UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
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January 24, 2005

Randall K. Edington, Vice
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Nebraska Public Power District
P.O. Box 98
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SUBJECT: COOPER NUCLEAR STATION - CONFIRMATORY ACTION LETTER (CAL) INSPECTION REPORT 05000298/2004013

Dear Mr. Edington:

On December 28, 2004, the NRC completed an inspection at your Cooper Nuclear Station. The enclosed inspection report documents the inspection findings, which were discussed on December 28, 2004, with Mr. S. Minihan, General Manager, Plant Operations, and other members of your staff during a telephone exit meeting.

This inspection examined activities related to the NRC CAL, dated January 30, 2003, and the Nebraska Public Power District (NPPD) Strategic Improvement Plan, Revision 2. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel. The inspection included NRC observation of an NPPD self-assessment conducted at Cooper Nuclear Station in May 2004. The purpose of this self-assessment was to determine NPPD's effectiveness in meeting the commitments confirmed in the CAL. On September 2, 2004, NPPD informed the NRC of their completion of the commitments of the CAL and their readiness to have the CAL closed.

Based on the results of this inspection, the NRC has concluded that NPPD conducted a thorough and probing self-assessment. The team determined that the discrete actions in the CAL have been completed and that performance within the six areas specified in the CAL has improved. The NRC's decision regarding the status of the CAL will be communicated to NPPD by separate correspondence. Additionally, a public meeting is scheduled for January 25, 2005, to discuss the status of the CAL.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's

document system (ADAMS). ADAMS is accessible from the NRC web-site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Arthur T. Howell III, Director
Division of Reactor Projects

Docket: 50-298
License: DPR-46

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NRC Inspection Report
05000298/2004013

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket.:	50-298
License:	DAR-46
Report No.:	05000298/2004013
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	P.O. Box 98 Brownsville, Nebraska
Dates:	May 17-28, 2004 October 25-29, 2004, with additional in-office review through December 28, 2004
Team Leader:	K. Kennedy, Chief, Project Branch C, Division of Reactor Projects (DRP)
Inspectors:	S. Cochrum, Resident Inspector, Project Branch C, DRP T. Farnholtz, Senior Project Engineer, Project Branch A, DRP T. Jackson, Resident Inspector, Project Branch E, DRP J. Kramer, Senior Resident Inspector, Project Branch C, DRP
Approved By:	Arthur T. Howell III, Director Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000298/2004013; 05/17/2004 - 12/28/2004; Cooper Nuclear Station; special inspection to verify provisions of the NRC Confirmatory Action Letter and the licensee's Strategic Improvement Plan.

The inspection was conducted by two Region-based inspectors and three resident inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

This purpose of this inspection was to assess the effectiveness of actions taken by Nebraska Public Power District to improve plant performance at Cooper Nuclear Station. Nebraska Public Power District's commitments to complete these actions, which were included in the Cooper Nuclear Station Strategic Improvement Plan, were confirmed in an NRC Confirmatory Action Letter, dated January 30, 2003. The inspection focused on the areas specified in the Confirmatory Action Letter which include: (1) emergency preparedness; (2) human performance; (3) material condition and equipment reliability; (4) plant modifications and configuration control; (5) corrective action program; and (6) engineering programs. In addition, the inspection reviewed the results of NPPD's Confirmatory Action Letter self-assessment, NRC baseline inspection reports, licensee performance measures, and NRC and licensee performance indicators.

Based on the results of this inspection, the NRC has concluded that Nebraska Public Power District conducted a thorough and probing self-assessment. The NRC determined that the discrete actions in the Confirmatory Action Letter have been completed and that performance within the six areas specified in the Confirmatory Action Letter has improved. NRC's decisions regarding the status of the Confirmatory Action Letter will be communicated to Nebraska Public Power District in separate correspondence. No findings of significance were identified during these inspections.

EXECUTIVE SUMMARY

On December 28, 2004, the NRC completed a team inspection of Cooper Nuclear Station. The purpose of the inspection was to assess the effectiveness of Nebraska Public Power District's actions documented in a Confirmatory Action Letter dated January 30, 2003, to improve performance at Cooper Nuclear Station. The purpose of the Confirmatory Action Letter was to confirm the commitments made by Nebraska Public Power District regarding completion of those actions in the Strategic Improvement Plan developed to address regulatory performance issues at Cooper Nuclear Station. The actions confirmed in the Confirmatory Action Letter addressed long-standing performance issues in the areas of emergency preparedness, human performance, material condition and equipment reliability, plant modification and configuration control, corrective action program, and engineering programs.

The inspection included NRC observation and assessment of the licensee's self-assessment conducted on May 17-28, 2004. The purpose of the self-assessment was to confirm that Cooper Nuclear Station had completed the actions committed to in the Confirmatory Action Letter and to determine if performance had improved in the six areas addressed in the Confirmatory Action Letter. The assessment also determined the ability of Cooper Nuclear Station to sustain improved performance in the six areas addressed in the Confirmatory Action Letter. On August 18, 2004, a public meeting was held in the NRC Region IV office during which Nebraska Public Power District presented the results of their self-assessment to the NRC. Based on the results of their self-assessment, and additional actions taken, Nebraska Public Power District submitted a letter to the NRC on September 2, 2004, informing the NRC that the actions in the Confirmatory Action Letter had been completed, that these actions had been effective in addressing long-standing performance issues, and that these improvements were sustainable.

From October 25-29, 2004, the NRC conducted additional inspection at Cooper Nuclear Station to reconcile differences between the results of the Nebraska Public Power District self-assessment and the NRC assessment, and to inspect the actions taken by Nebraska Public Power District in response to the self-assessment results.

The assessment plan was broad and adequately addressed the six areas described in the Confirmatory Action Letter. The self-assessment team, made up primarily of subject matter experts from other nuclear power plants, conducted critical assessments of performance in their assigned areas. The assessment criteria used by the team were adequate to determine whether the licensee had adequately addressed long-standing performance issues at CNS.

Based on the results of this inspection, the NRC has concluded that Nebraska Public Power District conducted a thorough and probing self-assessment. The NRC determined that the discrete actions in the Confirmatory Action Letter have been completed and that performance within the six areas specified in the Confirmatory Action Letter has improved. NRC's decisions regarding the status of the Confirmatory Action Letter will be communicated to Nebraska Public Power District in separate correspondence. No findings of significance were identified during these inspections.

REPORT DETAILS

1. Background

On April 1, 2002, Cooper Nuclear Station (CNS) entered the Multiple/Repetitive Degraded Cornerstone Column of the Action Matrix (NRC Manual Chapter 0305, "Operating Reactor Assessment Program") as a result of continuing problems with the implementation of the emergency preparedness program. As described in NRC Manual Chapter 0305, upon entry into this column of the Action Matrix, and with oversight by the NRC, Nebraska Public Power District (NPPD) developed a plan to improve performance at CNS. On June 10, 2002, NPPD submitted Revision 1 of the Strategic Improvement Plan (TIP) to the NRC. Following completion of an NRC supplemental inspection using Inspection Procedure 95003, "Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," on August 22, 2002, NPPD revised its improvement plan and submitted Revision 2 of the plan to the NRC on November 25, 2002.

On January 30, 2003, the NRC issued a Confirmatory Action Letter (CAL) to NPPD (ML030310263). The purpose of the CAL was to confirm the commitments made by NPPD regarding completion of those actions in the improvement plan developed to address regulatory performance issues. Actions confirmed in the CAL addressed long-standing performance issues in the areas of emergency preparedness, human performance, material condition and equipment reliability, plant modification and configuration control, corrective action program (CAP), and engineering programs. The CAL included improvement plan actions in these six areas scheduled to be started or completed through March 31, 2004.

Since the CAL was issued on January 30, 2003, in addition to the routine baseline inspections, the NRC conducted six inspections to verify completion of these CAL actions by NPPD and the effectiveness of these actions in addressing the specific performance issues. The results of these inspections were documented in the following inspection reports:

- NRC Inspection Report 05000298/200302 (ML033560163)
- NRC Inspection Report 05000298/200308 (ML031320058)
- NRC Inspection Report 05000298/200309 (ML032270124)
- NRC Inspection Report 05000298/200311 (ML040560210)
- NRC Inspection Report 05000298/200406 (ML041760499)
- NRC Inspection Report 05000298/200407 (ML042220048)

On May 17-28, 2004, NPPD conducted a self-assessment to determine whether CNS was ready for release from the CAL. The self-assessment (SAT) was led by the Director of Oversight of Entergy Nuclear Northeast, and, with one exception, all team members were from nuclear power plants other than CNS. The objectives of the self-assessment included:

- Confirm that CNS has completed the CAL-related actions committed to in the TIP

- Determine the extent to which CNS addressed CAL-related problem statements, and whether performance has improved in the six CAL areas

- Determine CNS' ability to sustain improved performance and/or positive performance trends in each of the six CAL areas

During the conduct of the self-assessment, an NRC inspection team observed the activities of the SAT and conducted independent inspection to assess the depth, breadth, scope, and conclusions of the self-assessment and to independently assess NPPD's progress in completing the actions of the CAL. Based on the results of their self-assessment, and additional actions taken, NPPD submitted a letter to the NRC on September 2, 2004, informing the NRC that the actions in the CAL had been completed, that these actions had been effective in addressing long-standing performance issues, and that these improvements were sustainable.

From October 25-29, 2004, the NRC conducted additional inspection at CNS to reconcile differences between the results of the NPPD self-assessment and the NRC assessment, and to inspect the actions taken by NPPD in response to the self-assessment results.

