



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

February 9, 2009

Stewart B. Minahan, Vice
President-Nuclear and CNO
Nebraska Public Power District
72676 648A Avenue
Brownville, NE 68321

Subject: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000298/2008005

Dear Mr. Minahan:

On December 31, 2008, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on January 8, 2009 with Brian O'Grady, Site Vice President, and other members of your staff.

The inspections examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents four NRC-identified findings and two self-revealing findings of very low safety significance (Green). Four of these findings were determined to involve violations of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 612 E. Lamar Blvd, Suite 400, Arlington, Texas, 76011-4125; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Cooper Nuclear Station facility.

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 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/

Geoffrey B. Miller, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

Enclosure: NRC Inspection Report 05000298/200805
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000298

License: DPR-46

Report: 05000298/2008005

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: 72676 648A Avenue
Brownville, NE 68321

Dates: September 22 through December 31, 2008

Inspectors: N. Taylor, Senior Resident Inspector
M. Chambers, Resident Inspector
P. Elkmann, Senior Emergency Preparedness Inspector
G. Guerra, Emergency Preparedness Inspector
S. Garchow, Senior Operations Engineer
K. Clayton, Senior Operations Engineer
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Approved By: G. Miller, Chief, Project Branch C
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2008005; 09/22/2008 – 12/31/2008; Cooper Nuclear Station, Integrated Resident and Regional Report; Maintenance Effectiveness, Maintenance Risk Assessments and Emergent Work Control, Operability Evaluations, Identification and Resolution of Problems, and Other Activities.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspections by regional based inspectors. Four Green noncited violations and two Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 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's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified Findings and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A Green self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the licensee's failure to establish measures to assure that long standing diesel generator 2 lubricating oil discharge piping misalignments leading to diesel generator oil leakage were promptly identified and corrected. Previous apparent cause investigations performed in 2002 and 2004 failed to correct the improper piping alignment that subsequently resulted in a fatigue failure crack of the diesel generator 2 main lubricating oil discharge piping February 13, 2008, requiring diesel generator 2 to be secured due to lubricating oil leakage during a surveillance test. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2008-00968. The licensee has corrected the misalignment issues.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective of ensuring the availability, and reliability of systems required to respond to initiating events. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was not a qualification deficiency, did not represent a loss of safety function, did not represent an actual loss of a single train for greater than its Technical Specification allowed outage time, did not represent a loss of a non-Technical Specification train of equipment for greater than 24 hours, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The cause of the finding is related to the human performance crosscutting component of resources in that the licensee failed to provide complete, accurate and up-to-date procedures and work packages to ensure proper alignment of the diesel generator flexible hose replacements up to the February 13, 2008, lubricating oil leak [H.2(c)] (Section 1R12).

- Green. The inspectors identified a Green noncited violation of 10 CFR 50.65.a(4) for the licensee's failure to assess and manage the risk of planned maintenance activities. Specifically, the licensee failed to include planned heavy equipment operations in the vicinity of the startup transformer transmission lines in their risk assessment on November 26, 2008. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-08987.

This finding is more than minor because the licensee's risk assessment failed to consider maintenance activities that could increase the likelihood of initiating events. The inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used due to the licensee's inability to quantify the increase in risk associated with the heavy equipment activity. The inspectors utilized Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," to determine that the finding was of very low safety significance because the other qualified source of offsite power (the emergency transformer) was unaffected by this performance deficiency and provided sufficient remaining defense in depth in the event of a loss of offsite power. The cause of this finding is related to the human performance crosscutting component of resources because procedures for control of switchyard and transformer yard activities failed to include precautions for heavy equipment operations in the immediate vicinity of the transmission lines in the protected area [H.2(c)] (Section 1R13).

- Green. The inspectors identified four examples of a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of Procedure ENN-OP-104, "Operability Determinations." Specifically, the inspectors identified four examples in which the shift manager failed to document an adequate basis for operability when a degraded or nonconforming condition had been identified. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-09514.

The finding is more than minor because the condition of performing inadequate operability determinations could become more significant if left uncorrected. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in the loss of safety function of any Technical Specification required equipment. The cause of this finding is related to the problem identification and resolution crosscutting component of the corrective action program because licensee personnel failed to thoroughly evaluate conditions adverse to quality and perform meaningful operability determinations [P.1(c)] (Section 1R15).

- Green. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of Administrative Procedure 0.5, "Conduct of the Condition Report Process." Specifically, licensee personnel failed to initiate condition reports for adverse conditions including multiple emergency response procedures that could not be implemented as written, a

metallic noise emanating from a service water pump motor, and multiple examples of chemical storage procedure violations. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-08780.

The finding is more than minor because the behavior of not initiating condition reports for adverse conditions could become more significant if left uncorrected. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in the loss of safety function of any Technical Specification required equipment. The cause of this finding is related to the problem identification and resolution crosscutting component of the corrective action program because licensee personnel failed to implement a corrective action program with a low threshold for identifying issues [P.1(a)] (Section 4OA2).

- Green. The inspectors identified a finding regarding the licensee's failure to comply with the requirements of the Material Safety Data Sheets for two hazardous chemicals stored in the protected area. Specifically, licensee personnel stored a 55 gallon barrel of hydrogen peroxide in the same location as a 140 pound barrel of muriatic acid. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-08823.

The finding is more than minor because if left uncorrected, it could become a more significant safety concern in that improperly stored hazardous chemicals could put personnel at significant risk of injury and could have inhibited operators' ability to access safety-related equipment to mitigate the consequences of an accident. Using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," the finding was determined to be of very low safety significance because it did not result in a loss of safety function for any mitigating system. The cause of this finding is related to the human performance crosscutting component of work practices because licensee personnel failed to supervise the activities of contractors storing hazardous chemicals in the turbine building [H.4(c)] (Section 4OA5).

Cornerstone: Public Radiation Safety

- Green. A self-revealing finding was identified regarding the licensee's failure to follow procedural requirements during system maintenance. Specifically, licensee personnel failed to heed a cautionary note in a maintenance procedure, resulting in an inadvertent isolation of the augmented off-gas system. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2008-08405.

The finding is more than minor because it affected the plant equipment attribute of the public radiation safety cornerstone, and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials release into the public domain as a result of routine civilian nuclear reactor operation, in that the release rate through the elevated release point increased over five hundred percent as a result of the system isolation. Using Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety

Significance Determination Process," the finding was determined to be of very low safety significance because it did not represent a failure to implement an effluent program or result in public dose greater than 10 CFR 50 Appendix I criterion. The cause of this finding is related to the human performance crosscutting component of work practices because licensee personnel failed to stop in the face of uncertainty when unexpected labeling was discovered [H.4(a)] (Section 40A5).

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers (condition report numbers) are listed in Section 40A7.

REPORT DETAILS

Summary of Plant Status

Cooper Nuclear Station began the inspection period at full power on September 22, 2008, and remained at full power through the end of the inspection period, December 31, 2008.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

Readiness for Impending Adverse Weather Conditions (Extreme Cold Weather)

a. Inspection Scope

The inspectors performed a review of the licensee's adverse weather procedures for impending adverse weather (e.g., extreme high temperatures, extreme low temperatures, or hurricane season preparations). The inspectors: verified that weather-related equipment deficiencies identified during the previous year were corrected prior to the onset of seasonal extremes; and evaluated the implementation of the adverse weather preparation procedures and compensatory measures for the affected conditions before the onset of, and during, the adverse weather conditions.

During the inspection, the inspectors focused on plant-specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant-specific procedures. Specific documents reviewed during this inspection are listed in the attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant system:

- Service Water System

These activities constitute completion of one readiness for impending adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- October 21, 2008, High pressure coolant injection during start-up transformer (SSST) outage
- October 21, 2008 Reactor core isolation cooling during start-up transformer outage

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could affect the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report, Technical Specification requirements, administrative technical specifications, outstanding work orders, condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of two partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

Quarterly Fire Inspection Tours

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- October 8, 2008, 1G and 1F switchgear room, Fire Area III Fire Zone 3B, and Fire Area II Fire Zone 3A

- October 27, 2008, Transformer yard, emergency transformer/start-up transformer area
- October 31, 2008, Fuel pool heat exchanger room, Fire Area 1 Zone 4C
- December 3, 2008, Northeast reactor core isolation cooling and core spray A room, Fire Zone 1A

The inspectors reviewed areas to assess if licensee personnel had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant; effectively maintained fire detection and suppression capability; maintained passive fire protection features in good material condition; and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features, in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to affect equipment that could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four quarterly fire-protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed the updated final safety analysis report, the flooding analysis, and plant procedures to assess susceptibilities involving internal flooding; reviewed the corrective action program to determine if licensee personnel identified and corrected flooding problems; inspected underground bunkers/manholes to verify the adequacy of sump pumps, level alarm circuits, cable splices subject to submergence, and drainage for bunkers/manholes; and verified that operator actions for coping with flooding can reasonably achieve the desired outcomes. The inspectors also walked down the area listed below to verify the adequacy of equipment seals located below the flood line, floor and wall penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, and control circuits, and temporary or removable flood barriers. Specific documents reviewed during this inspection are listed in the attachment.

- November 15, 2008, Battery Room A

These activities constitute completion of one flood protection measures inspection sample as defined in Inspection Procedure 71111.06-05.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Quarterly Inspection

a. Inspection Scope

On November 13, 2008, the inspectors observed a crew of licensed operators in the plant's simulator to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- Licensed operator performance
- Crew's clarity and formality of communications
- Crew's ability to take timely actions in the conservative direction
- Crew's prioritization, interpretation, and verification of annunciator alarms
- Crew's correct use and implementation of abnormal and emergency procedures
- Control board manipulations
- Oversight and direction from supervisors
- Crew's ability to identify and implement appropriate technical specification actions and emergency plan actions and notifications

The inspectors compared the crew's performance in these areas to pre-established operator action expectations and successful critical task completion requirements. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of one quarterly licensed-operator requalification program sample as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

.2 Biennial Inspection

a. Inspection Scope

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators are

administered an operating test consisting of job performance measures and simulator scenarios. In the second part of the training cycle, the biennial cycle, operators are administered an operating test and a comprehensive written examination.

