UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

May 2, 2013

Mr. Oscar A. Limpias, Vice President-Nuclear
and Chief Nuclear Officer
Nebraska Public Power – Cooper
Nuclear Station
72676 648A Avenue
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION – NRC INTEGRATED INSPECTION REPORT 05000298/2013002

Dear Mr. Limpias:

On March 23, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed inspection report documents the inspection results which were discussed on April 1, 2013, with Mr. R. Penfield, Director of Nuclear Safety Assurance, 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.

Three NRC-identified and two self-revealing findings of very low safety significance (Green) were identified during this inspection. All of these findings were determined to involve violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Cooper Nuclear Station.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC Resident Inspector at Cooper Nuclear Station.

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

NRC's Agencywide Document Access and Management 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/

David Proulx, Acting Chief
Projects Branch C
Division of Reactor Projects

Docket No.: 50-298
License No: DRP-46

Enclosure: Inspection Report 05000298/2013002
w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

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SRI:DRP/C	RI:DRP/C	SPE:DRP/C	C:DRS/EB1	C:DRS/EB2	C:DRS/OB
JJosey	CHenderson	RHagar	TRFarnholtz	GMiller	VGaddy
/RA/E-Proulx	**/RA/E-Proulx**	**/RA/E-Proulx**	**/RA/GGeorge for**	**/RA/GPick for**	**/RA/COsterholtz for**
5/2/13	5/2/13	5/2/13	4/23/13	4/23/13	4/24/13
C:DRS/PSB1	C:DRS/PSB2	C:DRS/TSB	AC:DRP/C		
MSHaire	JDrake	RKellar	DProulx		
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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000298
License:	DRP-46
Report:	05000298/2013002
Licensee:	Nebraska Public Power District
Facility:	Cooper Nuclear Station
Location:	72676 648A Ave Brownville, NE
Dates:	January 1, 2013 through March 23, 2013
Inspectors:	J. Josey, Senior Resident Inspector C. Henderson, Acting Senior Resident Inspector J. Gilliam, Reactor Inspector, Region III C. Hale, Reactor Inspector J. Laughlin, Emergency Preparedness Inspector, NSIR E. Uribe, Reactor Inspector
Approved By:	David Proulx, Acting Chief Project Branch C Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2013002; 01/01/2013 – 03/23/2013; Cooper Nuclear Station, Integrated Resident and Regional Report; Equipment Alignment, Flood Protection Measures, Operability Evaluations and Functionality Assessments, Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications, and Problem Identification and Resolution.

The report covered a 3-month period of inspection by resident inspectors and an announced baseline inspection by region-based inspectors. Five Green non-cited violations of significance 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." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components Within the Cross-Cutting Areas." 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. The inspectors reviewed a self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to maintain design control of high pressure coolant injection relief valve HPCI-RV-12RV. The licensee entered this issue into their corrective action program as Condition Reports CR-CNS-2013-00474 and CR-CNS-2013-00507.

  The failure to maintain design control of high pressure coolant injection system relief valve HPCI-RV-12RV was a performance deficiency. This performance deficiency was more than minor and therefore, a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone. Specifically, the licensee failed to adequately analyze the effects of the change in flow rate of the replacement relief valve, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-

significance in accordance with the licensee's maintenance rule program. This finding did not have a cross-cutting aspect because the most significant contributor did not reflect current licensee performance. (Section 1R04)

- Green. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to assure that the applicable design basis requirements, associated with the station's internal flooding analysis in response to a medium energy line break, were correctly translated into the plant design. Specifically, the licensee used incorrect assumptions for a time critical operator action, and this resulted in a nonconservative analysis for a moderate energy line break in the 903 feet control building corridor. The licensee entered this deficiency into their corrective action program for resolution as Condition Reports CR-CNS-2013-00579, CR-CNS-2013-00619, and CR-CNS-2013-01553.