During these inspections activities, the NRC inspection team:

- Interviewed plant personnel

- Reviewed licensee records and procedures

- Reviewed a sample of root cause evaluations and apparent cause evaluations

- Attended licensee meetings, including Condition Review Group meetings, Corrective Action Review Board meetings, daily SAT meetings

- Reviewed NRC integrated inspection reports and other baseline inspection reports

- Reviewed the results of licensee self-assessments and quality assurance audits and surveillances

- Reviewed licensee and NRC performance indicators

- Observed plant activities and human performance training

NRC Assessment Criteria

In assessing the effectiveness of NPPD's actions in addressing the long-standing performance issues at CNS, the NRC applied the following criteria:

- Completion of CAL Action Plan Steps

- Improved performance determined using inputs from the following sources:

  - Results of quarterly CAL inspections
  - Results of NRC baseline inspections
  - Results of NPPD CAL self-assessment
  - Results of NRC CAL assessment inspection
  - NRC performance indicators
  - NPPD performance indicators

- Progress in addressing original problem statements, causal factors, and objectives for TIP Action Plans covered by CAL

- Programs in place to sustain improved performance

NPPD CAL Self-Assessment

In each of the six areas addressed in the CAL, the SAT developed "Measures of Effectiveness" based on the objectives of the TIP Action Plans in each of the areas. The SAT then evaluated CNS performance against the measures of effectiveness to determine NPPD's progress in improving performance in the six CAL areas. Each measure of effectiveness was rated using the following system:

Fully Effective - The measures of effectiveness are all met and sustainability is demonstrated.

Largely Effective - The measures of effectiveness have fundamentally been met and sustainability is demonstrated. There may be minor areas that have not been met. There are no areas having significant performance deficiencies.

Marginally Effective - The measures of effectiveness have been only partially met. Areas remain in which performance has not yet improved to an acceptable or sustainable level.

Ineffective - The measures of effectiveness have not been met. Little or no performance improvement has been achieved.

An overall performance rating was then assigned to each CAL area.

The inspection found that NPPD's self-assessment was thorough and probing. The assessment plan was broad and adequately addressed the six areas described in the CAL. The team, made up primarily of subject matter experts from other nuclear power plants, conducted critical assessments of performance in their assigned areas. The assessment criteria used by the team were adequate to determine whether the licensee had adequately addressed long-standing performance issues at CNS.

2. CAL Item 1 - Emergency Preparedness

a. Scope

CAL Item 1 included one Action Plan from NPPD's TIP. This action plan and the associated problem statement and objectives are listed below:

Action Plan 5.12.2.1 - Emergency Preparedness

Problem Statement:

The CNS emergency preparedness program exhibited declining performance over an extended period of time. CNS management failed to take effective corrective action to arrest the declining performance before events caused CNS to enter the degraded area of the reactor oversight program action matrix.

Objectives:

- Effective management ownership and oversight of the emergency preparedness program
- Effective use of the CAP
- Programmatic methods to measure the performance of the emergency response organization and general health of the program
- Clear and effectively used procedures and processes to promote high performance and consistent response
- Training program which delivers effective and applicable instruction to the emergency response organization
- Reliable alerting mechanisms for plant personnel and general public

b. Assessment

(1) NPPD Self-Assessment Results

The licensee's SAT rated performance in the CAL area of Emergency Preparedness as fully effective. The SAT found that NPPD had completed the CAL actions in this area and that performance issues had been appropriately addressed. The SAT concluded that performance in this area had improved and CNS was performing at a sustained and high level of performance with sufficient structure, monitoring, oversight, and responsiveness in place to provide for continuation of current performance. The SAT concluded that this area of the CAL was ready for closure. The measures of effectiveness and their rating as determined by the SAT are listed below:

Effective management and oversight of the EP program	Fully Effective
Continued effective use of the CAP to document, evaluate, and resolve EP-related issues	Fully Effective
Consistent performance that meets or exceeds standards and expectations for EP program implementation	Fully Effective

(2) NRC Assessment

The NRC inspection team found that NPPD's TIP actions in the area of Emergency Preparedness were effective in improving performance in this area at CNS. In a letter dated July 2, 2004, the NRC informed NPPD that the three white inspection findings in the Emergency Preparedness Cornerstone were closed. Prior to issuance of the CAL, NPPD had completed their corrective actions to restore compliance with the regulations and improve performance in the Emergency Preparedness Cornerstone. Since the issuance of the CAL, CNS completed the CAL commitment to conduct a self-assessment of their emergency preparedness program in the areas of event classification, notification, emergency response facility staff augmentation, dose assessment, and protective action recommendations. NRC reviewed the results of the licensee's assessment and found them to be acceptable. NRC also inspected the licensee's emergency preparedness program during baseline inspections, including a graded exercise, and during the conduct of six quarterly inspections of NPPD's progress in completing actions in their improvement plan. On the basis of the results of the quarterly inspections of the improvement plan actions addressed in the CAL, baseline inspections, and performance indicators, NRC concluded that CNS had corrected the specific emergency preparedness performance deficiencies. Accordingly, NRC concluded that there was a sufficient basis for closing the White inspection findings identified at CNS in the Emergency Preparedness Cornerstone.

During this inspection, the NRC inspection team found that the NPPD's overall performance in the area of emergency preparedness continued to be acceptable. The SAT found that CNS provided effective oversight of the performance of the emergency

preparedness program, that corrective actions were being initiated at the appropriate levels and were effective in resolving performance issues, and that NRC and NPPD performance indicators demonstrated sustained improved performance. Additionally, no findings were identified during the recent NRC inspection of a biennial emergency plan exercise conducted in September 2004. Also, all TIP performance indicators used by NPPD to measure performance in this area met or exceeded established goals.

Indicator	**Performance**	**Trend**
Alert and Notification System Reliability (number of successful siren tests in previous 4 quarters divided by total number of siren tests in previous 4 quarters)	Green - Excellent Performance	Stable
Emergency Preparedness Emergency Response Organization (ERO) Staffing (tracks ERO staffing vacancies to assure adequate personnel to manage the responsibilities of the ERO)	Green - Excellent Performance	Stable
ERO Drill Participation (measures percentage of key ERO members who have participated recently in proficiency enhancing drills, exercises, training opportunities, or an actual event)	Green - Excellent Performance	Stable
ERO Performance (number of successful emergency opportunities divided by total opportunities in previous 12 months)	White - Meets Goal	Positive

c. Conclusions

NPPD completed the CAL actions in the area of Emergency Preparedness, and these actions were effective in addressing the specific performance issues listed in the TIP action plan, resulting in improved performance.

3. CAL Item 2 - Human Performance

a. Scope

CAL Item 2 included two Action Plans from NPPD's TIP. These action plans and the associated problem statements and objectives are listed below.

Action Plan 5.1.4.1 - Human Performance

Problem Statement:

The station has failed to recognize declining human performance and take effective corrective action.

Objectives:

- Organizational human performance that results in safe and reliable plant operation as indicated by a combination of the station human performance event free clock, OSHA Recordable Injury Rate, Personnel Error Rate, and Configuration Control Events
- Human Performance program structure that includes:
  - A communication strategy
  - Quality effectiveness measures
  - Training
  - Clearly defined expectations and reinforcement for behaviors at all levels of the organization
  - Defined process interactions with continuous improvement initiatives such as self-assessment, management observation, corrective action
  - Organizational structure providing sufficient oversight and sponsorship of human performance
  - Event investigation process

Action Plan 5.2.1.1 - Operational Department Excellence

Problem Statement:

CNS Operations Leadership has exhibited a tolerance for operational challenges as indicated by the number of unacceptable levels of deficient conditions (Maintenance

backlog, long-term (>3 months) clearance order and caution tags, Operator Work-Arounds, excessive numbers of temporary modifications and Control Room Deficiencies, etc.) and has not demonstrated high standards in conduct of operations.

Objectives:

Operations Department intolerant of operational challenges

- Reduced operational challenges and an improved response to emergent plant issues that challenge the on-line work schedule

- Operations Department consistently demonstrates high standards for conduct of operations

b. Assessment

(1) NPPD Self-Assessment Results

The SAT rated performance in the CAL area of Human Performance as largely effective. The SAT found that performance had improved in this area and that CNS had established sufficient structure, monitoring, oversight, and responsiveness to provide confidence that improved performance was sustainable. The SAT concluded that this area of the CAL was ready for closure. The measures of effectiveness and their rating as determined by the SAT are listed below:

Human Performance principles and expected behaviors are engrained in station culture	Marginally Effective
Human performance is on an improving trend and/or has attained performance goals	Largely Effective
Root cause evaluations consider human performance aspects of events	Fully Effective

The SAT identified one human performance area for improvement. The SAT found that, while the licensee had procedural guidance regarding the conduct of post-job critiques, post-job critiques were not always being conducted. The purpose for the post-job critique was to discuss the work after it was completed to identify lessons learned and changes to improve future job performance and reduce errors.

The SAT found that the staff at CNS had made significant improvements in understanding and recognizing human performance error prevention tools and expected behaviors. Improvement at the site was the result of improved human performance training and management expectations regarding the use of human performance error prevention tools. However, while workers typically were aware of the tools and techniques to reduce errors, the use of these tools was not fully engrained. Minor

examples were observed by the SAT in which personnel did not utilize all of the error prevention tools available to them. In addition, the SAT noted examples of errors in human performance at CNS since January 2004 that could have been prevented with the proper use of the error prevention tools.