This inspection was held during the last week of the biennial licensed operator requalification examination testing cycle, which began the week of October 14, 2008, and ended the week of November 21, 2008.

To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews, reviewed both the operating tests and written examinations, reviewed randomly selected medical and watchstanding proficiency records, and observed ongoing operating test activities both in the plant and on the simulator.

The inspectors interviewed licensee personnel to determine their understanding of the policies and practices for administering requalification examinations. The inspectors also reviewed operator performance on the written examinations and operating tests. These reviews included observations of portions of the operating tests by the inspectors. The operating tests observed included five job performance measures and two scenarios that were used in the current biennial requalification cycle. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. The inspector also reviewed a sample of licensed operator annual medical forms and procedures governing the medical examination process for conformance to 10 CFR 55.53, and a sampling of the licensed requalification program feedback system, and the remediation process records.

In addition to the above, the inspectors reviewed examination security measures, simulator fidelity and existing logs of simulator deficiencies.

At the conclusion of the testing cycle, the inspector reviewed the overall pass/fail results of the individual job performance measure operating tests, simulator operating tests, and written examinations administered by the licensee during the operator licensing requalification cycles and biennial examination. Final examination results were assessed to determine if they were consistent with the guidance contained in NUREG-1021, "Operator Licensing Examination Standards for Power Reactors", Revision 9, Supplement 1, and NRC Manual Chapter 0609, Appendix I, "Operator Requalification Human Performance Significance Determination Process." Seven separate crews participated in simulator operating tests, written examinations, and job performance measure operating tests, totaling 39 licensed operators. There was one individual failure on the written examination, as well as one crew and five individual failures on the operating test. All the individuals were remediated and subsequently passed the retake examinations prior to returning to shift.

The inspectors completed one inspection sample of the biennial licensed operator requalification program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk significant systems:

- November 4, 2008, CR-CNS-2008-6657, Failure of B zurn strainer
- November 10, 2008, CR-CNS-2008-07910, SW-P-A start circuit failure
- November 10, 2008, CR-CNS-2008-07840 and CR-CNS-2008-07866, Battery room low temperature

The inspectors reviewed events such as where ineffective equipment maintenance has resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- Implementing appropriate work practices
- Identifying and addressing common cause failures
- Scoping of systems in accordance with 10 CFR 50.65(b)
- Characterizing system reliability issues for performance
- Charging unavailability for performance
- Trending key parameters for condition monitoring
- Ensuring proper classification in accordance with 10 CFR 50.65(a)(1) or (a)(2)
- Verifying appropriate performance criteria for structures, systems, and components classified as having an adequate demonstration of performance through preventive maintenance, as described in 10 CFR 50.65(a)(2), or as requiring the establishment of appropriate and adequate goals and corrective actions for systems classified as not having adequate performance, as described in 10 CFR 50.65(a)(1)

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

The NRC entered a diesel generator 2 oil leak that occurred February 13, 2008 into the reactor oversight process as an unresolved item during the second quarter 2008 inspection report. This was required due to the length of time needed by the licensee to have laboratory analyses performed on the leaking DG 2 lubricating oil pipe elbow and revise their root cause evaluation. This current fourth quarter 2008 report closes unresolved item: URI 05000298/2008003-02, "Misaligned Lubricating Oil Piping Causes Diesel Generator 2 Failure," and documents the following associated finding.

b. Findings

Introduction. A Green self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the licensee's failure to establish measures to assure that long standing diesel generator 2 lubricating oil discharge piping misalignments leading to diesel generator oil leakage were promptly identified and corrected. Previous apparent cause investigations performed in 2002 and 2004 failed to correct the improper piping alignment that subsequently resulted in a fatigue failure crack of the diesel generator 2 main lubricating oil discharge piping February 13, 2008, requiring diesel generator 2 to be secured due to lubricating oil leakage during a surveillance test. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2008-00968.

Description. On February 13, 2008, diesel generator 2 was started for a monthly surveillance test per Surveillance Procedure 6.2DG.101. No oil leaks were observed during the initial walkdown following the start of the engine. Approximately one hour after the start of the engine, an oil leak was discovered on the main lubricating oil pump discharge piping. The leak was an active stream of lubricating oil from a 3-inch radial crack at the toe of an elbow to flange weld. Upon receiving the report of the oil leak, the operations shift manager declared diesel generator 2 inoperable and diesel generator 2 was secured.

The diesel generator 2 lubricating oil pump discharges horizontally to a 6-inch diameter, approximately 3 foot long, spool piece consisting of an upper elbow connected to a short vertical pipe connected to a lower elbow that connects to a horizontal flexible hose. The flexible hose connects to the lubricating oil cooler piping and dampens vibration from the engine to the lubricating oil cooler and associated piping. The licensee has a history of misalignment issues between the flexible hose and the discharge spool piece. In 2002, an apparent cause evaluation on diesel generator 2 was conducted due to minor oil leakage from a pinhole leak in the flexible hose. The evaluation determined misalignment between the flexible hose and the discharge piping flange caused the oil leak. The oil pump discharge spool piece was cut and welded to correct misalignment in 2002 in accordance with the manufacturer's flexible hose alignment acceptance criteria. Following the February 13, 2008 oil leak the piping flange was again found to be out of alignment with the flexible hose. In 2004, an apparent cause evaluation on diesel generator 1 was conducted due to an oil leak from the flexible hose. Misalignment of the flexible hose flange bolt holes to the piping bolt holes was found to be the cause of this diesel generator 1 oil leak. Corrective actions to address the 2002 misalignments failed to capture the manufacturer's recommendations for proper installation in site procedures or work instructions to ensure the information was available for future flexible spool piece

replacement maintenance. This resulted in a lack of knowledge by both maintenance and engineering as to the function of the flexible spool piece and vendor installation alignment requirements during the many flexible hose replacements from 2003 up to the 2008 oil leak. The annual replacements of the flexible hoses provided the licensee several opportunities to identify and correct the flexible hose alignment problems. Therefore, the cause of the finding is reflective of current performance and related to the human performance crosscutting component of resources in that the licensee failed to provide complete, accurate and up-to-date procedures and work packages to ensure proper alignment of the flexible hose replacements up to the February 13, 2008, lubricating oil leak.

The flexible hose misalignments included improper lengths. The 2008 root cause investigation found the flexible hose purchase specifications were changed in 1989 from custom lengths for each diesel generator application to a standard 17-inch length. The shorter length flexible hoses in stock were available and used throughout the 1990s until the first documented use of a 17-inch hose on diesel generator 2 in 2000. This increase in length introduced a 0.5 inch interference fit due to only 16.5 inches of clearance available in the diesel generator 2 lubricating oil pump discharge piping to fit the 17-inch flexible hose. The licensee's root cause investigation speculates that this interference fit could have resulted in the need for maintenance to apply large external loads to pull the lubricating oil pump discharge piping enough to allow fit up of the hose. The NRC staff noted that such external forces along with other surface stress riser defects in the adjacent weld could have raised the mean stress in the elbow resulting in the observed high cycle fatigue failure.

The licensee contracted with two research laboratories to review the failed elbow for the cause of the crack, evaluate the growth potential of the crack, and determine the associated oil leak growth rate if the diesel generator had not been shutdown. Southwest Research Institute Final Report, "A Failure Analysis Investigation of Leakage and Cracking in a Lube Oil Elbow Joint," Revision 0, states in conclusion that, "The crack initiated . . . and progressed via high cycle fatigue." Structural Integrity Associates, Inc. report, "Crack Growth and Leakage Analysis of Cracked Lube Oil Piping," Revision 0, conservatively stated that the 4-inch crack would increase in length by about 0.0004" and the leakage rate would increase from 8 gallons per hour to approximately 8.5 gallons per hour. Under normal loads the 4-inch crack would grow very slowly and the total accumulated leakage volume would be about 225 gallons in 24 hours of continuous diesel run [time]. This is below the 416 gallons available." The NRC staff and inspectors reviewed the laboratory report and concluded that diesel generator 2 would have been able to meet the 24-hour mission time.

Analysis. The performance deficiency is the licensee's failure to establish measures to assure that long standing diesel generator 2 lubricating oil discharge piping misalignments leading to oil leakage were promptly identified and corrected. This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone, and affected the cornerstone objective of ensuring the availability and reliability of systems required to respond to initiating events. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was not a qualification deficiency, did not represent a loss of safety function, did not represent an actual loss of a single train for greater than its technical specification allowed outage time, did not represent a loss of a non-technical specification train of

equipment for greater than 24 hours, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The cause of the finding is related to the human performance crosscutting area in that the licensee failed provide complete, accurate and up-to-date procedures and work packages to ensure proper alignment of the diesel generator flexible hose replacements up to the February 13, 2008, lubricating oil leak [H2(c)].

Enforcement. Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that measures shall be established to assure conditions adverse to quality are promptly identified and corrected. Contrary to this requirement, from 2002 to 2008, the licensee failed to establish measures to assure that diesel generator 2 lubricating oil discharge piping misalignments that led to oil leakage were promptly identified and corrected. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2008-00968, this violation is being treated as a noncited violation consistent with the Enforcement Policy: NCV 05000289/2008005-01, "Misaligned Lubricating Oil Piping Causes Diesel Generator 2 Failure."

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed licensee personnel's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- October 21, 2008, Start-up transformer outage/orange window
- November 12, 2008, Emergency transformer planned outage
- November 26, 2008, Heavy haul road construction in protected area during yellow risk window

The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that licensee personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When licensee personnel performed emergent work, the inspectors verified that the licensee personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were consistent with the risk assessment. The inspectors also reviewed the technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of three maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR 50.65.a(4) for the licensee's failure to assess and manage the risk of planned maintenance activities. Specifically, the licensee failed to include planned heavy equipment operations in the vicinity of the transmission lines to the startup transformer in their risk assessment on November 26, 2008.