  The failure to maintain design control with respect to the internal flooding analysis was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone. Specifically,the licensee's failure to use correct assumptions for time-critical operator actions resulted in a nonconservative analysis for a moderate energy line break in the 903-foot control building corridor, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to thoroughly evaluate problems such that the resolutions address the causes [P.1(c)]. (Section 1R06)

- Green. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to follow Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," and properly document the basis for operability when a degraded or nonconforming condition was identified. Specifically, operators removed caution tags for the cross-connect valves of the diesel generator 1 air start receivers when the tags were required to

support compensatory actions for a degraded condition. The licensee entered this deficiency into their corrective action program for resolution as Condition Report CR-CNS-2013-00386.

The failure to properly assess and document the basis for operability when a degraded or nonconforming condition had been identified was a performance deficiency. This performance deficiency was more than minor, and therefore, a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone. Specifically, the licensee's failure to properly document and assess the basis for operability resulted in a condition of unknown operability for a degraded nonconforming system, thereby affecting the associated objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix A, "Initial Screening and Characterization of Findings," and determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee did not ensure that the proposed action was safe in order to proceed, rather than unsafe in order to disapprove the action [H.1(b)] (Section 1R15).

- Green. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, for work instructions associated with the emergency diesel generator 1 voltage regulator cabinet that did not include a step to record the final thickness of shims used to level the voltage regulator cabinet and, as a result, the total shim thickness of the as-built configuration exceeded the allowable value. This finding was entered into the licensee's corrective action program as Condition Report CR-CNS-2013-01769.

  The failure to provide work order instructions appropriate to the circumstance for installing the voltage regulator cabinet is a performance deficiency. This finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating System Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because it

did not result in the loss of the safety function of any system or train and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that the finding included a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee did not appropriately plan the work activities to install the anchorage for the voltage regulator cabinet. Specifically, the licensee did not include instructions in the work package to measure and record the total thickness of shimming plates used [H.3.(a)] (Section 1R17).

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 5.4.1, associated with an operator who entered a high radiation/high-noise area contrary to an ALARA pre-job briefing and without high-noise dosimetry as required by Special Work Permit 2012-051. The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2012-10636.

  The failure to follow special radiation work permit requirements when entering a high radiation/high noise area was a performance deficiency. This performance deficiency was more than minor and therefore, a finding, because it was associated with the program and process attribute of the Occupational Radiation Safety cornerstone and affected the associated cornerstone objective to ensure the adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, this finding resulted in an operator received an unintended and unexpected radiation dose. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that finding was of very low safety significance (Green) because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning; (2) it did not involve an overexposure; (3) there was no substantial potential for an overexposure; and (4) the licensee's ability to assess dose was not compromised. The operator incorrectly assumed entry into the overheads in high radiation areas was allowed. Therefore, finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and ensure that the proposed action is safe in order to proceed, rather than unsafe in order to disapprove the action [H.1(b)] (Section 4AO2).

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Status

Cooper Nuclear Station began the inspection period at full power on January 1, 2013, and remained at essentially full power through the end of the inspection period, March 23, 2013.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness to Cope with External Flooding

a. Inspection Scope

In the area and on the date identified below, the inspectors evaluated the design, material condition, and procedures for coping with the design-basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and verified that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed an inspection of the protected area to identify any modification to the site that would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Specific documents reviewed during this inspection are listed in the attachment.

- March 13, 2013, Emergency diesel generators 1 and 2.

These activities constitute completion of one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

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

- January 25, 2013, Standby liquid control heating system
- January 25, 2013, High pressure coolant injection lube oil cooler and gland seal exhauster
- January 31, 2013, 125/250 Vdc B powered from 125/250 charger 1C

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 inspected 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 three partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

Introduction. The inspectors documented a self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” associated with the licensee’s failure to maintain design control of high pressure coolant injection system safety relief valve HPCI-RV-12RV.