The SAT noted an improving trend in the performance indicators used to measure performance in this area, although the performance indicators that measured human performance error rate and the number of days between events did not meet the CNS goals. However, the SAT determined that the measure of effectiveness, "Human performance is on an improving trend and/or has attained performance goals," was largely effective based on their observations regarding human performance at CNS and the human performance training program that CNS had implemented. The SAT concluded that the emphasis on improving human performance, including training and management expectations and reinforcement, would result in the desired level of performance.

The SAT also concluded that CNS included a review of the contributions of human performance errors when evaluating plant events. Station procedures required the review of human performance when conducting event root cause evaluations, and the team found that this was occurring at CNS.

(2) NRC Assessment

Following the May 2004 inspection, and after reviewing the results of NPPD's self-assessment, including the conclusions, the NRC determined that additional inspection was required to assess the effectiveness of NPPD's action in improving human performance at CNS. Consistent with the observations of the SAT, the NRC inspection team noted that the licensee performance indicator that measured human performance event-free days did not meet the licensee's goal and required action to improve performance. Additionally, although it was exhibiting an improving trend, the licensee performance indicator that measured the human performance error rate at CNS did not meet the licensee's goal and required action to improve performance. The inspection team also observed that human performance errors had caused or contributed to several plant events or degraded conditions at CNS since the beginning of 2004. These included an inadvertent partial isolation of containment (NRC Inspection Report 05000298/2004003) and the improper alignment of the emergency diesel fuel oil system resulting in both emergency diesel generators being inoperable (NRC Inspection Report 05000298/2004003). The inspection team also reviewed the results of the licensee's common cause analysis (Significant Condition Report (SCR) 2004-0270) issued on May 17, 2004. This common cause analysis was performed to review and compare the human performance contributors to significant plant events in 2003 and 2004. The results of this analysis were that previous corrective actions had not resulted in expected improvements in human performance.

During the October 2004 inspection, the team noted improvements in human performance at CNS. Although human errors were still occurring at CNS, the frequency

and consequence of the errors had decreased. To address the measure of effectiveness that was rated marginally effective by the SAT (Human Performance principles and expected behaviors are engrained in station culture), the licensee cited continued human performance training along with continued reinforcement and leadership modeling as the means for achieving full effectiveness. The inspectors noted that the licensee had taken actions to continue improvements in human performance at CNS. For example, a root cause analysis was completed in August 2004 (SCR 2004-0525), which evaluated and identified additional actions to further improve configuration control at CNS. The inspection team noted that CNS revised SCR 2004-0270 to better characterize the comparison of human performance contributors to plant events in 2003 and 2004. The root cause analysis found that, while human performance had improved from 2003 to 2004, latent conditions remained that, once addressed, would lead to further improvements in human performance and reduce the number and consequence of errors. These latent conditions include poor design, undetected manufacturing defects, maintenance procedures, poor procedures, inadequate training, and inadequate tools and equipment. Based on the results of the common cause analysis, CNS implemented additional corrective actions to improve human performance, including improved supervisory oversight, improved identification of latent conditions and their precursors, increased personnel awareness of the potential impacts of latent conditions on performance, and improved planning and scheduling of work.

In response to the area for improvement identified by the SAT, CNS revised Procedure 0-HP-PJ BRIEF to clarify that the conduct of post-job critiques was optional.

During the May 2004 inspection, the inspection team attended a human performance training session and found it to be effective in communicating error prevention techniques to plant personnel. The classroom training was followed by hands-on practical training in which the error prevention techniques discussed in the classroom were applied during the performance of tasks in several simulated work settings. Proper human error prevention techniques were reinforced by the instructors during this practical training.

The inspectors reviewed the September 2004 data for four licensee performance indicators associated with human performance:

Indicator	**Performance**	**Trend**
Human Performance Event Free Days	Yellow - Action Required	Improving Trend
Configuration Control Events	White - Meets Goal	Stable
Human Performance Error Rate	Green - Excellent Performance	Positive

OSHA Recordable Injury Rate	White - Meets Goal	Stable

The inspection team noted that the performance indicator for human performance error rate had improved from Yellow (action required) to Green (excellent performance), and that the indicator for human performance event-free days, although still Yellow, was on an improving trend.

c. Conclusion

NPPD completed the CAL actions in the area of human performance. The inspection team concluded that the licensee's actions had resulted in improved performance in this area. While human performance errors continued to occur at the site, the frequency and consequences of these errors was decreasing. Additionally, CNS continued to critically assess human performance and identify actions to further improve performance.

4. CAL Item 3 - Material Condition and Equipment Reliability

a. Scope

CAL Item 3 included 12 Action Plans from NPPD's TIP. These action plans and the associated problem statements and objectives are listed below:

Action Plan 5.3.1.1 - Equipment Reliability Improvement Plan

Problem Statement:

Lack of proactive processes to resolve equipment performance problems have resulted in an inability to consistently achieve long-term reliable system and equipment operation.

Objectives:

- An integrated equipment reliability process which results in a proactive approach to anticipate and prevent system and equipment problems.
- Reliable equipment operation that results in plant operation meeting performance goals.

Action Plans 5.3.1.2.a-k

These action plans were developed to improve the reliability of plant systems. The systems, with their associated action plan problem statement, are listed below:

a. Service Water System. The system was categorized as Maintenance Rule (a)(1) and selected system components have exhibited chronically unacceptable performance and unexpected failures.

b. Feedwater Check Valves. These valves are categorized as Maintenance Rule (a)(1) and have chronically demonstrated unacceptable performance in local leak rate tests.

c. Off-Site Power/Switchyard. Automatic scrams, unplanned power changes, and unplanned Technical Specification limiting conditions for operation (LCO) related to the emergency offsite power sources have occurred at CNS as a result of switchyard equipment problems.

d. Feedwater Controls. Reactor vessel level control postscram is complicated by age-related failures and poor operator interface design. The system was categorized as Maintenance Rule (a)(1) due to numerous problems since 1993.

e. Water Sulfates. Reactor water sulfate concentration has consistently been greater than 2 parts-per-billion.

f. Heating, Ventilation, and Air Conditioning (HVAC). HVAC had a history of repeated equipment failures due to the age of the equipment, limited design margin, and increased thermal demands.

g. Primary Containment Vacuum Breakers. Since 1997, two valves have failed to close. One valve failure resulted in an unplanned plant shutdown and the other occurred during an outage. In June 2002, one valve failed to open during routine surveillance testing.

h. Control Room Recorders. Control room recorders were obsolete and spare parts for the current equipment were no longer manufactured. Of the approximately 50 control room deficiencies per year, 28 percent were a result of recorder failures.

i. Service Air System. The service air system was categorized as Maintenance Rule (a)(1), the material condition of the discharge moisture drainage system was degraded, the reliability of the service air compressors had been declining, and CNS response to Generic Letter 88-14 had been inadequate.

j. Kaman Radiation Monitors. Kaman radiation monitor reliability had been unsatisfactory and the availability of spare parts had been insufficient, resulting in numerous unplanned entries into LCOs.

k. Optimum Water Chemistry. The optimum water chemistry system has been in startup testing status since the end of 2000 due to poor design which, in turn, is preventing hydrogen injection into the feedwater system.

The general objective of each of these action plans was to improve the overall reliability of the systems.

b. Assessment

(1) NPPD Self-Assessment Results

The SAT rated performance in the CAL area of Material Condition and Equipment Reliability as marginally effective; however, the SAT found that equipment reliability was on an improving trend. Improvements were noted in the reliability of the service water system, the plant chemistry performance indicator, the corrective maintenance backlogs, timeliness of preventive maintenance tasks, and a reduction in the number of critical component failures. However, the SAT concluded that performance shortfalls continued to exist as evidenced by risk significant functional failures of equipment, plant system health performance that was flat and below the goal, a long-term adverse trend in plant leaks, and unplanned LCO entries that had not improved to an acceptable level. The SAT noted that TIP actions to establish the equipment reliability infrastructure, and thus sustain improvements in this area, were in progress and that these actions were on schedule.

The measures of effectiveness and their rating as determined by the SAT are listed below:

Establishment of an integrated equipment reliability process established and functioning in a proactive manner to anticipate and prevent system and equipment problems	Marginally Effective
Reliable equipment operation evidenced by plant operation that meets performance goals	Marginally Effective

The SAT identified the following three areas for improvement that they determined needed to be addressed by NPPD before this CAL area could be considered for closure:

- Revise the preventive maintenance optimization (PMO) plan to evaluate sets of critical components classified PC1 in a phased manner. Revise the PMO schedule for this phased approach, retaining the current project completion date.

- Review the current equipment monitoring plans against the PC1 list and ensure all PC1 components are appropriately monitored.

- Review the critical component list to determine what predictive maintenance is required for those components that have not had the appropriate PMs performed on them and add these items to the predictive maintenance list.

(2) NRC Assessment Results

The NRC team observed the licensee's self-assessment, reviewed the results of the self-assessment, and agreed with the SAT that additional actions were required in order to close this area of the CAL.

With respect to the first measure of effectiveness, "Establishment of an integrated equipment reliability process established and functioning in a proactive manner to anticipate and prevent system and equipment problems," and the three areas for improvement, the inspectors noted that the licensee was on schedule to complete the TIP actions to address this area. TIP Action Plan 5.3.1.1, step 4b, included actions to perform a PMO using the critical components and methodology similar to industry standards. These actions were scheduled to be completed in the second quarter of 2005. Following the self-assessment, CNS implemented actions to address the findings of the self-assessment. CNS reviewed critical components (PC1) that did not have scheduled preventive maintenance and determined what actions needed to be taken in Refueling Outage RE22. A majority of the components were associated with the nonsafety-related feedwater heater system, including level control valves, level instruments, and air support lines. CNS planned to either replace or rebuild those PC1 components that did not have any preventive maintenance in Refueling Outage RE22. CNS also reviewed the PC1 list and began trending those critical components that may require monitoring. The predictive maintenance department at CNS reviewed the PC1 list and found 265 components that could benefit from predictive maintenance tasks. Most of the components (249) were eligible for thermography and the rest for vibration and motor current evaluation. These components were added to the predictive maintenance scope of work.