Description. During plant status activities on November 26, 2008, inspectors noticed heavy equipment operating within a few feet of the 161 kV transmission line tower to the startup transformer. The licensee was operating an excavator, a backhoe, a bulldozer and a dump truck in the area for the purpose of ripping up concrete during construction of a new heavy haul road for the independent spent fuel storage installation project under Work Order 4557573. As part of this activity, the bulldozer had created a large pile of concrete blocks, the base of which was only a few feet from the transmission tower.

The inspectors were aware that the plant was already in a planned yellow risk window due to ongoing maintenance activities that made diesel generator 2 unavailable. The inspectors challenged the heavy equipment operators, who were unaware of the importance of the transmission tower and had not received any specific instructions regarding standoff distances or other specific precautions. The inspectors contacted the control room staff, who were unaware of the ongoing heavy equipment operators in the vicinity of the transmission tower. The control room subsequently stopped work on the heavy haul road until diesel generator 2 had been returned to service.

The inspectors reviewed the contents of Work Order 4557573 and noted that there was no discussion in the work order of risk mitigating actions. The inspectors then contacted the risk assessment staff and learned that the maintenance risk assessment for the work week had not taken into account the planned heavy equipment operations around the transmission towers. In discussing the issue with the risk assessment staff, the inspectors learned that the licensee does not have a tool with which to assess the increase in risk associated with these types of external events. The licensee instead uses qualitative methods to perform risk assessments of switchyard and transformer yard activities.

The inspectors reviewed the requirements of Administrative Procedure 0-CNS-52, "Control of Switchyard and Transformer Yard Activities at CNS," Revision 17. This procedure requires that the work supervisor and the switchyard engineer provide the work week director with a description of all work activities conducted in the switchyard to allow for proper risk evaluation and risk controls. The procedure applies to activities in the switchyard or transformer yards, but does not control the transmission structures that connect them (for example, the transmission towers inside the protected area). As such, there was no procedural requirement for the work week director or the risk assessment staff to be notified of the scope of industrial activities for the independent spent fuel storage installation project, despite the fact that the activity substantially increased the likelihood of a loss of offsite power. In addition, the inspectors noted that Administrative Procedure 0.40.4, "Planning," contains a planner checklist as Attachment 1. Item 5.2.16 of this checklist asks the planner to consider "Is work in Switchyard or Substation (0-CNS-52) required?" For Work Order 4557573, this item was answered as "N/A," because the transmission towers in the protected area fall outside of the scope of

Procedure 0-CNS-52. This shortcoming in Procedure 0-CNS-52 made Procedure 0.40.4 an ineffective barrier and was a missed opportunity for the planning department to consider risk mitigating actions for the heavy equipment operations.

The inspectors learned that this vulnerability had twice been identified by station personnel, on December 15, 2004, and April 2, 2008. In both cases, the issue was identified outside the corrective action program and no action was taken on either notification. As a result of this observation by the inspectors, the licensee installed concrete vehicle barriers around the base of the transmission towers in the protected area. In addition, a discussion of planned heavy equipment operations was added to the morning production meeting discussion to make the site aware of the increase in risk due to these activities. The licensee documented this performance deficiency in Condition Report CR-CNS-2008-08987.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to assess and manage the risk of planned maintenance activities. Specifically, the licensee failed to include planned heavy equipment operations in the vicinity of the startup transformer transmission lines in their risk assessment on November 26, 2008. The finding is more than minor because licensee's risk assessment failed to consider maintenance activities that could increase the likelihood of initiating events. The inspectors determined that Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," could not be used due to the licensee's inability to quantify the increase in risk associated with the heavy equipment activity. The inspectors utilized Manual Chapter 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," to determine that the finding was of very low safety significance because the other qualified source of offsite power (the emergency transformer) was unaffected by this performance deficiency and provided sufficient remaining defense in depth in the event of a loss of offsite power. The cause of this finding is related to the human performance crosscutting component of resources because procedures for control of switchyard and transformer yard activities failed to include precautions for heavy equipment operations in the immediate vicinity of the transmission lines in the protected area [H.2(c)].

Enforcement. Title 10 of the Code of Federal Regulations, Part 50.65.a(4) requires, in part, that prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to this requirement, on November 26, 2008, the licensee conducted heavy equipment operations in the immediate vicinity of the startup transformer transmission line tower during a planned yellow risk window without considering the increased likelihood of a loss of offsite power. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2008-08987, this violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000298/200800502, "Failure to Assess and Manage the Risk of Heavy Equipment Operations."

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- October 17, 2008, Battery Room A exhaust low flow alarm, CR-CNS-2008-07704
- November 5, 2008, Diesel Generator 2 following discovery of foreign material in Diesel Generator 1
- December 8, 2008, Service Water Pump B foreign material exclusion analysis, CR-CNS-2008-08538
- December 8, Oil leak on reactor core isolation cooling pump, CR-CNS-2008-08807 and CR-CNS-2008-08889

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that technical specification operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the technical specifications and updated safety analysis report to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05

b. Findings

Introduction. The inspectors identified four examples of a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of Procedure ENN-OP-104, "Operability Determinations." Specifically, the inspectors identified four examples in which the shift manager failed to document an adequate basis for operability when a degraded or nonconforming condition had been identified.

Description. Procedure ENN-OP-104, "Operability Determinations," Revision 2, provides the guidance used by operations staff at Cooper Nuclear Station to perform operability determinations. Paragraph 4.2.1 requires, in part, that the shift manager "document the basis for operability when a degraded or nonconforming condition exists." Contrary to this requirement, the inspectors identified four examples of documented operability determinations that did not meet this requirement.

In the first example, Condition Report CR-CNS-2008-08538 was initiated to document that a piece of the service water Pump B suction bell had been discovered missing during an overhaul of the pump. This missing piece of metal was approximately four inches in diameter and one inch thick. The condition report documented that the missing piece may have been lost in the "E" bay of the intake structure, which is permanently designated as a "Zone 1" foreign material exclusion area. The initial operability

determination provided a statement that any pieces that had eroded off the suction bell would probably have been caught by the downstream zurn strainer. There was no objective evidence supporting this statement, however. As a result, the Quality Assurance Department initiated Condition Report CR-CNS-2008-08575, documenting the inadequacy of the operability determination. In response, control room staff wrote Version 2 of the operability determination, which provided an evaluation of the potential for the lost material to affect components downstream of the zurn strainers. This operability determination was still silent, however, on the potential for the lost material to affect the operability of the pump itself. The inspectors challenged the control room staff on this point, after which Version 3 of the operability determination was written, which provided a more rigorous engineering analysis and demonstrated that even if the part were to have fallen into the intake structure, the existing flow rates were not sufficient to lift a part with that geometry into the pump suction. The inspectors determined that Version 3 of the operability determination correctly determined that service water Pump B operability was not affected by the condition.

In the second example, the inspectors identified a small oil leak on the reactor core isolation cooling pump outboard bearing oiler during reactor core isolation cooling operation. This condition was reported in Condition Report CR-CNS-2008-08807. The first version of the operability determination evaluated the condition as a small oil leak from the reactor core isolation cooling turbine. The inspectors recognized that this was a non-conservative operability determination, as the turbine oil reservoir contains approximately 4.5 gallons of oil, whereas the pump oil reservoir (where the leak actually was) contains only approximately 0.3 gallons of oil. After being notified of this discrepancy, the control room staff performed Version 2 of the operability determination, which correctly evaluated the condition as affecting the reactor core isolation cooling pump. The licensee documented this deficient operability determination in Condition Report CR-CNS-2008-08889. The inspectors determined that Version 2 of the operability determination correctly determined that reactor core isolation cooling operability was not affected by the condition.

In the third example, Condition Report CR-CNS-2008-09017 was initiated to recommend an extent of condition inspection of a Division one service water pump to check for another suction bell failure, as had been seen in service water Pump B and described in Condition Report CR-CNS-2008-08538 (discussed above). The degraded condition discovered on Pump B had been discovered during the investigation into an air binding event that had affected Pump B due to a failure of the gland seal package on the pump. In the operability determination for CR-CNS-2008-09017, the operations staff stated that operability of the other service water pumps was not affected, as the Division one pumps "have not displayed indications that were present when the B pump was degraded." This represented a misunderstanding of the condition, in that the failure of the Pump B suction bowl was not readily apparent and was only discovered during disassembly of the pump. The condition report had been initiated to perform the inspection because a similar failure in the division one pumps would not be evident from available indications. The inspectors challenged the control room staff with this issue, after which Version 2 of the operability determination was written, which properly justified the continued operability of the division one service water pumps.

In the fourth example, the inspectors identified that leaks from the 250 Vdc Battery 1A were corroding the battery racks and associated fasteners on December 12, 2008. This condition was documented in Condition Report CR-CNS-2008-09094. The initial

operability determination written by the control room staff described this as a “cosmetic issue and does not threaten the structural strength of the battery rack.” The operability determination went on to state that “the corrosion has not degraded significantly since it was last evaluated by the system engineer on 24 Nov 2008.” The inspectors challenged the justification for this statement, in that it provided no technical basis for the acceptability of the corrosion of the seismic structure supporting the battery, nor did it provide a basis for the assumption that the corrosion was only cosmetic in nature. After repeated conversations with civil engineering staff, Version 2 of the operability determination was issued, which evaluated the ability of the battery racks to survive a seismic event without the corroded fasteners. This analysis demonstrated that sufficient design margin existed without the fasteners, and the control room staff properly evaluated the condition as not affecting the operability of the 1A batteries. The licensee documented the inadequacy in the original operability determination in Condition Report CR-CN-2008-09205.

The licensee initiated Condition Report CR-CNS-2008-09514 to document the degrading trend in the quality of operability determinations.

Analysis. The performance deficiency associated with this finding involved the licensee’s failure to follow the requirements of Procedure ENN-OP-104, “Operability Determinations.” Specifically, the inspectors identified four examples in which the shift manager failed to document the basis for operability when a degraded or nonconforming condition had been identified. The finding is more than minor because the condition of performing inadequate operability determinations could become more significant if left uncorrected. Using Manual Chapter 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” the finding is determined to have very low safety significance because it did not result in the loss of safety function of any Technical Specification required equipment. The cause of this finding is related to the problem identification and resolution crosscutting component of corrective action program because licensee personnel failed to thoroughly evaluate conditions adverse to quality and perform meaningful operability determinations [P.1(c)].