Description. On January 21, 2013, the licensee was conducting a required quarterly surveillance run and in-service testing for the high pressure coolant injection system. During the system testing, the diaphragm for air operated pressure control valve HPCI-AOV-PCV50 failed, which caused the valve to fail open. This caused downstream

pressure to increase and the safety relief valve for the high pressure coolant injection system HPCI-RV-12RV opened at 100 psig and relieved water to the C sump as designed. Subsequently, the control room received an unexpected C sump high-level alarm, which they determined was due to safety relief valve HPCI-RV-12RV lifting. The licensee entered this deficiency into their corrective action program for resolution as Condition Report CR-CNS-2013-00474.

The inspectors reviewed Condition Report CR-CNS-2012-00474 and noted Design Calculation NEDC 94-067-008, "Relief Valve HPCI-RV-12RV Sizing," had evaluated the system response based on the valve having a capacity of 30 gallons per minute at 100 psig. However, due to obsolescence of the original valve, in May 2005, the licensee had approved Part Evaluation 4435367 to install a new safety relief valve with a capacity of 100 gallons per minute. The inspectors reviewed Part Evaluation 4435367 and the associated 10 CFR 50.59 screen and noted that the licensee's screen had failed to identify the potential effect on calculation NEDC 94-067-008 of the higher flow rate due to the new valve. When the inspectors asked the licensee if the flow rate from the new safety relief valve flow could adversely impact the high pressure coolant injection system's ability to respond when required, the licensee entered this concern into their corrective action program for resolution as Condition Report CR-CNS-2013-00507.

The licensee determined that the increased flow rate of safety relief valve HPCI-RV-12RV did not directly impact the ability of the high pressure coolant injection system to respond to a loss of offsite power or a loss-of-coolant accident. Also, they recognized that while they had assumed a relief valve flow rate of 30 gallons per minute at 100 psig in Design Calculation NEDC 89-1621, "High Pressure Coolant Injection Cooling Water Subsystem Flow Analysis," the new relief valve flow rate could allow a flow rate of 100 gallons per minute at 100 psig. They also determined that a flow rate of 100 gallons per minute could overwhelm the floor-drain system and cause flooding that could render high pressure coolant injection system components inoperable. Based on this evaluation, the licensee determined that if both C sump pumps are rendered unavailable, the licensee would declare the high pressure coolant injection system inoperable.

The inspectors considered that the most significant contributor to this finding likely was a human-performance error that had occurred in May, 2005.

Analysis. The failure to maintain design control of the high pressure coolant injection safety relief valve HPCI-RV-12RV was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone and affected that cornerstone's objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to adequately analyze the effects of the change in flow rate of the replacement relief valve, which resulted in the licensee not recognizing that flow from the relief valve could render high pressure coolant injection system components inoperable,. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very

low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety significance in accordance with the licensee's maintenance rule program. Because the most-significant contributor does not reflect current licensee performance, this finding does not have a cross-cutting aspect.

Enforcement. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that, measures shall be established to assure the design bases are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, measures established by the licensee did not assure that the design bases were correctly translated into specifications. Specifically, from May 2005 until January 2013, measures established by the licensee failed to ensure that the design bases documented in Part Evaluation 4435367 were correctly translated into calculations NEDC 94-067-008 and NEDC 89-1621. This violation is being treated as a non-cited Violation, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Reports CR-CNS-2013-0474 and CR-CNS-2013-0507. (NCV 05000298/2013002-01, "Failure to Maintain Design Control of the High Pressure Coolant Injection System")

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:

- January 14, 2013, Reactor water cleanup valve room, Fire Area I, Zone 4C
- January 14, 2013, Standby liquid control pump tank and access way, Fire Area I, Zone 5A
- January 24, 2013, DC switchgear 1B, Fire Area VI, Zone 8G
- January 24, 2013, Battery room 1B, Fire Area VI, Zone 8F

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 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 inspected 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.

- March 4, 2013, Control building corridor, 903 feet 6 inches elevation, and service water booster pump room

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

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," associated with the licensee's failure to assure that the applicable design basis requirements, associated with the station's

internal flooding analysis in response to a moderate energy line break, were correctly translated into the plant design.