With respect to the second measure of effectiveness, "Reliable equipment operation evidenced by plant operation that meets performance goals," the inspectors noted during the May 2004 inspection that CNS had experienced a number of problems that degraded the reliability of plant equipment and resulted in performance indicators not meeting goals, including forced loss rate (Red), risk significant functional failures (Yellow), system health (Yellow), and unplanned entries into LCOs (Red). During the October 2004 inspection, the inspectors observed that the plant had experienced fewer equipment reliability problems, resulting in an improving trend in the forced loss rate and risk significant functional failures performance indicators, and a Green, or excellent, performance for the unplanned entries into LCOs performance indicator.

Overall, the team found CNS response to the SAT's areas for improvement to be satisfactory.

TIP Action Plans 5.3.1.2 a-k

The team reviewed the equipment reliability performance of specific systems that were identified in TIP Action Plans 5.3.1.2.a-k. The team found that the licensee had completed actions as scheduled and that additional, longer-term TIP actions were scheduled to further improve equipment reliability.

The team found that the licensee's actions associated with the service water system resulted in a reduced number of corrective maintenance work orders, corrective action items, and unplanned entries into LCOs.

The team found that CNS planned to replace all four feedwater system check valves in Refueling Outage RE22, which would be ahead of the schedule outlined in the TIP Action 5.3.1.2b.

The team reviewed the actions and performance of the offsite power sources and switchyard. The team observed that the majority of switchyard-related TIP actions, and all of the CAL actions, were completed.

The team reviewed the performance of the reactor feed pump turbine (RFPT) speed controls, turbine supervisory instrumentation, and startup vessel level controls. CNS plans to replace the reactor vessel level controls, including Level 8 trip components. CNS had replaced their RFPT speed control system in the previous refueling outage. The team observed several challenges to plant operations due to the RFPT control system. In May 2004, an unplanned power change greater than 20 percent occurred when intermittent contacts in a limit switch caused the RFPT B control system to receive a false trip signal and caused control of the pump to switch from automatic to manual at minimum demand. CNS discovered that preventive maintenance had not been performed on this limit switch, even though a similar problem had been experienced in November 2002.

The team observed an additional four events caused by the newly installed RFPT control system. The following list describes the events associated with the RFPT speed control system.

November 7, 2003	The RFPT A control system transferred from automatic to manual demand with no alarms in the control room.
November 28, 2003	The RFPT B control system switched from automatic to manual direct valve positioning mode, causing a scram due to reactor water level rapidly dropping.

December 3, 2003	At low power, the RFPT A control system trouble alarm was received and the startup valve master controller transferred from auto to manual. CNS determined this was insufficient grounding of the controller casing.
May 13, 2004	The RFPT A controller went from auto to manual demand mode, causing an unplanned power change greater than 20 percent.

CNS was unable to determine the cause of the events since the information needed to diagnose potential problems with the software code and digital network was not retrievable after the events. The inspectors found that the licensee's corrective action plan was focused on improving diagnostic capabilities and continuing the root cause evaluation. CNS postulated that the root cause of the problem could be noise entering the RFPT speed control loop, a software code error in the control/communication logic, or hardware/communication network effects. CNS installed digital network monitoring equipment on both RFPT A and B control systems to aid in determining the root cause. CNS also installed additional monitoring equipment to monitor for electrical noise and implemented code changes to support the root cause investigation. Interim corrective actions included establishing an alarm to help operators respond in a timely manner to address the fail-over to manual direct valve positioning mode. Also, CNS is evaluating the replacement of the RFPT control system.

The team reviewed the licensee's actions to reduce reactor water sulfates. The team observed that approximately 60 percent of the TIP actions were complete and water sulfates were currently at an acceptable level.

The team reviewed the licensee's actions and performance of the reactor building differential pressure control system. The team observed that on April 22, 2004, there was a spike of up to -0.24" wg, which placed the plant in an unplanned LCO. The cause of the spike was attributed to dirt in the vortex damper gear train and loose/bent vane guide rods. CNS increased the frequency of preventive maintenance on the vortex dampers from every 18 months to 1 year. The team observed that the heating and ventilation system was currently categorized as Maintenance Rule (a)(1) due to the failures of the reactor building vortex dampers and the steam tunnel fan cooler units. Aside from the single issue involving the vortex dampers, the team did not observe any other issues with the reactor building differential pressure control system. The vortex damper issues are planned to be resolved by second quarter 2005. Other activities under TIP Action 5.3.1.2.f, such as those related to drywell temperature, control room supply fan discharge dampers, and the technical support center HVAC, were not scheduled to be completed until the years 2006 - 2007.

The team reviewed the licensee's actions and performance associated with primary containment vacuum breakers. CNS completed the actions for TIP Action Plan

5.3.1.2.g. CNS plans to perform more testing in the coming outage and produce a final assessment. The team did not observe any issues associated with primary containment vacuum breakers.

The team reviewed the licensee's actions and performance associated with control room recorders. CNS completed actions for the design portion of TIP Action Plan 5.3.1.2.h and had initiated actions to implement replacement of the recorders. The team performed a walkdown of the recorders and did not identify any issues associated with the newly installed recorders.

The team reviewed the licensee's actions and performance associated with air systems. The team observed that the actions associated with service air compressors were complete. The remaining actions included service air compressor replacement and final effectiveness reviews.

The team observed that, on July 19, 2004, the service air Compressor B motor failed. Upon disassembly, maintenance personnel found burnt insulation and windings fused together due to shorts. The end windings showed oil and dirt. Plant documents showed that the motor was probably the original motor. In 1996, the service air Compressor C motor windings failed, and in 1998, the service air Compressor A motor windings failed. CNS had determined that, with respect to maintenance, these motors would be operated in a run-to-failure mode, since two service air compressors would be operational if one failed.

The team reviewed the actions and performance associated with the Kaman radiation monitors. CNS completed actions for refurbishing the Kaman radiation monitors, and established metrics, monitoring, and assessments of these monitors. CNS established a contingency action plan to replace the monitors if the quarterly monitoring shows the previous actions were not effective. The team walked down two of the Kaman radiation monitors and interviewed maintenance and engineering personnel. The team concluded that, while Kaman radiation monitors had exhibited low equipment reliability in the past, recent actions by CNS would promote a higher reliability. Specifically, CNS plans to replace the multipurpose facility Kaman radiation with a different type of monitor that has a higher reliability. Preventive maintenance of the Kaman radiation monitors included replacement of low voltage power supplies, pumps, and air conditioning units on 5-, 3-, and 8-year frequencies, respectively. After reviewing the past failures of the Kaman radiation monitors, the team concluded that the current preventive maintenance program would be effective in improving the reliability of the Kaman radiation monitors. The inspectors found that the Kaman monitors were meeting their performance goal of no more than seven unplanned LCO entries per calender quarter and not exceeding 8 percent unplanned unavailability per calender quarter. In the third quarter 2004, there were two unplanned LCO entries and 0.86 percent unavailability.

The team reviewed the actions and performance of the optimum water chemistry system. The team found that the hydrogen generation/injection system was in service

and that the system availability was 93 percent. CNS was operating the system under a special test procedure, which required the system engineer to be present when starting up the system. Following system modifications in Refueling Outage RE22, the system will be turned over to operations.

The inspectors reviewed the September 2004 data for performance indicators associated with material condition and equipment reliability.

Indicator	**Performance**	**Trend**
Chemistry Performance Index	Red - Unsatisfactory Performance	Positive
Components in Accelerated Testing	Green - Excellent Performance	Stable
Control Room Deficiencies	Green - Excellent Performance	Stable
Forced Loss Rate	Red - Unsatisfactory Performance	Positive
Long-Term Caution Orders	Green - Excellent Performance	Positive
Long-Term Clearance Orders	White - Meets Goal	Stable
Online Corrective Maintenance Backlog	White - Meets Goal	Negative
Online Plant Leaks	Green - Excellent Performance	Stable
Overdue Preventive Maintenance	Green - Excellent Performance	Stable
Risk-Significant Function Failures	Yellow - Action Required	Positive
Safety System Functional Failure	White - Meets Goal	Negative

Safety System Unavailability - Emergency AC Power	Green - Excellent Performance	Stable
Safety System Unavailability - High Pressure Coolant Injection	White - Meets Goal	Stable
Safety System Unavailability - Reactor Core Isolation Cooling	White - Meets Goal	Stable
Safety System Unavailability - Residual Heat Removal	White - Meets Goal	Stable
System Health	Yellow - Action Required	Stable
Temporary Modifications	Green - Excellent Performance	Stable
Unplanned LCO Entries	Green - Excellent Performance	Positive

The “Chemistry Performance Index” performance indicator demonstrated unsatisfactory performance, but an improving trend. The performance indicator considered reactor water chlorides, sulfates, and feedwater iron. The team observed the raw data for this performance indicator and learned that river water in-leakage through the main condenser adversely affected the trend from the end of 2003 to the beginning of 2004. CNS successfully identified the in-leakage and corrected it. The performance indicator trend demonstrated some improvement, but since it is based on an 18-month rolling average, it would take several more months of good chemistry operation before the indicator improved to the point where it met the goal.