Enforcement. Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Procedure ENN-OP-104, “Operability Determinations,” Revision 2, requires that the shift manager document the basis for operability when a degraded or nonconforming condition is identified. Contrary to this requirement, on November 22, December 3, December 10, and December 12, 2008, the documented bases for operability for degraded conditions did not adequately support the operability position taken by the shift manager. Because the finding is of very low safety significance and has been entered into the licensee’s corrective action program as Condition Report CR-CNS-2008 09514, this violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2008005-03, “Failure to Follow Procedure Results in Inadequate Operability Determinations.”

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following temporary/permanent modifications to verify that the safety functions of important safety systems were not degraded:

- December 12, 2008, Temporary configuration change for removing soft seat from diesel generator 1 float valve

The inspectors reviewed the temporary modification and the associated safety evaluation screening against the system design bases documentation, including the updated final safety analysis report and the technical specifications, and verified that the modification did not adversely affect the system operability/availability. The inspectors also verified that the installation and restoration were consistent with the modification documents and that configuration control was adequate. Additionally, the inspectors verified that the temporary modification was identified on control room drawings, appropriate tags were placed on the affected equipment, and licensee personnel evaluated the combined effects on mitigating systems and the integrity of radiological barriers.

These activities constitute completion of one sample for temporary plant modifications as defined in Inspection Procedure 71111.18-05.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the following postmaintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- November 6, 2008 Postmaintenance test for diesel generator 1, float valve, solenoid valve replacement
- November 12, 2008, Emergency station transformer outage postmaintenance test
- December 9, 2008 Postmaintenance test for reactor core isolation cooling maintenance
- December 10, 2008, Postmaintenance test for RCIC-MO-18

The inspectors selected these activities based upon the structure, system, or component's ability to affect risk. The inspectors evaluated these activities for the following (as applicable):

- The effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed
- Acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate

The inspectors evaluated the activities against the technical specifications, the updated final safety analysis report, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with postmaintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of four postmaintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the updated final safety analysis report, procedure requirements, and Technical Specifications to ensure that the five surveillance activities listed below demonstrated that the systems, structures, and/or components tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the significant surveillance test attributes were adequate to address the following:

- Preconditioning
- Evaluation of testing impact on the plant
- Acceptance criteria
- Test equipment
- Procedures
- Jumper/lifted lead controls
- Test data
- Testing frequency and method demonstrated technical specification operability
- Test equipment removal

- Restoration of plant systems
- Fulfillment of ASME Code requirements
- Updating of performance indicator data
- Engineering evaluations, root causes, and bases for returning tested systems, structures, and components not meeting the test acceptance criteria were correct
- Reference setting data
- Annunciators and alarms setpoints

The inspectors also verified that licensee personnel identified and implemented any needed corrective actions associated with the surveillance testing.

- November 3, 2008 Emergency transformer deluge test
- November 10, 2008, Battery room electrolyte temperature test
- November 24, 2008, Diesel generator fuel oil quality test
- December 9, 2008, Reactor core isolation cooling system surveillance following maintenance
- December 9, 2008, Reactor core isolation cooling motor operated valve surveillance following maintenance

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of five surveillance testing inspection samples as defined in Inspection Procedure 71111.22-05.

b. Findings

No findings of significance were identified.

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors reviewed the objectives and scenario for the 2008 biennial emergency plan exercise to determine if the exercise would acceptably test major elements of the emergency plan. The scenario simulated a carbon dioxide discharge in a vital area, a main turbine trip, a failure of the reactor protection system to bring the reactor to less than five percent power, fission product barrier failures, core damage from a spike in reactor power, a radiological release to the environment through two main steam isolation valves in the same steam line failing open with a concurrent steam leak, changes in wind direction, and failures of offsite emergency warning sirens, to demonstrate the licensee's capabilities to implement the emergency plan.

The inspectors evaluated exercise performance by focusing on the risk-significant activities of event classification, offsite notification, recognition of offsite dose

consequences, and development of protective action recommendations, in the simulator control room and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility
- Joint Information Center

The inspectors also assessed recognition of and response to abnormal and emergency plant conditions, the transfer of decision making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility Emergency Plan, and emergency plan implementing procedures associated with operation of the above facilities and performance of the associated emergency functions as listed in the attachment to this report.

The inspectors compared the observed exercise performance with the requirements in the facility emergency plan, 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, and with the guidance in the emergency plan implementing procedures and other federal guidance.

The inspectors attended the post-exercise critiques in each of the above facilities to evaluate the initial licensee self-assessment of exercise performance and attended a subsequent formal presentation of critique items to plant management.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.01-05.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed an in-office review of Revision 55 of the Cooper Nuclear Station Emergency Plan, submitted October 16, 2008, and Revision 38 to Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification," submitted October 22, 2008. These revisions described the notifications required when an emergency condition is discovered after it no longer applies, clarified the intent of toxic gas emergency action levels, and made minor administrative corrections.

The revisions were compared to their previous revisions, to the criteria of NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q). This review was not documented in a safety evaluation report and did not constitute an approval of the licensee's changes; therefore, these revisions are subject to future inspection.

These activities constitute completion of two samples as defined in Inspection Procedure 71114.04-05.

b. Findings

No findings of significance were identified.

1EP7 Force-on-Force Exercise Evaluation (71114.07)

a. Inspection Scope

The inspectors observed licensee performance during the site emergency preparedness drill in the Technical Support Center. This drill was in conjunction with an inspection scheduled and observed by the NRC's Office of Nuclear Security and Incident Response and documented in Inspection Report 05000298/2008201. The inspectors observed communications, event classification, and event notification activities by the simulated shift manager. The inspectors reviewed the emergency preparedness-related corrective actions from a previous inspection conducted by the NRC's Office of Nuclear Security and Incident Response to determine whether they had been completed and adequately addressed the cause of the previously-identified weakness. The inspectors also observed portions of the post-drill critique to determine whether their observations were also identified by the licensee's evaluators. The inspectors verified that minor issues identified during this inspection were entered into the licensee's corrective action program.

This inspection constitutes one sample as defined by Inspection Procedure 71114.07-05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

a. Inspection Scope

This area was inspected to assess licensee personnel's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspectors used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspectors interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspectors performed independent radiation dose rate measurements and reviewed the following items:

- Performance indicator events and associated documentation packages reported by the licensee in the Occupational Radiation Safety Cornerstone

- Controls (surveys, posting, and barricades) of radiation, high radiation, or airborne radioactivity areas
- Radiation work permits, procedures, engineering controls, and air sampler locations
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Radiation work permit briefings and worker instructions
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of 13 of the required 21 samples.

b. Findings

No findings of significance were identified.

20S2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspectors assessed licensee personnel's performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable. The inspectors used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspectors interviewed licensee personnel and reviewed the following:

- Current 3-year rolling average collective exposure
- Five work activities from previous work history data which resulted in the highest personnel collective exposures
- Site-specific trends in collective exposures, plant historical data, and source-term measurements
- Site-specific ALARA procedures

- Three work activities of highest exposure significance completed during the last outage
- ALARA work activity evaluations, exposure estimates, and exposure mitigation requirements
- Intended versus actual work activity doses and the reasons for any inconsistencies
- Interfaces between operations, radiation protection, maintenance, maintenance planning, scheduling and engineering groups
- Integration of ALARA requirements into work procedure and radiation work permit (or radiation exposure permit) documents
- Dose rate reduction activities in work planning
- Postjob (work activity) reviews
- Assumptions and basis for the current annual collective exposure estimate, the methodology for estimating work activity exposures, the intended dose outcome, and the accuracy of dose rate and man-hour estimates
- Method for adjusting exposure estimates, or re-planning work, when unexpected changes in scope or emergent work were encountered
- Exposure tracking system
- Records detailing the historical trends and current status of tracked plant source terms and contingency plans for expected changes in the source term due to changes in plant fuel performance issues or changes in plant primary chemistry
- Source-term control strategy or justifications for not pursuing such exposure reduction initiatives
- Specific sources identified by the licensee for exposure reduction actions, priorities established for these actions, and results achieved since the last refueling cycle
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection
- Resolution through the corrective action process of problems identified through postjob reviews and postoutage ALARA report critiques
- Corrective action documents related to the ALARA program and follow-up activities, such as initial problem identification, characterization, and tracking

- Effectiveness of self-assessment activities with respect to identifying and addressing repetitive deficiencies or significant individual deficiencies

Specific documents reviewed during this inspection are listed in the attachment.

These activities constitute completion of 13 of the required 15 samples and 9 of the optional samples as defined in IP 71121.02-05.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

.1 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the third quarter 2008 performance indicators for any obvious inconsistencies prior to its public release in accordance with Inspection Manual Chapter 0608, "Performance Indicator Program."

This review was performed as part of the inspectors' normal plant status activities and, as such, did not constitute a separate inspection sample.

b. Findings

No findings of significance were identified.

