was observed when both pumps were running (described as a "steady stream" in Notification 10177658). In response to the team’s concern, the licensee measured the leakage from the flange on July 19 and determined that the leak rate with both residual heat removal pumps running was 386 cc/min. Although the total leak rate (415 cc/min) remained below the limit established in Procedure 13.1, the procedure required that corrective action be taken to reduce the leakage. The licensee initiated a work order to correct the leakage during the next scheduled outage. The team found that the licensee had used an incorrect leak rate in evaluating the total leakage from the RHR heat exchanger and incorrectly determined that no actions were required to reduce the leakage.

In another example, the team found that feedwater containment isolation check valves had repeatedly failed their local leak rate tests. This had been a problem since before 1994. A modification to the valves and improved maintenance techniques had been largely ineffective. Despite this history, the licensee had not categorized these valves as (a)(1) under the Maintenance Rule Program until 2002 (this was the subject of a noncited violation in NRC Inspection Report 50-298/02-08) and had only performed root cause evaluations twice (when both valves in a containment penetration failed). The team noted that licensee management believed that improved maintenance techniques would improve valve performance, but the cognizant engineers recognized that continual maintenance made it harder to restore the valves to a leak tight condition. The team concluded that the licensee organization was not aligned to resolve this issue and that correcting the problem would be significantly delayed as a result.

The team reviewed the licensee's implementation of their PM program and observed that there were 72 items on the PM deferral list, 22 of which were associated with safety-related equipment. The licensee monitored PM items that were overdue, but did not monitor items that had been deferred. However, the team found that there were no overdue items on the tracking list because the PM due date was canceled as soon as an item was deferred, and the licensee did not assign a new due date to deferred PMs. Since a new due date had not been established, some PMs had not been performed for an extended period of time. The team identified one example where a deferred PM item had not been performed since 1995, even though the PM had a periodicity of 36 months. The team also found examples where the licensee had not provided a justification for the deferral of PMs, had not assigned a new due date for the deferred PMs, and had not provided an engineering technical justification for the deferral of PMs for safety-related equipment. None of the 22 deferred PM items associated with safety-related systems had the required engineering technical justifications. The team reviewed these deferred PM items and determined that there were no adverse impacts on the safety-related systems. In response to the team's concerns, the licensee documented justification for deferral of the PM items and implemented corrective actions to ensure that the PM program would be properly implemented.

Action Plan Assessment

The team determined that Action Plan 5.3.1.1 did not address one of the performance issues described in the extent of condition review. In their extent of condition review, the licensee identified the existence of repetitive and long-standing equipment reliability issues. Numerous self-assessments and NRC inspection reports identified equipment reliability problems as one of the most significant problems facing the station because frequent and recurring equipment problems routinely challenged the organization, diverted resources, and disrupted planned work. The team noted that the licensee consistently identified this as a problem in major self-assessments conducted since 1994, including a focused self-assessment in this area conducted in 2002. The latter report, "CNS Unplanned LCO Action Statement Entry and Equipment Reliability Review," provided a comprehensive assessment of the significant systems and equipment problems, as well as the collective impact to the station. The team identified that the licensee's action plan to improve equipment reliability did not include any actions to correct known, long-standing problems with the reliability of specific equipment or systems. Rather, the action plan contained steps to improve programs which allowed the organization to either tolerate or ineffectively address equipment reliability.

During the inspection, the licensee stated that they did not include specific long-standing equipment reliability issues in the action plan because these issues were being addressed within their corrective action program. However, the team found that the licensee's corrective action program had been unsuccessful in implementing long-term corrective actions to correct these problems. In addition, the team determined that these specific issues needed to be included in the improvement plan in order to get the increased management attention, resources, and priority required to improve in this area.

The action plan's performance indicators were adequate to monitor equipment reliability problems.

c. Conclusions

The action plan did not have actions to correct specific long-standing equipment reliability issues at CNS. The extent of condition review accurately characterized the performance issues identified in previous assessments. The proposed performance indicators intended to trend the impact to the site from equipment reliability problems were fully developed and appeared to provide appropriate feedback to measure the effectiveness of improvements in this focus area.

4.3.2 Programs

a. Focus Area Purpose

Focus Area 5.3.2, "Programs," included the following action plans and WBS folder:

- Action Plan 5.3.2.1, "Programs"
- WBS Folder 3.4.4, "Program Maintenance"

Although the licensee did not include it in this focus area, the team assessed Action Plan 5.1.1.9, "Program Management," in this area.

Action Plan 5.1.1.9 addressed long-standing performance issues involving ineffective implementation of site programs resulting, in part, from a lack of standards and expectations for the performance of these programs. Action Plan 5.3.2.1 addressed long-standing performance issues involving: a lack of program ownership, a lack of organizational depth in program ownership and implementation, and a lack of quality and frequency of self-assessment activities associated with programs.