The “Forced Loss Rate” performance indicator demonstrated unsatisfactory performance but an improving trend. The performance indicator considered planned and unplanned energy loss and outage extensions. The performance indicator was mainly driven by steam tunnel fan cooler units and feedwater heater control issues. Steam tunnel fan cooler units are located in the steam tunnels, and maintenance cannot be performed on-line. CNS had implemented an accelerated replacement program for the belts to improve their reliability. With respect to long-term corrective actions, CNS is considering moving the fan cooler units out of the steam tunnel and using a direct drive instead of belts. This would allow on-line maintenance and low dose and would remove the weakness of the belts. The final solution is scheduled for RE23 (2006).

The “Forced Loss Rate” performance indicator was also impacted by feedwater heater control issues. The feedwater heater control issues were driven by the lack of maintenance performed on level control valves, transmitters, instrument air lines, and

other associated equipment. A majority of the equipment is scheduled to be replaced in Refueling Outage RE22 (starting in January 2005). When the team was onsite in October 2004, CNS was in a forced outage due to low pressure turbine rotor blade failures. CNS was in the process of repairing the rotors so that reliable operation could continue until Refueling Outage RE22 commences. During that outage, the low pressure turbine rotors are scheduled to be replaced with new rotors. However, the forced outage will negatively impact the "Forced Loss Rate" performance indicator.

The "Risk-Significant Functional Failures" performance indicator demonstrated performance that required action, but an improving trend. The team observed that there was only one risk-significant motor failure between April and September 2004, which was the service air Compressor B motor failure. The team learned that CNS treated the motor as a run-to-failure piece of equipment since they were going to replace the compressors by fall 2007.

The "Safety System Functional Failure" performance indicator demonstrated performance that met CNS expectations but had a trend that was slightly negative. In May 2004, the performance indicator was White, with two safety system functional failures. In September 2004, the performance indicator was White with three safety system functional failures. The team learned that CNS had to revise the performance indicator data because they had submitted a change to two licensee event reports submitted in 2003 regarding high pressure coolant injection pump pull-to-lock situations. This year, there was a third situation where the high pressure coolant injection pump was in a pull-to-lock situation that was counted as a safety system functional failure. A fourth safety system functional failure that impacted the performance indicator was diesel generator fuel oil strainer fouling. The team determined that the diesel generator fuel oil strainer fouling was the only safety system functional failure that reflected equipment reliability, while the other three functional failures were human performance issues.

The "System Health" performance indicator demonstrated performance that required action with a stable trend. The team observed that several systems at CNS had unsatisfactory performance. The HVAC systems negatively contributed to the performance indicator because of failures of reactor building vortex dampers and steam tunnel fan cooler units. The vortex dampers are in the monitoring period and expected to return to Maintenance Rule (a)(2) status in May 2005. The reactor feedwater pump turbine speed control system negatively contributed to the performance indicator due to the scram and downpowers caused by that system. The turbine generator system negatively contributed to the performance indicator due to the turbine trip block failing, causing a downpower. Additionally, turbine blade failures had also negatively contributed to this system's performance. Feedwater heaters negatively contributed to the performance indicator due to an unplanned power change associated with the poor material condition of feedwater heater level controls. Reactor feedwater negatively contributed to this performance indicator when a feedwater pump tripped as a result of repeat functional failures of a copper air line.

Overall, the team observed that the performance indicators demonstrated an improved performance for equipment reliability at CNS. The system health and forced loss rate performance indicators were negatively impacted by the equipment reliability of several systems, including: steam tunnel fan cooler units, RFPT controls, main turbine, and feedwater heaters. The team recognized that these issues arose after the TIP was developed. The team also acknowledged that the licensee has actions planned for Refueling Outage RE22 to address the issues with the main turbine and feedwater heater systems. The team observed that, although CNS has taken adequate short-term corrective actions, the plant will continue to be challenged in the future by steam tunnel fan cooler unit and reactor feedwater pump turbine control issues.

c. Conclusion

NPPD completed the CAL actions in the area of material condition and equipment reliability. NPPD's CAL actions, and the additional actions taken in response to the licensee's self-assessment, were effective in improving performance in the area of equipment reliability. Although a number of long-term actions have not yet been completed, the actions the licensee has taken to this point have resulted in an overall improvement in the reliability of plant equipment.

5. CAL Item 4 - Plant Modifications and Configuration Control

a. Scope

CAL Item 4 included four Action Plans from NPPD's TIP. These action plans and the associated problem statements and objectives are listed below:

Action Plan 5.2.1.2 - Operability Determinations

Problem Statement:

Resolution of degraded and nonconforming conditions requires improvement in the areas of recognition of degraded and nonconforming systems, structures, and components (SSCs), completeness of the evaluation of technical bases for impact on operability, and timely completion of corrective actions.

Objectives:

- Degraded or nonconforming conditions are recognized and evaluated in a timely manner for impact on operability of systems, structures, and components (SSCs).

- SSC's safety functions described in the Licensing Basis are adequately addressed in Operability Determinations.

- Degraded or nonconforming conditions are adequately resolved in a timely manner commensurate with the safety significance of the issue.

Action Plan 5.3.3.1 - Design Basis Information/Licensing Basis Information (DBI/LBI) Translation Project

Problem Statement:

CNS has produced lower quality documents such as operability determinations and configuration changes when these documents have had a higher reliance on locating and understanding the assumptions used in the CNS safety analysis or required translation of these assumptions into operating procedures.

Objectives:

- Inputs and assumptions for the CNS safety analysis properly translated into the appropriate policies, procedures, and programs

- A tool for CNS engineering/operations use that enables better and quicker access to design basis and supporting design information

- An improved site-wide understanding of the CNS design, supporting design information, and licensing basis

- Improved understanding of the design basis, which enables the site to fully utilize the design basis criteria when performing operability determinations or when modifying the plant

Action Plan 5.3.3.3 - Unauthorized Modifications Followup Project

Problem Statement:

Implementation of the Unauthorized Modifications Followup Project is not yet complete.

Objectives:

The Unauthorized Modifications Followup Project is complete and open items from NRC Inspection Report 05000298/1998022 are resolved.

Action Plan 5.3.3.4 - Design Modification Process

Problem Statement:

In several cases, design modifications have not been delivered and installed in a timely manner to support the operational needs of the station. Also, additional cases have been cited with long-standing problems with the quality/adequacy of modification

packages, problems with inadequate rigor/quality of calculations and analyses, and problems with addressing component obsolescence issues in a timely manner.

Objectives:

- Modifications prepared as scheduled and meeting quality standards
- Clear milestones within the modification process for activities such as document development, training updates, configuration documents updates, etc.
- Clear roles and responsibilities for Engineering (i.e., Field Engineering) during modification implementation
- Modification process procedure(s) to address component design life and/or availability/longevity of spare parts and one-for-one replacements
- Modification process aligned with industry peer processes that are considered successful
- DBI/LBI effectively integrated in modification process

b. Assessment

(1) NPPD Self-Assessment Results

The SAT rated performance in the CAL area of Plant Modifications and Configuration Control as largely effective. The SAT found that all CAL actions had been completed and that these actions had resulted in improved performance. Furthermore, this improved performance was sustainable with sufficient structure, monitoring, oversight, and responsiveness in place. The SAT concluded that this area of the CAL was ready for closure. The measures of effectiveness and their rating as determined by the SAT are listed below:

Inputs and assumptions for the CNS safety analysis are accurately translated into related policies, procedures, and programs.	Largely Effective
CNS Engineering/Operations personnel have better and quicker access to design basis and supporting design information.	Largely Effective
Improved site-wide understanding of the CNS design, supporting design information, and licensing basis.	Fully Effective

The "Unauthorized Modifications (UMOD) Follow-Up Project" plan is complete and open items from NRC IR 05000298/1998022 are resolved. Configuration Management standards and rigorous controls are implemented that prevent installation of UMODs in the future.	Fully Effective
Design modifications are delivered and installed in a timely manner to support operational needs of the station.	Largely Effective
Modification packages, calculations, and analyses are rigorous and of high quality.	Marginally Effective

(2) NRC Assessment Results

Operability Determinations

The inspectors found that the TIP actions resulted in improved performance in the area of operability determinations. The performance indicator for Operability Evaluation, which was part of the "Non-Technical Program Health" performance indicator, was Green (excellent performance) for both May and September 2004. The inspectors also noted that CNS had two levels of addressing operability determinations. If the degraded/nonconforming condition was not complex and did not require significant engineering support, then operability was addressed in the Notification written to enter the condition into the CAP. If the condition was complex, then a formal team was convened to develop a rigorous operability determination package. The inspectors reviewed the same nine operability determination samples that the SAT reviewed. No significant issues were identified.

In April 2004, CNS made significant changes to their operability determination process and procedure. Since these changes were made, the inspectors noted only one issue associated with the adequacy of operability determinations. The example, which was documented in NRC Inspection Report 05000298/2004003, involved two valves in the diesel fuel oil system that were difficult to operate due to the excessive amount of torque required. CNS did not adequately consider all emergency operating aspects of the valves and tagged the valves opened. During certain emergency operating conditions, the valves would need to be closed to meet the single-failure criterion. The team noted that NRC inspectors had reviewed a total of eight operability determinations since April 2004.