.2 Unplanned Scrams with Complications

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams with complications performance indicator for the period from the third quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports and NRC integrated inspection reports for the period of July 2007 through September 2008 to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one unplanned scrams with complications sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - emergency AC power system performance indicator for the period from the fourth quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, mitigating systems performance index derivation reports, issue reports, event reports and NRC integrated inspection reports for the period of October 2007 through September 2008 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index emergency AC power system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.4 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - high pressure injection systems performance indicator for the period from the fourth quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of October 2007 through September 2008 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index high pressure injection system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.5 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - heat removal system performance indicator for the period from the fourth quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, mitigating systems performance index derivation reports, and NRC integrated inspection reports for the period of October 2007 through September 2008 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.6 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - residual heat removal system performance indicator for the period from the fourth quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of October 2007 through September 2008 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to

determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index residual heat removal system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.7 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the mitigating systems performance index - cooling water systems performance indicator for the period from the fourth quarter 2007 through the third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's operator narrative logs, issue reports, mitigating systems performance index derivation reports, event reports and NRC integrated inspection reports for the period of October 2007 through September 2008 to validate the accuracy of the submittals. The inspectors reviewed the mitigating systems performance index component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one mitigating systems performance index cooling water system sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.8 Drill and Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the drill/exercise performance performance indicator for the period July 2007 through September 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 4 and 5, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspector reviewed licensee records and processes including procedural guidance on assessing opportunities for the

performance indicator; assessments of performance indicator opportunities during pre-designated control room simulator training sessions, performance during the 2008 biennial exercise, and performance during other drills. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one drill and exercise performance sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.9 Emergency Response Organization Drill Participation

a. Inspection Scope

The inspectors sampled licensee submittals for the emergency response organization drill participation performance indicator for the period July 2007 through September 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 4 and 5, were used. The inspectors reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed the licensee's roster of personnel assigned to key emergency response organization positions, drill participation records, and training records for twenty key responders. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one emergency response organization drill participation sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.10 Alert and Notification System

a. Inspection Scope

The inspectors sampled licensee submittals for the alert and notification system performance indicator for the period July 2007 through September 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revisions 4 and 5, were used. The inspector reviewed the licensee's records associated with the performance indicator to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspector reviewed licensee records and processes including procedural guidance on assessing opportunities for the performance indicator and the results of periodic limited-cycle and full-cycle alert notification system operability tests. The specific documents reviewed are described in the attachment to this report.

These activities constitute completion of one alert and notification system sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.11 Occupational Radiological Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the occupational radiological occurrences performance indicator for the period from the second quarter 2008 through third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's assessment of the performance indicator for occupational radiation safety to determine if indicator related data was adequately assessed and reported. To assess the adequacy of the licensee's performance indicator data collection and analyses, the inspectors discussed with radiation protection staff, the scope and breadth of its data review, and the results of those reviews. The inspectors independently reviewed electronic dosimetry dose rate and accumulated dose alarm and dose reports and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

These activities constitute completion of the occupational radiological occurrences sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.12 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences performance indicator for the period from the second quarter 2008 through third quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, was used. The inspectors reviewed the licensee's issue report database since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates between second quarter 2008 through third quarter 2008 to determine if indicator results were accurately reported. The

inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Additionally, the inspectors reviewed the licensee's historical 10 CFR 50.75(g) file and selectively reviewed the licensee's analysis for discharge pathways resulting from a spill, leak, or unexpected liquid discharge focusing on those incidents which occurred over the last few years.

These activities constitute completion of the radiological effluent technical specifications/offsite dose calculation manual radiological effluent occurrences sample as defined by Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

40A2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the various baseline inspection procedures discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. The inspectors reviewed attributes that included: the complete and accurate identification of the problem; the timely correction, commensurate with the safety significance; the evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews; and the classification, prioritization, focus, and timeliness of corrective actions. Minor issues entered into the licensee's corrective action program because of the inspectors' observations are included in the attached list of documents reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

Introduction. The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to follow the requirements of Administrative Procedure 0.5, "Conduct of the Condition Report Process." Specifically, licensee personnel failed to initiate condition reports for adverse conditions including multiple emergency response procedures that could not be implemented as written, a metallic noise emanating from a

service water pump motor, and multiple examples of chemical storage procedure violations.

Description. Administrative Procedure 0.5, "Conduct of the Condition Report Process," Revision 63, provides overall direction on the conduct of the corrective action program at Cooper Nuclear Station. Paragraph 7.1.3 provides the following standard for condition report initiation: "Employees and contractors are encouraged to write CRs for a broad range of problems. Problems reported must include, but are not limited to, Adverse Conditions." The procedure goes on to define adverse conditions as "an event, defect, characteristic, state, or activity that prohibits or detracts from safe, efficient nuclear plant operation. Adverse conditions include non-conformances, conditions adverse to quality, and plant reliability concerns." The inspectors identified three occasions (some of which had multiple sub-examples) when licensee personnel failed to initiate condition reports for adverse conditions as required by Procedure 0.5.

In the first example, the inspectors identified that the licensee had not initiated condition reports upon the discovery that multiple emergency procedures could not be implemented as written. In preparation for an NRC inspection, operations staff walked down approximately seventy emergency response procedures to ensure that they were complete and accurate, most of which were revised as a result of the walkdowns. In performing these walkdowns, operators discovered many separate conditions that made portions of the procedures impossible to implement as written. These conditions included such problems as missing emergency response equipment, incorrect component labeling, incorrect component identification in the procedural steps, staged tagouts that contained errors, and incomplete or incorrect procedural instructions. As these errors were discovered, they were promptly corrected. The individual conditions were not, however, entered into the corrective action program as required by Procedure 0.5. The inspectors reviewed 13 procedure review packages that contained such inadequacies, and noted that none of them had been entered in the corrective action program in a timely manner (three of them had been entered into the corrective action program weeks after discovery, whereas the others were not written up at all).

In the second example, inspectors were performing a field inspection of a service water pump shortly after it had been returned to service following major disassembly on December 3, 2008. The inspectors heard an audible banging noise coming from the pump motor and notified the control room immediately. The licensee subsequently learned that the water shield deflectors had not been properly reassembled following maintenance, and that one of the deflector standoff bolts had been banging the motor casing. The next day, the inspectors noted that no condition report had been initiated to document the failure by maintenance personnel to properly reassemble the motor. The inspectors shared this observation with the licensee, after which Condition Report CR-CNS-2008-08842 was written to document the error.

In the third example, the inspectors noted during a review of plant records that multiple examples of improper storage of incompatible chemicals had been identified by station personnel during quarterly chemical storage inspections, as required by Administrative Procedure 0.7.3, "Chemical Material Storage," Revision 4. These walkdowns had identified violations of Procedure 0.7.3 on three different recent occasions, each of which created the potential for dangerous chemical reactions and/or the release of toxic gases in the plant. None of these three procedural violations were documented in the corrective action program. Interviews indicated that the licensee staff members who

perform these activities did not believe that condition reports were necessary unless programmatic breakdowns were known to exist. The licensee documented this condition in Condition Report CR-CNS-2009-00099.

The inspectors determined that each of these three examples represented a failure to comply with the requirements of Procedure 0.5, in that these non-conformances had not been entered into the corrective action program. The licensee documented this condition in Condition Report CR-CNS-2008-08780.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow the requirements of Administrative Procedure 0.5, "Conduct of the Condition Report Process." Specifically, licensee personnel failed to initiate condition reports for adverse conditions including multiple emergency response procedures that could not be implemented as written, a metallic noise emanating from a service water pump motor, and multiple examples of chemical storage procedure violations. The finding is more than minor because the condition of not initiating condition reports for adverse conditions could become more significant if left uncorrected. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding is determined to have very low safety significance because it did not result in the loss of safety function of any Technical Specification required equipment. The cause of this finding is related to the problem identification and resolution crosscutting component of corrective action program because licensee personnel failed implement a corrective action program with a low threshold for identifying issues [P.1 (a)].

Enforcement. Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions or drawings. Administrative Procedure 0.5, "Conduct of the Condition Report Process," Revision 63, requires that licensee personnel initiate condition reports for adverse conditions, including events that detract from safe nuclear plant operation. Contrary to this requirement, on December 3, 2008, licensee personnel failed to initiate a condition report for the adverse condition of a metallic noise emanating from a service water pump motor. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program as Condition Report CR-CNS-2008-08780, this violation is being treated as a noncited violation consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2008005-04, "Failure to Follow Procedure for Initiating Condition Reports."

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. The inspectors accomplished this through review of the station's daily corrective action documents.

The inspectors performed these daily reviews as part of their daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors completed a semiannual trend review of repetitive or closely related issues that were documented in corrective action documents, corrective maintenance documents, and the control room logs to identify trends that might indicate the existence of more safety significant issues. The inspectors' review covered the 12-month period between December 2007 and December 2008. When warranted, some of the samples expanded beyond those dates to fully assess the issue. The inspectors reviewed the following issues:

- Freezestat alarms
- Battery Room A low-flow alarms
- Drywell air monitor gaseous channel unreliability
- Meteorological tower unreliability
- Unauthorized labeling of plant components

The inspectors compared their results with the results contained in the licensee's routine trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy. Documents reviewed by the inspectors are listed in the attachment.

b. Assessment and Observations

The inspectors evaluated the licensee's corrective action program trending methodology and observed that the licensee had performed detailed reviews of developing issues. The inspectors determined that the licensee had generally addressed each of the areas reviewed. In addition to the observations already documented by the licensee, the inspectors noted the following:

- Freezestat Alarms

The inspectors noted that there had been a significant increase in number of freezestat alarms received in the control room in the winter months of 2008. During the 2007/2008 winter season, a total of 12 condition reports were issued for freezestat alarms. In comparison, 18 condition reports were initiated between October and December for issues with freezestat alarms. These alarms were indicative of a variety of degraded conditions, including failed steam trap bypass valves, insufficient steam flow to keep air stream warm, condensation buildup in heating steam coils, failed temperature control valves and system lineup issues. Based on interviews with plant personnel, this increase in the number of material failures is partly due to the delays in preparing the auxiliary steam system for service prior to the winter months. While the freezestat alarms are not individually significant, they do result in a control room annunciation and create a distraction for operations. The inspectors determined that no actions existed within corrective action program or any other station process to identify or

correct this trend. Based on this observation by the inspectors, the licensee initiated Condition Report CR-CNS-2009-00171 to document the adverse trend.

- Battery Room A Low-flow Alarms

The inspectors noted a number of recent condition reports that documented the receipt of Battery Room A low-flow alarms. This condition was documented four times in 2008, with each alarm being resolved as a “spurious” alarm. Three of the four condition reports were closed to work items, and the fourth was closed as a category “E” requiring no corrective actions. Given the risk importance of the station batteries, the inspectors challenged this treatment of the repetitive battery room low flow alarms. Upon further investigation, licensee personnel discovered that the pressure switch that drives the alarm is being utilized in the bottom ten percent of its effective range and may be providing erroneous low flow signals. In addition, the investigation demonstrated that Fan EF-C-1A is under-performing, contributing to the low-flow condition. Based on this observation by the inspectors, the licensee initiated Condition Report CR-CNS-2009-00139 to document the adverse trend.