Description. While conducting an internal flooding review of the 903-foot control building corridor, the inspectors noted that Station Calculation NEDC 09-102, "Internal Flooding – HELB, MELB, and Feedwater Line Break," Revision 0, incorporated an assumption that operators would terminate a 12-inch fire protection line break event within 30 minutes after the break had started, based on the "L" sump high level alarm. During a walkdown of the subject corridor, the inspectors determined that the flow path resulting from a 12-inch fire protection line break event in the corridor would be through the gaps under two doors to the 882-foot elevation of the control building basement, across the basement floor, and then through the basement floor drains to the "L" sump, resulting in the sump level rising to the alarm setpoint. The inspectors also reviewed Alarm Procedure 2.3_S-1, "Panel S- Annunciator S-1," Revision 17, and Emergency Procedure 5.1Break, "Pipe Break Outside Secondary Containment," Revision 12, and determined that although calculation NEDC 09-102 was based on operators terminating a 12-inch fire protection line break event within 30 minutes of the break, no specific guidance existed to describe the operator response to such a break event. The licensee initiated Condition Reports CR-CNS-2013-0579 and CR-CNS-2013-0619 to enter this issue into the corrective action program.

The licensee subsequently determined that the evaluation documented in calculation NEDC 09-102 did not take into account the time required for water from a break on the 903-foot elevation to reach the L sump, exceed the capacity of the two sump pumps, and then trip the sump high-level alarm. The licensee subsequently initiated Condition Report CR-CNS-2013-01553 to address that issue. As part of this condition report, the licensee determined that the maximum flood height for safety related equipment would be exceeded in approximately 45 minutes, and identified compensatory measures to ensure operator actions to terminate the break event prior to this time being exceeded.

The inspectors considered that the primary contributor to this finding had likely been a human-performance error that occurred more than three years ago. However, the inspectors also considered that when the licensee had evaluated Condition Report CR-CNS-2012-00451 early in 2012, they had an opportunity to identify the failure to use correct assumptions for a
time-critical operator action.

Analysis The failure to maintain design control with respect to the internal flooding analysis was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it was associated with the design control attribute of the Mitigating Systems Cornerstone. Specifically,the licensee's failure to use correct assumptions for time-critical operator actions resulted in a nonconservative analysis for a moderate energy line break in the 903-foot control building corridor, thereby affecting the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the

finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function for one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program component because the licensee failed to thoroughly evaluate problems such that the resolutions address the causes [P.1(c)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion III, "Design Control," states, in part, that, measures shall be established to assure that the design bases are correctly translated into specifications. Contrary to the above, measures established by the licensee did not assure that the design bases were correctly translated into specifications. Specifically, from initial construction until March 1, 2013, measures established by the licensee did not assure that internal flooding analysis assumptions were correctly translated into the station's design-basis calculations. This violation is being treated as a non-cited Violation, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Reports CR-CNS-2013-00579, CR-CNS-2013-00619, and CR-CNS-2013-01553. (NCV 05000298/2013002-02, "Failure to Maintain Design Control of the Internal Flooding Analysis")

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Quarterly Review of Licensed Operator Requalification Program

a. Inspection Scope

On January 29, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during requalification testing. The inspectors assessed the following areas:

- Licensed operator performance
- The ability of the licensee to administer the evaluations and the quality of the training provided
- The modeling and performance of the control room simulator
- The quality of post-scenario critiques
- Follow-up actions taken by the licensee for identified discrepancies

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

b. Findings

No findings were identified.

.2 Quarterly Observation of Licensed Operator Performance

a. Inspection Scope

On March 1, 2013, the inspectors observed the performance of on-shift licensed operators in the plant's main control room. At the time of the observations, the plant was in a period of heightened activity due to quarterly downpower for rod pattern adjustment and evaluations to improved condenser performance. The inspectors observed the operators' performance of the following activities:

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure and other operations department policies.