The purpose of Action Plan 5.1.1.9 was to: (1) identify site programs that were not included in the scope of Procedure 0-CNS-12, "CNS Program Administration"; (2) establish standards and expectations for these programs; (3) establish plans to utilize the corrective action program and self-assessments to improve performance of these programs; (4) and establish measures to monitor the performance of these programs.

The purpose of Action Plan 5.3.2.1, "Programs," was to: (1) ensure that the appropriate scope and categories of site programs were included in Procedure 0-CNS-12, "CNS Program Administration"; (2) complete existing program improvement project action plans, such as the Program Improvement Project and the EQ [Environmental Qualification] Improvement Project, to ensure that the site's technical programs consistently meet or exceed management's standards and expectations for program scope and definition, implementation, interfaces, and monitoring; (3) complete specific corrective and improvement actions identified during Performance Improvement

Program self-assessment conducted in 2001; and (4) complete the EQ Improvement Project to correct programmatic deficiencies identified in 2000.

b. TIP Action Plan Assessment

The team reviewed the licensee's completed Program Implementation Review Project, the Program Improvement Project plan, the EQ program interface assessment, program performance indicators, and action plan performance indicators. For each of the programs covered by the action plans, the team reviewed the licensee's procedural guidance for management expectations and assessment of program health, current program health reports, current program 6-year plans, ongoing program improvement projects, recent self-assessments, and program notebooks. The team also interviewed the program owners for the 16 major programs, focus area owners, and action plan owners.

The team determined that Action Plan 5.3.2.1 did not address one of the performance issues described in the extent of condition review. Causal Factor 2 identified that organizational depth in many programs had been lacking. The lack of backup program owners often resulted in a decline in the performance of that program when the primary program owner left the position. Interviews with the major program owners indicated that many programs continued to lack backup program owners or did not have sufficient staffing to allow both program maintenance and planned improvement efforts. The action plan did not include actions to address the lack of organizational depth and its impact on program implementation.

The team noted that the extent of problems associated with the implementation of many programs had not yet been evaluated and that the action plan consisted of steps to perform assessments to develop the extent of condition. The team performed limited reviews of each of the programs being addressed and did not identify any concerns that required immediate attention. Thus the licensee's plan to sequentially assess each program in order of priority seemed to be adequate to develop the extent of condition for this focus area.

The plan did not address how the results of the self-assessments would be utilized to improve the programs. The deliverable statement only required completion of the self-assessments and entering deficiencies into the corrective action program and did not require implementation of the corrective actions. In addition, the team noted that there were no plans to conduct external benchmarking to determine current industry standards and best practices related to these major site programs, prior to conducting the self-assessments. Many of the program owners had not been involved in industry groups related to their program and therefore may not have been familiar with the current best practices and standards of industry peers. The team also identified that the licensee did not plan to conduct a self-assessment of one of the 16 major site programs, the Probabilistic Risk Assessment Program. The licensee stated that this program was inadvertently omitted and would be included in the program assessments.

Neither Action Plans 5.1.1.9 nor 5.3.2.1 contained adequate performance indicators to monitor program health or measure changes in performance for individual programs. Action Plan 5.1.1.9 listed CNS Program Health Indicators as the performance monitoring measure, which were reports assessing the health of seven attributes of individual programs. These reports were qualitative in nature and required to be performed only once every 2 years. The team considered that this was not sufficient to trend performance. Action Plan 5.3.2.1 relied on the CNS Program Cumulative Health Indicator which is a summary rating of the CNS Program Health Indicators for the 16 programs within the scope of this action plan. The CNS Program Cumulative Health Indicator was not adequate to measure changes in the performance of individual programs since this indicator averaged scores for 7 attributes in each of the 16 programs.

c. Conclusions

Action Plan 5.3.2.1 did not address one of the performance issues described in the extent of condition review. Causal Factor 2 identified that organizational depth in many programs had been lacking, resulting in a decline in the performance of that program when the primary program owner left the position. While the extent of condition review accurately characterized the performance issues identified in previous assessments, the licensee had not conducted a complete extent of condition review for each of the major site programs. As part of Action Plan 5.3.2.1, the licensee planned to conduct self-assessments of major site programs to identify any additional performance issues. Neither of the action plans contained adequate performance indicators to monitor program health or measure changes in performance for individual programs.

4.3.3 Key Modifications, Projects, Configuration

a. Focus Area Purpose

Focus Area 5.3.3, “Key Modifications, Projects, Configuration,” included the following action plans and WBS folder:

- Action Plan 5.3.3.1, “Design Basis Information/License Basis Information Translation Project”
- Action Plan 5.3.3.2, “Offsite Power Reliability Improvement - Phase 1”
- Action Plan 5.3.3.3, “Unauthorized Modifications Follow-up Project”
- WBS Folder 3.4.1, “Key Modifications and Projects; Configuration”

The purpose of the action plans in this focus area was to incorporate projects into the TIP that the licensee had already begun.