- Drywell Air Monitor Gaseous Channel Unreliability

The inspectors noted that the drywell air monitor gaseous channel had been inoperable for 86 percent of the previous 6 months and for significant periods of time before that. The reliability of the gaseous channel (one of three instruments credited with satisfying the Limiting Condition for Operation for Technical Specification 3.4.5) has been a challenge for the station that is well-documented in the corrective action program, system health tracking websites and daily operations reports. Nonetheless, Cooper Nuclear Station has been dealing with an ongoing general increase in unidentified leakage in the drywell for the past two operating cycles. The inspectors determined that continued vigilance is required for this adverse trend in the reliability of the drywell air monitor gaseous channel. Based on this observation by the inspectors, the licensee initiated Condition Report CR-CNS-2009-00140 to document the adverse trend.

- Meteorological Tower Unreliability

The inspectors noted that there were eleven conditions in the last year that resulted in a partial or complete loss of functionality in the station meteorological towers (met towers). The met towers contain instrumentation used to provide environmental data in support of the station emergency plan. Loss of met tower data is a challenge for station personnel in completing their emergency plan duties, although the inspectors noted that alternate sources were available to meet the requirements of the emergency plan. Of the eleven met tower failures, two were related to human error (accidental cable cuts during digging activities). The other nine failures were a result of equipment malfunctions, some of which were repetitive in nature. The inspectors did not find any documentation of this trend in corrective action program, system health reports, or other data sources. Based on this observation by the inspectors, the licensee initiated Condition Report CR-CNS-2009 00141 to document the adverse trend.

- Unauthorized Labeling of Plant Components

The inspectors noted that an increased number of condition reports were being generated to document unauthorized labeling of plant components. The inspectors identified seven examples of such unauthorized labeling that had been identified within the last two months of the year, three of which had been identified by NRC inspectors. These conditions included marking damper positions with indelible markers on duct lagging, recording wiring configuration on the end of the diesel fuel oil day tank with a pencil, and labeling emergency and normal power supplies on a transfer switch with a magic marker. The existence of these unauthorized labels is a challenge to configuration control and was a contributor to the mispositioning of a control room supply fan damper on November 20, 2008. The inspectors noted that the licensee had documented this emerging trend in Condition Report CR-CNS-2008-09386 on December 22, 2008 and Condition Report CR-CNS-2009-00143 on January 8, 2009.

.4 Emergency Preparedness Annual Sample Review

a. Inspection Scope

The inspectors reviewed three previous exercise scenarios, drill and exercise evaluation reports for licensee drills conducted between January 2007 and November 2008, and a summary of corrective actions (Condition Reports) associated with emergency response facilities and emergency response organization performance initiated between January 2007 and October 2008, to identify trends in emergency preparedness weaknesses and deficiencies and performance issues. The inspectors observed the November 18, 2008, biennial emergency preparedness exercise to verify the effectiveness of corrective actions for emergency response organization weaknesses and performance issues.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure, they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings and Observations

No findings of significance were identified.

4OA3 Event Follow-up (71153)

(Closed) Licensee Event Report 05000298/2008-001, Turbine Reheat Stop Valve Failure Results in Manual Scram

On August 9, 2008, during turbine valve stroke testing the reheat/stop valve failed to reopen when a moisture separator high level alarm occurred. In accordance with licensee procedures the plant was manually scrammed. Plant and mitigating system responses during the scram were as expected. The probable mechanical cause was a manufacturing defect that resulted in the reheat/stop valve test solenoid to jam. The root cause was attributed to a practice of performing reheat/stop valve testing at a power level which could result in a moisture separator reheater high level condition should a reheat/stop valve test solenoid jam. Actions to prevent recurrence included performing

that section of reheat/stop turbine valve testing when less than 25 percent power and working with the test valve manufacturer to ensure the test solenoid valves do not jam in service.

The licensee initiated this licensee event report due to the reactor protection system actuation resulting in a reactor scram and the primary containment isolation system group 2 Isolation. The licensee documented this event with condition report CR-CNS-2008-06082. The inspectors reviewed all aspects of the event, including performance of control room staff, evaluation and mitigation of station risk, troubleshooting plans, performance of corrective maintenance, treatment in the corrective action program, evaluation of the root cause investigation and corrective actions to prevent recurrence. This review found no findings of significance and that no violation of NRC requirements occurred. This licensee event report is closed.

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors performed observations of security force personnel and activities to ensure that the activities were consistent with Cooper Nuclear Station security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Implementation of Temporary Instruction 2515/176, Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

The objective of Temporary Instruction 2515/176 was to gather information to assess the adequacy of nuclear power plant emergency diesel generator endurance and margin testing as prescribed in plant-specific Technical Specifications. The inspectors reviewed the licensee's Technical Specifications, procedures, and calculations and interviewed licensee personnel to complete the temporary instruction. The information gathered while completing this temporary instruction was forwarded to the Office of Nuclear Reactor Regulation for further review and evaluation on January 12, 2009.

b. Findings

No findings of significance were identified.

.3 Procedure Violation Causes Augmented Off-gas System Isolation

a. Inspection Scope

The inspectors reviewed the licensee's actions in response to an unexpected isolation of the augmented off-gas system on November 17, 2008. The inspectors reviewed the licensee's control of the evolution through work control documents, established procedures and operating logs. The followup inspection focused specifically on the apparent cause and corrective actions taken as a result of this event. Documents reviewed are listed in the attachment.

b. Findings

Introduction. A self-revealing Green finding was identified regarding the licensee's failure to follow procedural requirements during system maintenance. Specifically, licensee personnel failed to heed a cautionary note in a maintenance procedure, resulting in an inadvertent isolation of the augmented off-gas system.

Description. During maintenance on November 17, 2008, unexpected isolation of the augmented off-gas system occurred. The purpose of the augmented off-gas system, as stated in the Cooper Nuclear Station Updated Final Safety Analysis Report, is to delay the radioactive gases in the off-gas stream, reducing the activity level prior to venting the gases to the atmosphere through the elevated release point. The augmented off-gas system satisfies the as low as practicable requirements of 10 CFR Part 50, Appendix I. The augmented off-gas system is therefore required by the Technical Requirements Manual to be continuously in service whenever the main condenser air ejectors are in service with the reactor above ten percent rated power.

IAC Procedure 14.11.6, "Yokogawa Recorder μ RS1000 and μ RS1800 Calibration and Maintenance," Revision 4, contains a cautionary note stating the following:

"CAUTION – Do Not remove the 250 Ω resistors associated with Channels 2 and 3 from Terminal Board ATB14 as this will cause an augmented off-gas isolation. Channel wiring should be lifted at the recorder as identified below, not Terminal Board ATB4."

Contrary to this note, the maintenance person performing this procedure on November 17, 2008 lifted the lead for the recorder at Terminal Board ATB4 and caused an isolation of the augmented off-gas system. Operations personnel restored the augmented off-gas system to service later that day. The licensee documented this event in Condition Report CR-CNS-2008-08405.

The licensee determined that the error occurred when the maintenance person discovered labeling on the back of the recorder that did not match the description in the maintenance procedure. The maintenance person then traced the wires from the back of the recorder to the terminal board and determined which wire was to be disconnected. Instead of returning to the recorder to lift the wiring, the individual lifted the wire at the terminal board, contrary to the caution note in the procedure.

The licensee's effluent monitoring program showed that the release rate through the elevated release point rose from 2.209E-8 μ Ci/ml to 1.275E-05 μ Ci/ml after the

inadvertent augmented off-gas system isolation, which remained within the 10 CFR Part 50 Appendix I, criterion.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to follow procedural requirements during system maintenance. Specifically, licensee personnel failed to heed a cautionary note in a maintenance procedure, resulting in an inadvertent isolation of the augmented off-gas system. The finding is more than minor because it affected the plant equipment attribute of the public radiation safety cornerstone, and affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials release into the public domain as a result of routine civilian nuclear reactor operation, in that the release rate through the elevated release point increased over five hundred percent as a result of the system isolation. Using Inspection Manual Chapter 0609, Appendix D, "Public Radiation Safety Significance Determination Process," the finding was determined to be of very low safety significance because it did not represent a failure to implement an effluent program or result in public dose greater than 10 CFR Part 50 Appendix I, criterion. The cause of this finding is related to the human performance crosscutting component of work practices because licensee personnel failed to stop in the face of uncertainty when unexpected labeling was discovered [H.4(a)].

Enforcement. No violation of NRC requirements was identified. This finding is identified as FIN 05000298/2008005-05, "Procedure Violation Causes Augmented Off-gas System Isolation."

.4 Improper Storage of Hazardous Chemicals

a. Inspection Scope

The inspectors reviewed the licensee's control of hazardous chemicals stored in the protected area by review of established procedures, interviews with site personnel and walkdowns of chemical storage areas. The followup inspection focused specifically on the apparent cause and corrective actions taken as a result of the inspectors finding incompatible hazardous materials stored together. Documents reviewed are listed in the attachment.

b. Findings

Introduction. The inspectors identified a Green finding regarding the licensee's failure to comply with the requirements of the Material Safety Data Sheets for two hazardous chemicals stored in the protected area. Specifically, licensee personnel stored a 55 gallon barrel of hydrogen peroxide in the same location as a 140 pound barrel of muriatic acid.

Description. During a routine plant tour, the inspectors noted that two barrels of incompatible chemicals were being stored on the same spill pallet in the turbine building heating boiler room, which also serves as the south access to the diesel generator spaces. These chemicals, hydrogen peroxide and muriatic acid (hydrochloric acid), were capable of producing an uncontrolled chemical reaction and chlorine gas release should they have become mixed together. The inspectors challenged licensee staff regarding this issue, after which the chemicals were properly separated.

The inspectors noted that the Material Safety Data Sheet for muriatic acid identifies that it is chemically incompatible with oxidizing substances. The Material Safety Data Sheet for hydrogen peroxide describes it as a "strong oxidizer" and directed that it be stored separately from acids.