DBI/LBI

The inspectors found that the TIP actions resulted in improved performance in the area of DBI/LBI. CNS developed a database that contained DBI/LBI for various systems and design basis accidents. Using the database, engineers, operators, and other plant personnel could quickly locate DBI/LBI that was pertinent to their issue. The team observed in May 2004 that the "Design Basis" input to the "Non-Technical Program

Health" performance indicator was Yellow (action required) because 18 persons still needed training on the database search engine. Also, the database owner had assigned it a Yellow rating in May 2004 because of the newness of the tool. In October 2004, the inspectors noted that the required training was conducted and the performance indicator was White (meets goal).

The team, along with the SAT, tested the capabilities of the database by searching for design basis information, such as net positive suction head for safety-related pumps. The team found the database easy to search and capable of providing needed information. At the time of the test, the database had been populated with an adequate level of DBI/LBI. The team observed that the database could be populated with more detail DBI/LBI as time permits, and therefore, expand the usefulness of the tool.

Unauthorized Modifications Followup Project Completion

The team found that the licensee completed the Unauthorized Modifications Followup Project. There were 570 maintenance work orders identified in the Unauthorized Modifications Project that needed engineering evaluations. All of the work orders reviewed were determined to be acceptable. CNS conducted a self-assessment of the project completion and documented the results in Resolve Condition Report 2004-0226. The self-assessment identified minor issues with four maintenance work orders that were all written prior to 1996.

Design Modifications

In October 2004, the team observed the following with respect to CNS performance indicators, including the raw data that supported the indicators.

Indicator	**Performance**	**Trend**
Engineering Inventory	White - Meets Goal	Improving
Modification Closeout Backlog	Green - Excellent Performance	Stable
Pre-Outage Milestone Schedule Adherence	Green - Excellent Performance	Stable

The performance indicators indicated sustainable improvement in the design modification process area.

The inspectors and SAT found that inputs and assumptions for the CNS safety analysis were accurately translated into related policies, procedures, and programs. Also, the team concluded that design modifications were delivered and installed in a timely manner to support the operational needs of the station. The team observed that engineering management was aware of the site's Top 10 issues list and other initiatives to improve plant performance. However, it was noted that engineering workload was high, as evidenced by the number maintenance work orders on engineering hold,

maintenance rework, and the CNS 12-week work process performance indicators. The team noted that the design engineering organization had a large workload due to the modifications associated with improving equipment reliability. Once equipment reliability improvement plans have been accomplished, the design engineering workload should be reduced. Lastly, the team reviewed modification packages, calculations, and analyses and found them to be rigorous and of high quality.

The SAT rated the measure of effectiveness associated with the rigor and quality of modifications packages, calculations, and analyses as marginally effective. The SAT identified a number of minor errors in design modification packages. The majority of these errors were editorial and not technical in nature. In October 2004, the inspectors reviewed the licensee's actions to address the results of the SAT assessment. The inspectors found that the licensee had implemented corrective actions to enhance training for engineering personnel to improve attention to detail.

c. Conclusion

NPPD completed the CAL actions in the area of plant modifications and configuration control. NPPD's CAL actions were effective in improving performance in this area. Improved performance was noted in the quality of operability determinations, the licensee processes for conducting operability determinations, and the availability of DBI/LBI for use by plant personnel. The licensee completed the Unauthorized Modifications Follow-Up Project, and improved the design modification process.

6. CAL Item 5 - Corrective Action Program

a. Scope

CAL Item 5 included 3 Action Plans from NPPD's TIP. These action plans and the associated problem statements and objectives are listed below:

Action Plan 5.2.7.1 - Improve Use of CAP to Effectively Resolve Station Problems

Problem Statement:

As an organization, CNS is not using the CAP effectively to understand problems and change behaviors for continuous improvement.

Objectives:

- Improve ability to effectively communicate, utilize, and reinforce CAP standards and expectations

- Improved ownership and oversight by site personnel and line management

- Use of the CAP as the primary means to fix issues and to effectively improve station performance

Action Plan 5.2.7.2 - Root Cause Investigation and Corrective Action Effectiveness

Problem Statement:

CNS has had a history of recurring problems that have not been eliminated or prevented by the root cause investigations and subsequent corrective actions.

Objectives:

Produce root cause analyses that consistently result in:

- Correction of identified problems
- Prevention of similar consequences
- Organizational learning
- Continuous improvement of root cause products

Action Plan 5.2.7.3 - Improve Utilization of Operating Experience Report

Problem Statement:

Long-standing problems exist with applying Operating Experience, such as reporting of events to the industry and using operating experience in daily activities. Additionally, Significant Operating Experience Report recommendations are not implemented and tracked consistently.

Objectives:

Improve the utilization of Operating Experience in daily activities such that:

- The managers look for the use of Operating Experience during Management Observations.

- Appropriate site personnel are familiar with finding Operating Experience and effectively apply Operating Experience.

- CNS quickly communicates CNS events and issues to the industry.

- Significant Operating Experience Report recommendations files are easily auditable.

- Effectiveness reviews are performed and Operating Experience Documents Corrective/Preventive Actions formally issued.

b. Assessment

(1) NPPD Self-Assessment Results

The SAT rated performance in the CAL area of the CAP as largely effective. The SAT found that CAL actions in this area were complete and that performance had improved. The SAT concluded that further improvement was needed in the elements of problem identification through probing self-assessment, rigorous cause evaluations for critical component failures, and implementation of interim actions where preventive actions cannot be taken promptly, and trending. The SAT concluded that sufficient structure, monitoring, oversight, and responsiveness was in place to provide for continued improvements in performance in this area. The SAT concluded that this area of the CAL was ready for closure. The measures of effectiveness and their rating as determined by the SAT are listed below:

Site personnel actively identify and enter issues into the CAP.	Largely Effective
Quality and timeliness of evaluations meet established standards and expectations.	Marginally Effective
Timeliness and effectiveness of corrective actions meet established standards and expectations. Repeat events are minimized due to effective problem solving, accurate root cause evaluations, and sustainable corrective actions.	Marginally Effective
Data/information is reviewed for trends, trends are entered into the CAP, and actions to address them are effective.	Marginally Effective
Ownership of the CAP items is demonstrated through improved performance in all phases of the CAP. Management oversight of CAP is effective in holding “owners” accountable, monitoring performance, and taking timely action to recover from adverse trends.	Largely Effective
CAP-related performance indicators are indicative of “true performance,” are at acceptable levels or trending toward them, and are not significantly fluctuating.	Largely Effective
Operating experience is accurately screened and, for issues applicable to CNS, corrective actions are effective in minimizing the potential for occurrence and/or impact at CNS.	Fully Effective

The SAT concluded that the CNS staff demonstrated a willingness to identify issues and enter them into the CAP. However, several examples of failure to identify items that could result in personnel injury or equipment failure were identified. The SAT identified

several items in the Operations' shift logs that appeared to warrant entry into the CAP where no such entries were made. These observations indicated that the threshold or standard for problem identification was inconsistent across the station.

The SAT concluded that the timeliness of evaluations had significantly improved at the station. The overall quality of root cause evaluations was judged to be good with clear evidence the organization was learning from past events and taking actions to improve performance. Some weaknesses were identified in apparent cause evaluations for critical component failures. These evaluations generally did not document the extent of condition. The SAT concluded that improvement was being made in the quality of apparent cause evaluations due largely to the CAP Group review and feedback to the initiating department.

The SAT also concluded that timeliness of corrective actions was on an improving trend. However, there continued to be recurring significant events that indicated prior corrective actions were not sufficiently timely or effective to prevent recurrence. The station investigated the causes of continuing recurring events and identified a number of latent causes as follows:

- Inadequate processes to ensure critical power generation equipment reliability
- Lack of strategic trending of error precursors related to latent conditions, lack of risk awareness for attributes not directly related to nuclear safety
- Inconsistent reinforcement of desired worker behaviors by supervisors
- Inadequate assessment of interim actions and extent of condition from previous SCRs

The SAT concluded that the consistency and effectiveness of trending was mixed. Trending of multiple data streams was being performed, equipment trending was identifying critical components with high failure rates, and these were being entered into the CAP. Also, departments were identifying adverse trends through the use of self-assessments and were documenting them in the CAP. However, problems existed with the communication and prioritization of trending results. Because of these problems, formal trending deliverables were not being used to full advantage by station management, resulting in missed opportunities for more timely actions to address identified emerging trends.

The SAT identified examples of ownership of issues and managers driving accountability for them through observations of site meetings. The team cited establishment of a 100 percent back-end review for quality of CAP closures and a set of revised performance expectations that had driven improved ownership and accountability for quality closures across the site.

The SAT concluded that the station utilized a comprehensive set of indicators to track its performance relative to CAP. The indicators consisted of both quantitative and qualitative measures that provided a complete report of overall program health. Review of the station performance indicators compared to the SAT findings showed that the indicators provided a generally accurate reflection of station performance.

The SAT concluded that the TIP action to review industry operating experience document closure packages since 1994 resulted in items that were accurately screened and corrective actions that were effective. The station identified two recommendations to improve the Operating Experience Review process.

The SAT identified one area for improvement in the CAP area. The SAT found that the level of rigor and methodology applied to apparent causes for critical component failures had not consistently resulted in determining and correcting the cause or implementing actions that addressed the extent of condition. Although this area for improvement was identified in the CAP area, the SAT determined that, because this issue affected the reliability of plant equipment, it needed to be addressed before the CAL area of Material Condition and Equipment Reliability could be considered for closure.

(2) NRC Assessment Results

The inspectors determined that the SAT conducted a thorough and comprehensive inspection. The SAT members inspecting the CAP area were knowledgeable and experienced.