Action Plan 5.3.3.1 incorporated actions from the CNS Strategy for Achieving Engineering Excellence, Revision 3, submitted to the NRC in 1999. The steps in Action

Plan 5.3.3.1 were intended to: (1) validate that the inputs and assumptions for the CNS safety analysis have been properly translated into plant procedures, programs, and processes; (2) develop tools to provide engineering personnel efficient access to the plant's design basis and supporting design information; and (3) improve the plant personnel's understanding of the design and licensing basis and the supporting design information. The purpose of this effort was to provide the licensee assurance that the plant configuration was consistent with the design basis.

The purpose of Action Plan 5.3.3.2 was to improve switchyard equipment performance, improve the availability of offsite power to the station, and create a tool to provide real-time grid condition analysis information to the station. This plan was developed in response to several events that had challenged the offsite power supply to the station.

The purpose of Action Plan 5.3.3.3 was to complete implementation of the project to disposition previously identified unauthorized modifications to the plant which were made prior to 1996, through maintenance work orders, and to confirm that previous corrective actions to prevent unauthorized modifications have been effective.

b. TIP Action Plan Assessment

Scope of the Review and Inspection

The team reviewed the Project Task Instruction and the Project Plan for the Design Basis Information/License Basis Information Translation Project. Team members also observed a demonstration of the software being developed as the tool to improve access to design and licensing basis information.

The team reviewed the events and root cause reports for recent events involving offsite power reliability, as well as the licensee's plans to address industry recommendations related to offsite power reliability.

To evaluate the problems with unauthorized modifications, the team reviewed Inspection Reports 50-298/96-04 and 50-298/98-22 and the licensee's responses to the associated Notices of Violation, SCRs 96-0363 and 98-1164, the Project Plan, and the Problem Resolution Matrix. The status of the project was reviewed with the project manager/action plan owner and focus area manager. Team members independently evaluated the items identified by the licensee as potential unauthorized modifications and the process used by the licensee to assess the potential impact on the safe operation of the plant.

The team independently evaluated the extent of condition and actions taken to improve performance in the control of plant modifications and configuration control. The licensee's engineering backlog was reviewed for content and trend. Recent changes to the configuration control procedures (3.4 series procedures) were reviewed. The team also reviewed a licensee self-assessment of the design modification process, "Design Modification Self-Assessment SA-02-012," and RCR 2001-0969. The following modification packages were reviewed:

- Motor Replacement in the Diesel Fuel Oil Transfer Pump (CED 6008866, Change 1)

- High Pressure Coolant Injection Check Valve Replacement (CED 2001-0020)

- Portable Diesel Generators for Emergency Operations Facility and the Technical Support Center (CED 6005622)

Extent of Condition

Because the action plans primarily incorporated existing projects into the TIP, the majority of the problem identification had been completed prior to the development of the TIP.

The team found that the licensee had not conducted a thorough review of the extent of condition of problems associated with offsite power reliability. While the actions in Action Plan 5.3.3.2 addressed both industry recommendations and corrective actions for CNS problems related to offsite power reliability, the licensee had not conducted a thorough review of the extent of condition of these problems. Licensee personnel indicated that the actions in Action Plan 5.3.3.2 represented the first phase of the effort, and they planned to further define the scope of problems and corrective actions in Phase 2.

In reviewing the problems associated with unauthorized plant modifications, the team noted that the NRC previously concluded that corrective actions taken in 1996 were adequate to prevent future unauthorized modifications. Therefore, the team reviewed the licensee's current effort to identify and address the existing unauthorized modifications and concluded that the action plan steps were adequate to address the issues. The team reviewed the issues already identified as potential unauthorized modifications and the process used by the licensee to assess any potential impact on operability of SSCs and identified no concerns.

Quality of Action Plans

The team determined that the action plans in this focus area failed to address two performance issues described in the extent of condition review. The TIP did not contain actions to address long-standing problems with the quality and adequacy of plant modification packages. Several self-assessments identified problems with the quality and completeness of modifications. In addition, the action plans did not address problems associated with inadequate rigor/quality of calculations, evaluations, and analyses. Although the licensee had recently made significant changes to address both of these issues, the effectiveness of these changes had not been determined.

The level of detail in these action plans was adequate, with one exception. The Project Plan for the Design/License Basis Translation Project stated that validation efforts were intended to provide reasonable assurance that design basis information was consistently reflected in the physical plant and the controlled documents used to support

plant operations. However, the plan did not include actions to verify that the plant configuration was consistent with the design basis information.