Cooper Nuclear Station Administrative Procedure 0.7.3, "Chemical Material Storage," Revision 4, requires that "chemical materials to be stored in the Owner Controlled Area shall be stored in a manner consistent with the manufacturer's MSDS." The procedure contains an "Incompatible Chemicals Table," which provides a list of potential incompatibilities. This table does not list any incompatibilities for muriatic acid or hydrochloric acid, nor does it list any hazards associated with reducing agents or acids as an incompatibility for hydrogen peroxide. The procedure acknowledges that the table does not list all possible incompatibilities and directs the user to contact the station chemical control coordinator or the hazardous waste coordinator for guidance in storing any non-listed chemical. Based upon interviews conducted with the chemical control coordinator, the inspectors learned that neither of these individuals was contacted to authorize the co-location of these chemicals.

The inspectors learned that the chemicals had most likely been placed in that location by contractor personnel who operate the station water treatment plant. This performance deficiency has been identified twice before. On January 7, 2006 operations personnel identified an identical condition (hydrogen peroxide and muriatic acid stored on the same spill pallet), after which a separate spill pallet was staged to separate the two chemicals. The condition was again identified on December 12, 2006, but no condition report was initiated to record this error.

Procedure 0.7.3 requires that the chemical control coordinator perform quarterly inspections to verify, in part, that chemicals are being properly stored. The inspectors reviewed the quarterly inspection results for the previous two years to judge the effectiveness of the program. The quarterly inspections performed in the heating boiler room in 2007 and 2008 did not identify the practice of storing these chemicals together. The inspectors noted that these inspections had noted at least three other examples of improper chemical storage identified in the inspections within the past year, but that no condition reports had been initiated to recognize the procedural violations. The inspectors recognized that this was a performance deficiency, as discussed in Section 4OA2 of this report.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to comply with the requirements the Material Safety Data Sheet for hydrogen peroxide and muriatic acid. Specifically, licensee personnel stored a 55 gallon barrel of hydrogen peroxide in the same location as a 140 pound barrel of muriatic acid. The finding is more than minor because if left uncorrected, it could become a more significant safety concern in that improperly stored hazardous chemicals could put personnel at significant risk of injury and could have inhibited operators' ability to access safety related equipment to mitigate the consequences of an accident. Using Manual Chapter 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because it did not result in a loss of safety function for any mitigating system. The cause of this finding is related to the human performance crosscutting component of work practices because licensee personnel failed to supervise the activities of contractors storing hazardous chemicals in the turbine building [H.4(c)].

Enforcement. No violation of NRC requirements was identified. This finding is identified as FIN 05000298/2008005-06, "Improper Storage of Hazardous Chemicals."

40A6 Meetings

Exit Meeting Summary

On October 9, 2008, regional inspectors presented the occupational radiation safety inspection results to Mr. D. Willis, Manager, Plant Operations, and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On November 4, 2008, regional inspectors conducted a telephonic exit meeting to present the results of the in-office inspection of changes to the licensee's emergency plan and emergency plan implementing procedures to Mr. J. Austin, Manager, Emergency Planning, who acknowledged the findings.

On November 20, 2008, regional inspectors presented the results of the onsite inspection of the Biennial Emergency Preparedness Exercise to Mr. B. O'Grady, Site Vice President, and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary, sensitive, or personal information examined during the inspection had been returned to the identified custodian.

On November 20, 2008, regional inspectors briefed Mr. S. Minahan, Chief Nuclear Officer, and other members of the licensee's staff, on the results of the licensed operator requalification program inspection. The licensee acknowledged the findings presented. After review of the complete biennial requalification cycle examination results, the inspectors conducted a telephonic exit with Mr. D. Werner, Operator Training Superintendent, on December 11, 2008. The licensee acknowledged the results as presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On January 8, 2009, the resident inspectors presented the quarterly inspection results to Mr. B. O'Grady, Site Vice President and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed no proprietary information was examined during the inspection.

40A7 Licensee-Identified Violations

The following finding of very low safety significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600 for being dispositioned as a noncited violation.

- Technical Specification 5.4.1 requires, in part, that written procedures shall be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2. Regulatory Guide 1.33, Appendix A, Section 9a, requires, in part, that procedures performed for maintenance be properly preplanned and performed in accordance with instructions. Contrary to the above, on May 8, 2008, during the installation of the reactor vessel head, licensee workers failed to implement Procedure 7.4.4.1, "Reactor Pressure Vessel Head Installation,"

Revision 25, steps 4.32.1 through 4.43.4 for tensioning of the studs. Consequently, the reactor head stud tensioning had to be reworked and repeated resulting in an additional six person-rem of unplanned radiation exposures. Additionally, other planning issues and poor worker performance resulted in Job Package 2008-005, "Refuel Floor Work," to exceed the initial dose estimate of 19.862 person-rem by approximately 80 percent, and accumulated a total of 35.08 person-rem. The issue has been entered into the licensee's corrective action program as Condition Report CR-CNS-2008-3585. The inspectors determined the finding had very low safety significance because, although the finding did involve ALARA work planning and controls, the licensee's latest official 3-year rolling average collective dose was less than 240 person-rem.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Austin, Manager, Emergency Preparedness
D. Anderson, Supervisor, ALARA/Dosimetry
B. Beilke, Manager, Chemistry
M. Boyce, Manager, Projects
T. Carson, Manager, Maintenance
R. Estrada, Manager, Corrective Action and Assessments
J. Florence, Simulator Supervisor
T. Francis, Supervisor, Technical Training
J. Furr, Manager, Quality Assurance
M. Joe, Initial Licensed Operator Training Supervisor
G. Kline, Director, Engineering
D. Madsen, Licensing Engineer
J. Mahan, Manager, Projects
E. McCutchen, Senior Licensing Engineer
B. O'Grady, Site Vice President
D. Oshlo, Manager, Radiation Protection
R. Penfield, Assistant Manager, Operations
D. Seacock, Manager, Training
D. VanDerKamp, Manager, Licensing
D. Werner, Operations Training Superintendent
D. Willis, Manager, Plant Operations
A. Zarembo, Director, Nuclear Safety Assurance

NRC Personnel

E. Byre, Physical Security Specialist
Z. Bailey, Reactor Inspector
R. Hardies, Chief, Component Integrity Branch
D. Rudland, Senior Materials Engineer
J. Tsao, Senior Materials Engineer

Federal Emergency Management Agency

R. McCabe, Chairman, Regional Assistance Committee
N. Valentine, Senior Technical Specialist
A. Canida, Technical Specialist

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

050000298/2008005-01	NCV	Misaligned Lubricating Oil Piping Causes DG 2 Failure (Section 1R12)
050000298/2008005-02	NCV	Failure to Assess and Manage the Risk of Heavy Equipment Operations (Section 1R13)
050000298/2008005-03	NCV	Failure to Follow Procedure Results in Inadequate Operability Determinations (Section 1R15)
050000298/2008005-04	NCV	Failure to Follow Procedure of Initiating Condition Reports (Section 4OA2)
050000298/2008005-05	FIN	Procedure Violation Causes Augmented Off-gas System Isolation (Section 4OA5)
050000298/2008005-06	FIN	Improper Storage of Hazardous Chemicals (Section 4OA5)

Closed

05000298/2008-001-00	LER	Turbine Reheat Stop Valve Failure Results in Manual Scram (Section 4OA3)
05000298/2008-003-02	URI	Misaligned Lubricating Oil Piping Causes DG 2 Failure (Section 1R12)

Discussed

None

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

NUMBER	TITLE	REVISION
General Operating Procedure 2.1.14	Seasonal Weather Preparations	11
SOP 2.2.3	Circulating Water System	116
Maintenance Procedure 7.2.80	Intake Structure Guide Wall Winterization and Restoration	8

WORK ORDER

4602273

Section 1R05: Fire Protection

DOCUMENTS

TITLE	REVISION
Cooper Nuclear Station Fire Hazards Analysis	2/28/03
Cooper Nuclear Station Fire Preplan Sheet CNS-FP-268	Revision 2
Cooper Nuclear Station Fire Hazards Analysis Fire Area Drawing Elevations 958'-3", 976'-0", 1001'-0" Figure 5	Revision 4

Section 1R11: Licensed Operator Requalification Program

PROCEDURES

NUMBER	TITLE	REVISION
OTP 804	Requalification Training and Examination Scenario Development	15
OTP 805	Licensed Operator Requalification Annual/Biennial Examination Development	10
OTP 809	Operator Requalification Examination Administration	15
0-CNS-47	Training Oversight Program	21
2.0.7	Licensed Operator Active / Reactivation / Medical Status Maintenance Program	4
TPP 201	CNS Licensed Personnel Requalification Program	48

MISCELLANEOUS

TITLE	REVISION
Lesson SKL052-52-79	5
Attachment 1, RO Dynamic Grading Worksheet	11/13/08
Attachment 3, SRO Dynamic Grading Worksheet	11/13/08
Attachment 5, STE Dynamic Grading Worksheet	11/13/08
Attachment 7, Crew Dynamic Grading Worksheet	11/13/08
All scenarios used during the 2008 biennial requalification examinations	

All job performance measures used during the 2008 biennial requalification examinations

Simulator Discrepancy Report

Licensed Operator Proficiency Watch Status Report

Six randomly selected licensed operator medical records

Forty licensed operator human performance related condition reports

Licensed Operator Training Review Committee meeting minutes for the last two years

Section 1R12: Maintenance Effectiveness

PROCEDURE

NUMBER	TITLE	REVISION/ DATE
0.5.EVAL	Preparation of Condition Reports	18

CONDITION REPORTS

CNS-2008-00968	Oil Leak From Weld on DG-2 Main Lubricating Oil Pump Discharge Pipe	Root Cause Report dated March 11, 2008
CNS-2008-00968	Oil Leak From Weld on DG-2 Main Lubricating Oil Pump Discharge Pipe	Root Cause Report Revision 1 dated November 17, 2008