Following the licensee's self-assessment, the inspectors conducted additional inspection to assess licensee actions to address the results of the self-assessment, particularly those measures of effectiveness that were determined to be marginally effective and the area for improvement.

The inspectors reviewed the licensee's actions following the self-assessment, as described in their September 2, 2004, letter, and found that they appropriately addressed those measures of effectiveness that were determined to be marginally effective, as well as the area for improvement.

The inspectors determined that NPPD's actions taken to improve performance in this CAL area were effective and resulted in improved performance.

The inspectors found that the licensee had improved the use of the CAP to effectively resolve station problems (Action Plan 5.2.7.1). Interviews with station personnel indicated an increased awareness of the CAP as the process to address plant problems. Station personnel expressed confidence in the ability of the CAP to address plant issues. Increased management involvement in the CAP resulted in an improvement in the quality of CAP-related meetings and an emphasis on writing Notifications and Condition Reports. The TIP performance indicator data provided useful information concerning the CAP.

The inspectors reviewed the licensee's actions to address the SAT conclusion that the licensee's threshold or standard for problem identification, including entering items into the CAP, was inconsistent. The licensee developed site-wide training entitled, "Observation Training," to improve observations skills and enable personnel to recognize potential issues. The training consisted of classroom training and mock-up training. The mock-up consisted of areas that were staged with multiple problems, such as material condition issues, personnel hazard issues, housekeeping, and fire protection issues. At the time of the October 2004 inspection, the licensee had provided this training to between 90 and 95 percent of station personnel. In addition, the licensee instituted a new program entitled "Integrated Issues Identification Team (IIIT)." The teams, which consist of plant personnel from different departments, tour specific parts of the facility looking for any problems or issues. The inspector discussed this program with the responsible manager, reviewed the results obtained thus far, and concluded that this initiative was effective.

The team found that CNS had improved their root cause investigations and corrective actions to prevent the recurrence of plant issues (Action Plan 5.2.7.2). The licensee reduced the number of people assigned to perform SCR root causes to increase the quality and consistency of root cause evaluations and establish a standard root cause methodology, resulting in improvements in evaluations associated with SCRs.

To address problems with recurring events resulting from inadequate interim corrective actions or ineffective corrective actions, the licensee established a technique entitled "Assessing and Managing Interim Risk" as a tool to be used by responsible managers to determine if specified interim corrective actions are appropriate. In addition, the licensee adopted the Entergy Operational Decision-Making Policy, which provides direction on how to systematically make operational decisions that support safe, reliable, and efficient plant operation. The team reviewed these programs and, specifically, the worksheet prepared for the RFPT control system anomalies that the station had been experiencing. The root cause of this problem had not yet been established. As a result, the actions taken by the licensee were considered interim actions and were assessed using these new programs. The worksheet was very detailed and provided a comprehensive discussion of the issue.

The inspectors found that the licensee had improved in their use of operating experience (Action Plan 5.2.7.3). The SAT considered this area to be fully effective. The licensee improved the identification and use of operating experience. The inspectors noted that operating experience was discussed during prejob briefings. Additionally, CNS developed a web site for use by station personnel to identify operating experience that could be used in prejob briefings. The inspectors observed that personal experience was used as appropriate during prejob briefings to illustrate particular points. The inspectors found that CNS had conducted a review of external operating experience issued and applicable since 1994. The results indicated that the operating experience evaluations performed since 2000 were of better quality than those performed previously.

The inspectors reviewed the licensee's actions related to those measures of effectiveness that were determined by the SAT to be marginally effective.

The inspectors reviewed the licensee's actions to address the quality and timeliness of root cause evaluations. The SAT found that, while the overall quality of root cause evaluations for SCRs was good, there were some weaknesses with the licensee's apparent causes. The SAT noted that some apparent cause evaluations were not adequate and that they did not contain a discussion of the extent of condition. The inspectors reviewed a sample of apparent cause evaluations that had been performed since May 2004. The licensee had established a new template to be used for evaluations involving critical components. This new template required an extent of condition discussion and specified attributes that must be included. In addition, the licensee issued an equipment failure evaluation guide. This document established a series of items to be considered following an equipment failure. These included: preventive maintenance frequency, delays, and adequacy; deficiencies in past maintenance; industry or CNS operating experience; corrective maintenance issues; training issues; parts issues; and design issues. The inspector concluded that, in general, the quality of apparent cause evaluations was adequate.

One notable exception was identified. An apparent cause evaluation was performed for an issue involving the reactor equipment cooling (REC) system. The REC surge tank level was allowed to drop below the required limit due to elevated leakage. This was due to a plant operator that was not aware of a requirement to maintain the surge tank level in accordance with a secondary document that took into account the leakage rate. This additional requirement would have required the level to be maintained above that specified in the Technical Specification. The licensee's apparent cause evaluation stated the problem as "REC surge tank level was not monitored effectively." The inspector considered this to be an inadequate statement of the problem. The REC surge tank level was monitored and logged as required but the operator that was doing the monitoring was not aware of the level requirement. As a result of the erroneously written problem statement, the apparent cause was identified as "REC surge tank level was not being monitored at a frequency to detect level below the allowed level." The actual cause should have been that the plant operator was not aware of the current requirement for this level. The frequency of monitoring was not the primary cause of this problem. The licensee reopened this Condition Report to re-perform the apparent cause.

The inspectors reviewed the licensee's requirements for prioritization and timeliness of corrective action activities. The licensee established requirements to complete the disposition of SCRs in less than or equal to 30 days and to complete associated corrective actions within 150 days after condition report categorization. RCRs had to be dispositioned within 30 days and corrective actions completed within 180 days after condition report categorization. Work prioritization requirements and guidelines were specified in CNS Operations Manual Administrative Procedure 0-NPG-4.12, "Site Work Prioritization." This was a detailed procedure that contained adequate guidance to ensure proper prioritization of work activities.

The inspectors reviewed the licensee's actions to improve the use of trending data. While the SAT found that CNS was identifying trends and entering them into the CAP, problems existed with the communication and prioritization of the trending results. As a result, the insights resulting from trending were not being fully utilized by station management, resulting in missed opportunities for timely actions to address identified emerging trends. The licensee established a Collective Significance Review Committee to review collective trends that were identified from various sources. These potential trends were sorted by areas, including process items, human performance items, organizational items, and equipment items. In addition to the quarterly trend report, the licensee established a statistically based monthly trend report. Trends of interest are periodically presented to site management and are reviewed on a monthly basis by the CAP Continuous Improvement Coordinators. The inspectors concluded that trending is being performed, communicated to management, and considered adequate.

The team reviewed the September 2004 performance indicators, and their inputs, used by CNS to measure performance in this area of the CAL.

Indicator	**Performance**	**Trend**
Corrective Action Program Performance Index	Green - Excellent	Stable
Timeliness of Cooper Nuclear Station Response to Industry Issues	White - Meets Goal	Positive
Corrective Action Program Self-Identification	Green - Excellent	Positive
On Schedule Completion of QA Findings	Green - Excellent	Stable

c. Conclusion

NPPD completed the CAL actions in the area of the CAP. NPPD's CAL actions were effective in improving the CAP at CNS. These actions resulted in improvements in the licensee's use of the CAP to effectively resolve station problems, in their root cause investigations and corrective actions to prevent the recurrence of plant issues, and in their use of operating experience.

7. CAL Item 6 - Engineering Programs

a. Scope

CAL Item 6 included one Action Plan from NPPD's TIP. This action plan and the associated problem statement and objectives are provided in the following discussion:

Action Plan 5.3.2.1 - Engineering Programs

Problem Statement:

The performance of CNS engineering programs has historically lacked sustained effectiveness.

Objectives:

- Procedure O-CNS-12, CNS Program Administration, is closely aligned with the industry with respect to proper scope of engineering programs and the proper standards and expectations for engineering program oversight and management.
- The full extent of condition in engineering programs is identified through completion of the remaining program self-assessments and interface assessments.
- High priority corrective actions resulting from self-assessments, program benchmarks, and the interface assessments are identified and implemented.
- Independent verification of effectiveness of program corrective actions and program health ratings is established. Programmatic controls to ensure sustained engineering programs are established.
- Implementation of required engineering program related modifications and projects.
- Adequate and consistent management oversight of engineering program health is established.
- Improvements in CNS program management through implementation of industry benchmarking recommendations.

b. Assessment

(1) NPPD Self-Assessment Results

The SAT rated performance in the CAL area of Engineering Programs as largely effective. The SAT found that the performance indicators used by CNS to assess the various engineering programs either met the established goals or were performing at an excellent level. The SAT concluded that programmatic controls, performance monitoring, management support, and oversight were in place to ensure sustained improvement in this area. The SAT concluded that this area of the CAL was ready for closure. The measures of effectiveness and their rating as determined by the SAT are provided in the following discussion:

Engineering programs are developed and implemented in accordance with standards and expectations in program Procedure 0-CNS-12, "CNS Technical Program Administration."	Largely Effective
High priority corrective actions from self-assessments, program benchmarks, and interface assessments are entered into CAP and effectively resolved.	Largely Effective
Programmatic controls, performance monitoring, and management oversight are effective in sustaining engineering program health beyond TIP closure.	Largely Effective
Organizational depth in engineering programs is established and maintained.	Largely Effective
Required engineering program-related modifications and projects are timely and effectively implemented.	Largely Effective

(2) NRC Assessment Results

The inspector determined that the SAT conducted a thorough and comprehensive inspection. The team members inspecting the Engineering Programs area of the CAL were knowledgeable and experienced.