Action Plans 5.3.3.1 and 5.3.3.3 had inadequate performance indicators to monitor the effectiveness of the improvement actions. The performance indicators merely measured the adherence to the action plan implementation schedule. The performance indicators for Action Plan 5.3.3.2 adequately measured performance in this area of concern.

c. Conclusions

The action plans in this focus area failed to address two performance issues described in the extent of condition review. The plans did not contain actions to address long-standing problems with the quality and adequacy of plant modification packages or problems associated with inadequate rigor/quality of engineering calculations, evaluations, and analyses. Although the licensee had recently made significant changes to address both of these issues, the effectiveness of these changes had not been determined. Two of the three action plans had inadequate adequate performance indicators to monitor the effectiveness of the improvement actions.

4.4 Training Program

4.4.1 Training Program

a. Focus Area Description

Focus Area 5.4.1, “Training Program,” included the following action plans and WBS folder:

- Action Plan 5.4.1.1, “Management Ownership”
- Action Plan 5.4.1.2, “Evaluation and Qualification”
- Action Plan 5.4.1.3, “Organizational Effectiveness”
- Action Plan 5.4.1.4, “Training Program and Process Enhancements”
- WBS Folder 3.5.3, “Training/Accreditation”

The action plans included in Focus Area 5.4.1 addressed long-standing performance issues involving the inability to effectively maintain training programs at industry standards. Various causes contributed to this situation. Examples included: (1) a lack of line ownership of the requisite training programs; (2) failure of management to hold supervisors accountable for training; (3) poor quality of exams and on-the-job training/ on-the-job evaluation processes; (4) failure of instructors to maintain requisite level-of-knowledge and qualifications; and (5) excessively burdensome administrative processes which led to a lack of adherence to process requirements.

The purpose of the action plans in Focus Area 5.4.1 was to improve management ownership of training, improve evaluation and qualification of personnel, address

organizational effectiveness issues within the Training Department, and upgrade formal training programs to meet current industry standards.

b. TIP Action Plan Assessment

The team reviewed the action plans, the licensee's extent of condition reviews, corrective action program documents related to training issues, training procedures and lesson plans, and several closure packages supporting prior program improvement efforts. The team verified that the results of the extent of condition reviews were correctly translated into the various problem statements and causal factors for the four action plans.

The team conducted observations of several of the licensee's scheduled training sessions, including licensed operator requalification classroom training and operating crew simulator training. Additionally, the team conducted several interviews with key personnel involved with the development of the action plans, including each action plan's owner and the Focus Area Owner/Training Manager. Team members reviewed the licensee's completion documentation for recent upgrades to the Shift Supervisor Training Program and documentation related to their revised, position-specific Engineering and Support Personnel Training Program.

The licensee's extent of condition analysis was correctly translated into the various problem statements and causal factors for the training action plans. Additionally, the action plan steps addressed the issues and problems pertaining to training identified in the extent of condition review and related documents.

In reviewing the action plans, the team noted that the licensee had preliminarily estimated the resources required for plan implementation. This was the exception rather than the rule when compared with the other action plans in TIP Revision 1. However, the team also noted that without an integrated approach to resource loading which involved all workgroups and their combined tasks, such a preliminary estimate performed unilaterally by the Training Department would require refinement before being practicable.

Upon review of the performance indicators for the training action plans, the team found that the licensee had developed and implemented a full complement of indicators for the action plans. As was the case with estimating the resources required for implementation, having a fully developed complement of performance indicators was also the exception when compared with the other action plans in TIP Revision 1. With one exception, the team found the thresholds associated with the licensee's performance indicators to be appropriate.

The team identified that the licensee had established an indicator to track the number of instances in which unqualified individuals were utilized to perform work tasks. The thresholds associated with this indicator were set such that one instance per quarter of an unqualified person performing a work activity, or as many as four such instances per year, would indicate acceptable performance. This rate of unqualified personnel

performing work could continue indefinitely without the performance indicator triggering any corrective action. When the team brought this to the attention of the licensee, they entered the issue into their corrective action program and immediately revised the indicator's acceptability thresholds.

c. Conclusions

The licensee's extent of condition review was correctly translated into the various problem statements and causal factors for the training action plans. Additionally, the action plan addressed the issues and problems pertaining to training identified in the extent of condition review. Finally, the licensee's performance indicators were fully developed and functional for their intended purposes. With the one exception, the thresholds associated with those performance indicators were appropriate.

5 Management Meetings

On August 22, 2002, a public meeting was held to present the results of the inspection to Mr. D. Wilson and other members of the licensee's staff. The licensee acknowledged the inspection results. Although proprietary information was reviewed during the inspection, the information was returned to the licensee and was not included in this inspection report.