MISCELLANEOUS

NUMBER	TITLE	REVISION/ DATE
	Structural Integrity Associates, Inc., Calculation Package File 0800309.301, Evaluation of DG2 Lubricating Oil Piping Crack Initiation and Propagation at Cooper	0
	Structural Integrity Associates, Inc. Calculation Package File 0800309.301, Evaluation of DG2 Lubricating Oil Piping	A
	Structural Integrity Associates, Inc. Calculation Package File 0800309.303, Fracture Mechanics Stress Intensity Calculations for DG2 Lubricating Oil Piping	0
	Structural Integrity Associates, Inc. Calculation Package File 0800309.303, Fracture Mechanics Stress Intensity Calculations for DG2 Lubricating Oil Piping	B

Structural Integrity Associates, Inc. Calculation Package File 0800309.304, Crack Growth and Leakage Analysis of Cracked Lubricating Oil Piping	0
Structural Integrity Associates, Inc. Calculation Package File 0800309.303, Crack Growth and Leakage Analysis of Cracked Lubricating Oil Piping	A
Structural Integrity Associates, Inc. Letter Report 0800309.401, Vibration Testing for the Emergency Diesel Generator at Cooper Nuclear Station	0
Southwest Research Institute 18.18056.08.809 Interim Report, A Failure Analysis Investigation of Leakage and Cracking in a Lubricating Oil Elbow Joint in a MV-506-B Pump	2/22/08
Southwest Research Institute 18.18056.08.809, Final A Failure Analysis Investigation of Leakage and Cracking in a Lubricating Oil Elbow Joint in a MV-506-B Pump	4/3/08
International Journal of Pressure Vessels and Piping 79 (2002) 99-102, Effects of Crack Morphology Parameters on Leak-Rate Calculation in LBB Evaluation	
Cooper Energy Services letter to Cooper-Bessemer Owners Group Technical Committee, Engine Base Oil Volume	8/26/96
Cooper Nuclear Station Lubricating Oil Schematic, KSV46-5	N20
Cooper Nuclear Station Control Elementary Diagram, 3046 SH 15	N20

WORK ORDER

NUMBER	TITLE	REVISION
4247791	Diesel Generator 2 Flex Hose Oil Leak	

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
0.40.4	Planning	10
0-CNS-52	Control of Switchyard and Transformer Yard Activities	17

CONDITION REPORTS

CR-CNS-2008-08987 CR-CNS-2008-08645

WORK ORDER

4557573

Section 1R15: Operability Evaluations

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
ENN-OP-104	Operability Determinations	2

CONDITION REPORTS

CNS-2008-09514	CNS-2008-8889	CNS-2008-9205	CNS-2008-9094
CNS-2008-8538	CNS-2008-8889	CNS-2008-9017	CNS-2008-9219
CNS-2008-8575			

Section 1R18: Plant Modifications

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
TCC 4665414	DG1 Float Valve CNS-1-DGDO-FOV-FLTV10 Soft Seat Removal	
EE 08-026	Re-configure DGDO-V-19 from Open to Closed	

Section 1R19: Postmaintenance Testing

PROCEDURE

NUMBER	TITLE	REVISION/ DATE
SP 6.RCIC.201	RCIC Power Operated Valve Operability Test (IST)	16

WORK ORDERS

4520574	4547002	4582079	4602413
4546994	4547003	4582131	

Section 1R22: Surveillance Testing

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
SP 15.FP-648	Outside Transformer Deluge System Flow Test	5
SP 6.1EE.602	DIV I 125V/250V Station and Diesel Fire Pump Battery 92 Day Check	0
SP 6.RCIC.102	RCIC IST and 92 Day Test	22
SP 6.RCIC.201	RCIC Power Operated Valve Operability Test (IST)	16
SP 6.DG.604	Diesel Fuel Oil Storage Tank, Bunker A & B Quality Test	15

Section 1EP1: Exercise Evaluation

NUMBER	TITLE	REVISION/ DATE
5.7.1	Emergency Classification	38
5.7.2	Emergency Director	26
5.7.6	Notifications	48
5.7.7	Activation of TSC	31
5.7.8	Activation of OSC	24
5.7.9	Activation of EOF	30
5.7.14	Stable Iodine Thyroid Blocking	15
5.7.15	OSC Team Dispatch	17
5.7.20	Protective Action Recommendations	19
5.7.25	Recovery Operations	17

Section 2OS1: Access Controls to Radiologically Significant Areas

CONDITION REPORTS

CR-CNS-2008-4781	CR-CNS-2008-4876	CR-CNS-2008-6144	CR-CNS-2008-6362
CR-CNS-2008-4876	CR-CNS-2008-5868	CR-CNS-2008-6293	

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
9.RADOP.1	Radiation Protection at CNS	Revision 8
9.ENN-RP-102	Radiological Control	Revision 0
9.ENN-RP-106	Radiation and Contamination Surveys	Revision 6
9.EN-RP-104	Personnel Contamination	Revision 2

Section 2OS2: ALARA Planning and Controls

CONDITION REPORTS

20086363	20086787	20087361	20087466
20086582	20087230	20087455	20088225
20086638			

RADIATION WORK PERMITS

NUMBER	TITLE
2008440	RE-24 Reactor Disassembly/Re-Assembly
2008441	RE-24 Cell Maintenance/Fuel Moves
2008442	RE-24 LPRM Replacement
2008443	RE-24 Refuel Floor Support Activities
2008458	RE-24 Drywell Temporary Shielding
2008460	RE-24 Drywell Permanent Shielding

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
0.ALARA.1	CNS ALARA Program	5
9.ALARA.4	Radiation Work Permits	9
9.ALARA.5	ALARA Planning and Controls	19
9.EN-RP-110	ALARA Program	12
9.EN-RP-208	Whole Body Counting and In-Vitro Bioassay	2

Section 4OA1: Performance Indicator Verification

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
5.7.1	Emergency Classification	37 and 38
5.7.27	Alert and Notification System	17
0-PI-01	Performance Indicator Program	23
EPDG 2	Emergency Preparedness Performance Indicator Guide	15

CONDITION REPORTS

CR-CNS-2007-08194	CR-CNS-2007-3552	CR-CNS-2008-00512	CR-CNS-2008-04862
CR-CNS-2007-08426	CR-CNS-2008-00138	CR-CNS-2008-00982	CR-CNS-2008-05737
CR-CNS-2007-08729	CR-CNS-2008-00173	CR-CNS-2008-01017	CR-CNS-2008-6082

MISCELLANEOUS

TITLE	REVISION/ DATE
System Engineer Performance Indicator Notebooks with Monthly Data Files up to August 2008	
Cooper Nuclear Generating Station Emergency Plan	55

Section 4OA2: Identification and Resolution of Problems

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
0.4.3	Procedure Adequacy Review Program	2
0.5	Conduct of the Condition Reporting Process	63
0.5CR	Condition Report Initiation, Review and Classification	12
0.7.3	Chemical Material Storage Attachment 2, Chemical Storage Inspection Checklists from 2007 and 2008	2
0.7.3	Chemical Material Storage	4
IAC Procedure 14.11.6	Yokogawa Recorder uRS1000 and uRS1800 Calibration and Maintenance	4
System Operating Procedure 2.2.19	480 VAC Auxiliary Power Distribution System	38
Surveillance Procedure 6.1DG.103	Diesel Generator 18 Month Operability Test (IST) (DIV I)	34
Emergency Procedure 5.3EMPWR	Emergency Power During Modes 1,2 or 3	25
NEDC 00-111	CNS Auxiliary Power System AC Loads	4

MISCELLANEOUS

NUMBER	TITLE	REVISION/ DATE
	CNS Technical Specifications	
Engineering Evaluation 06-042	Response of DG to a LOOP When Operating in Parallel	0
	Ideal Electric Company Drawing D-40135	2/6/71

IEEE Standard 387-1995	Power Supplies for Nuclear Power Generating Stations	
	Instruction Manual, Synchronous Motors, Generators, DC Exciters & Brushless Equipment, Ideal Electric Company	8/28/70
	System Health Reports	
	KSV Diesel Generator Operation and Maintenance Manual, Cooper Cameron Corporation	1997
	Material Safety Data Sheet for Hydrogen Peroxide, Atofina Chemicals Inc.	11/29/01
	Material Safety Data Sheet for Muriatic Acid, Bayer Corporation	3/19/01
	Surveillance Procedure 6.1DG.103 completion records from previous three years	
Updated Final Safety Analysis Report, Chapter VIII	Standby AC Power Source	2/28/00

CONDITION REPORTS

CR-CNS-2008-07095	CR-CNS-2008-08464	CR-CNS-2008-08686	CR-CNS-2009-00099
CR-CNS-2008-07238	CR-CNS-2008-08503	CR-CNS-2008-08687	CR-CNS-2009-00113
CR-CNS-2008-07667	CR-CNS-2008-08506	CR-CNS-2008-08693	CR-CNS-2009-00139
CR-CNS-2008-07982	CR-CNS-2008-08563	CR-CNS-2008-08823	CR-CNS-2009-00140
CR-CNS-2008-08009	CR-CNS-2008-08652	CR-CNS-2008-08842	CR-CNS-2009-00141
CR-CNS-2008-08234	CR-CNS-2008-08654	CR-CNS-2008-09320	CR-CNS-2009-00143
CR-CNS-2008-08270	CR-CNS-2008-08683	CR-CNS-2008-09386	CR-CNS-2009-00171
CR-CNS-2008-08405			

Section 40A5: Other Activities

PROCEDURES

NUMBER	TITLE	REVISION/ DATE
IAC Procedure 14.11.6	Yokogawa Recorder μ RS1000 and μ 1800 Calibration and Maintenance	4
0.7.3	Chemical Material Storage	2

MISCELLANEOUS

NUMBER	TITLE	REVISION/ DATE
	Elevated Release Point Discharge Data for November 17, 2008 and November 24, 2008	

MSDS Sheet for 35% Hydrogen Peroxide, Atofina
Chemicals 11/29/01

MSDS Sheet for 20 Degree Baume Muriatic Acid,
Bayer 3/19/01

Updated Safety Analysis Report

CONDITION REPORTS

CR-CNS-2008-08405 CR-CNS-2008-8823