The inspectors agreed with the results of NPPD's self-assessment and determined that NPPD's actions taken to improve performance in this CAL area were effective and resulted in improved performance. The inspectors found that the licensee's actions improved the effectiveness of the various engineering programs at the station and that processes and procedures were established to sustain effective program implementation.

The team reviewed the September 2004 performance indicators, and their inputs, used by CNS to measure performance in this area of the CAL.

Indicator	**Performance**	**Trend**
Components in Accelerated Testing	Green - Excellent Performance	Stable
Overdue Preventive Maintenance Tasks	Green - Excellent Performance	Stable
Program Health	White - Meets Goal	Stable

The team observed stable performance that either met or exceeded licensee goals, indicating sustained improvement for the engineering programs area.

The inspectors found that NPPD had effectively addressed the observations made by the SAT. For example, the SAT discovered a lack of consistency with the air-operated valve (AOV) program as compared with the other engineering programs. AOV failures were mentioned by the SAT as a large contributor to past plant events. The PMO program identified AOVs as the top component in the plant for equipment reliability improvement. Based on inspector interviews with the AOV program owner, only those AOVs with existing preventive maintenance tasks were scheduled to be worked in Refueling Outage RE22, which starts in January 2005. CNS had identified several Category 4 valves (low significance per the AOV program) that are Critical 1 (high significance per the PMO program). These valves were not scheduled to be worked in the outage. The team verified in October 2004 that CNS had planned replacement or preventive maintenance in Refueling Outage RE22 for those AOVs that were rated Critical 1 by the PMO program.

The SAT also performed an in-depth review of the licensee's implementation of the boiling water reactor vessel and internals project and found it to be effective.

The team reviewed self-assessment reports and interviewed responsible personnel to assess the following engineering programs:

- Snubber Program
- Check Valve Program
- Probabilistic Risk Assessment Program
- Paintings and Coatings Program
- Appendix J Program
- Erosion/Corrosion Program

The team did not identify any findings in these program areas.

d. Conclusion

NPPD completed the CAL actions in the area of engineering programs, and these actions were effective in addressing the specific performance issues addressed by the TIP action plan, resulting in improved performance. Ownership of engineering programs was properly defined, the expectations of engineering program owners were clearly defined in procedures, and the quality and frequency of self-assessments was adequate.

8. Exit Meeting

On December 28, 2004, a telephonic exit meeting was held to present the results of the inspection to Mr. Minahan and other members of the licensee staff. The licensee staff acknowledged the inspection results.

Proprietary information reviewed during the inspection was returned to the licensee and was not included in this report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Baldwin, Acting Supervisor Electrical/I&C System
V. Bhardwaj, Manager, Engineering Support
J. Bednar, EP Manager
K. Billesbach, QA Supervisor
M. Boyce, Nuclear Asset Manager
D. Buman, Manager, Design Engineering
K. Chambliss, Operations Manager
T. Chard, Radiation Protection Manager
J. Christensen, Co-Director, Nuclear Safety Assurance
D. Cook, TIP Manager
K. Dahlberg, General Manager, Support
L. Dewhirst, Technical Training Supervisor
R. Drier, Self-Assessment Coordinator
J. Dubois, Supervisor, System Engineering
R. Edington, Vice President - Nuclear Energy and Chief Nuclear Officer
J. Edom, Maintenance Rule Coordinator
R. Estrada, Performance Assessment Department Manager
K. Fili, Manager, Nuclear Projects
R. Fili, Manager, System Engineering
P. Flemming, Licensing Manager
S. Freeborg, Acting Manager, Engineering Support Department
K. Gardner, ALARA Supervisor
P. Gritton, Manager, Finance and Cost
T. Hottavy, Manager of Equipment Reliability Department
D. Joy, Document Manger Supervisor
K. Kirkland, Manager, Information Technology
G. Kline, Director, Engineering
K. Knight, Manager, Planning, Scheduling, and Outages
D. Knox, Manager, Maintenance
J. Mahan, Change Manager
D. Meyers, General Manager Site Support
S. Minahan, General Manager, Plant Operations
A. Mitchell, Engineering Design Manager
D. Montgomery, Human Performance Coordinator
J. Roberts, Co-Director, NSA
M. Schaible, Assistant Operations Manager
J. Schouerman, Action ASD Manager
G. Smith, Project Manager, Performance Management
T. Stevens, Mechanical Design Supervisor
J. Sumpter, Senior Engineer, Licensing

J. Teten, Chemistry Operations Supervisor
B. Toline, Manager, Root Cause Analysis
J. Waid, Manager, Training
A. Williams, Manager, Engineering Programs
R. Wulf, Assistant Manager, System Engineering

NRC

S. Checkroom, Resident Inspector, Cooper Nuclear Station
S. Schwind, Senior Resident Inspector, Cooper Nuclear Station

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Calculations

NEDC 97-044A, "NPSH Margins for the RHR and CS Pumps," Revision 3

Condition Reports

2004-05151	2004-03639	2004-06919
2004-03101	2004-06882	

Department Dispositions

10203323	10266254	10267946	10282527
10207747	10266261	10268982	10283178
10265695	10266477	10270928	10283233
10265735	10266648	10270930	10283277
			10283278

Notifications

10142147	10270928	10292791	10302274	10318052
10203323	10270930	10293648	10302783	10321311
10207747	10276714	10295436	10302980	10322701
10223528	10279881	10295667	10306050	10339346
10228616	10283178	10296879	10307640	10345643
10265695	10283233	10297683	10311895	10345837
10265735	10283277	10299233	10312078	10345838
10266254	10283278	10299895	10313582	
10266261	10284724	10299960	10313688	
10266477	10285561	10300937	10314216	
10266648	10287688	10301618	10314590	
10267946	10290917	10301712	10314680	
10268879	10291229	10301739	10314815	
10268982	10292528	10301713	10315164	
10270221	10292644	10301754	10315284	

Procedures

2.0.4, “Relief Personnel and Shift Turnover,” Revision 14

7.0.1.7, “Troubleshooting Plant Equipment,” Revision 11

EDP-21, “Guidelines for Evaluation and Resolution of Potential Unauthorized Modifications,” Revision 4

O-CNS-25, “Self Assessment and Benchmarking Process,” Revision 15

0-HP-PJ BRIEF, “Pre-job Brief/Post-job Critique,” Revision 3

7.0.3, “Maintenance Rework”

0-HP-TOOLS, “Human Performance Tools,” Revision 0

Resolve Condition Reports

2000-0924	2002-1232	2003-1333
2001-0392	2002-2436	2003-1639
2001-0529	2002-2438	2003-1984
2001-0969	2002-2445	2004-0226
2002-0051	2002-2446	2004-0271
2002-0717	2002-2466	2004-0523
		2004-0548

Significant Condition Reports

2002-0815	2003-1814	2004-0270
2003-0349	2003-1930	2004-0322
2003-0350	2004-0031	2004-0350
2003-0355	2004-0077	2004-0412
2003-0770	2004-0163	2004-06068
2003-1432	2004-0229	

Self-Assessments

CAL Closure Assessment Report, July 15, 2004

Cooper Nuclear Station - AOV Program Quick Hit Assessment, April 7-8, 2004

Plant Health Committee: Optimum Water Chemistry, October 4, 2004

Predictive Maintenance Program Assessment at Cooper Nuclear Generating Station, February 2004

SA-02-026, Appendix J Program

SA-02-033, Erosion/Corrosion Program

SA-03-034, Heat Exchanger GL 89-13 Program

SA-03-048, Self-Assessment of the Check Valve Program at Cooper Nuclear Station

SA-03-052, Snubber Program Self Assessment Report

SA-03-057, Paintings and Coatings Program

SA-03-061, PRA Program

SA-04-043, “Interim Effectiveness Assessment - TIP Action Plan 5.3.3.1”

Snap Shot Assessment SS04114, Status of AOV Program Implementation

Work Orders

4379771 4384300

Other Documents

CNS Board Item Capital Project E/219/21I, “Reactor Feedwater Pump Turbine Control Digital Modification, October 8, 2004

Licensee Event Report 2004-002-00, “Failure to Follow Procedure Results in Both Diesel Generators Being Inoperable”

Licensee Event Report 2004-004-00, “Loss of Safety Function Due to Past Inoperabilities of High Pressure Coolant Injection System”

Operations Desktop Guide 5, "Operability Determination Considerations," Revision 5

QA Audit 03-08, “Offsite Dose Assessment Manual (ODAM)”

Quality Assurance Field Observation FO-0309

Quality Assurance Monthly TIP Oversight Report TIP-0301, January 2003

System Engineering Long Range Plans, September 30, 2004

Top 10 Technical Issues, October 25, 2004

TIP Performance Indicators

Departmental Performance Indicators

Maintenance Rule a(1) List

QA Audit Report 04-04

System Health Reports

LIST OF ACRONYMS

AOV	air-operated valve
CAL	Confirmatory Action Letter
CAP	corrective action program
CFR	*Code of Federal Regulations*
CNS	Cooper Nuclear Station
DBI/LBI	Design Basis Information/Licensing Basis Information
ERO	Emergency Response Organization
HVAC	heating, ventilation, and air conditioning
LCO	limiting condition for operation
NPPD	Nebraska Public Power District
NRC	U.S. Nuclear Regulatory Commission
REC	reactor equipment cooling
RFPT	reactor feed pump turbine
SAT	self-assessment team
SCR	significant condition report
SSC	structures, systems, and components
TIP	Strategic Improvement Plan
UMOD	unauthorized modifications