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

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

- February 25, 2013, Service water booster pump fan coil unit
- March 23, 2013, Control building, service water pump room, diesel generator room floor drains and sump L pumps credited for internal flooding

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 two quarterly maintenance effectiveness samples as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings were identified.

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:

- January 4, 2013, Standby liquid control maintenance window
- January 15, 2013, Residual heat removal B maintenance window
- January 24, 2013, High pressure coolant injection unplanned limiting condition for operation entry
- January 30, 2013, Surveillance Procedure 6.1CS.702, “Core Spray Loop A Pump Time Delay Channel Funtional Test (DIV 1)”

- February 4, 2013, Service water booster pump B and D unavailable during surveillance

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 five maintenance risk assessments and emergent work control inspection samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Evaluations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed the following assessments:

- January 14, 2013, Service water booster pump A and C jumpers during breaker rack out
- January 26, 2013, Diesel generator 1 single air receiver
- January 30, 2013, Core spray pump A seal leakage
- February 7, 2013, High pressure coolant injection
- February 22, 2013, Reactor, diesel, and control building drainage capacity
- March 14, 2013, Diesel generator 1 and 2 nonconforming bolts

The inspectors selected these operability and functionality assessments based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure technical specification operability was properly justified and to verify 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 Final 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. Additionally, the inspectors 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 six operability evaluations inspection samples as defined in Inspection Procedure 71111.15-05.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to follow Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," and properly document the basis for operability when a degraded or nonconforming condition was identified.

Description. On January 26, 2013, while performing a plant-status walkdown in the emergency diesel generator 1 room, the inspectors noted that the licensee had removed caution tags from the cross-connect valves for the starting air receivers. These tags and Standing Order 2012-09 had been issued in response to a previously identified issue, NCV 05000298/2012003-13, "Failure to Correct a Condition Adverse to Quality for Determining the Number of Multiple Starts for a Single Diesel Generator Starting Air Accumulator." That violation was associated with the licensee's failure to prepare an adequate design calculation demonstrating that a single diesel generator starting air receiver was capable of performing multiple air starts of an emergency diesel generator. The inspectors were aware that the licensee had recently tested emergency diesel generator 2 to demonstrate its ability for multiple starts on a single receiver, and that the licensee had not performed any testing or new analysis for emergency diesel generator 1.

When the inspectors asked the control room staff about the status of emergency diesel generator 1 and Standing Order 2012-09, operators told the inspectors that the caution tags had been removed, Standing Order 2012-09 had been closed, and they had declared emergency diesel generator 1 operable. The inspectors told the licensee that this configuration had again placed emergency diesel generator 1 in a condition where no testing or calculation analysis demonstrated multiple starts from a single air receiver. The licensee initiated Condition Report CR-CNS-2013-00386 to capture the inspector's concern in the station's corrective action program. Under that condition report, the licensee subsequently performed an operability evaluation and determined that the diesel was operable with compensatory measures. Specifically, the licensee re-hung caution tags to alert operators that if an air receiver is to be isolated or pressure falls below 200 psig, then emergency diesel generator 1's operability must be assessed. Additionally, the licensee issued Standing Order 2013-002 to declare emergency diesel

generator 1 inoperable if an air receiver was isolated or receiver pressure is below 200 psig.

The inspectors therefore determined the licensee had failed to appropriately assess and document the bases for operability of emergency diesel generator 1 as required by Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," Revision 38. Instead, the licensee had apparently decided that emergency diesel generator 1 was operable based on results obtained from emergency diesel generator 2.

Analysis. The licensee's failure to properly assess and document the basis for operability of emergency diesel generator 1 as required by Station Procedure 0.5OPS was a performance deficiency. This performance deficiency was more than minor, and therefore a finding, because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the associated objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee's failure to properly document and assess the basis for operability resulted in a condition of potential indeterminate operability for a degraded nonconforming system. Using Inspection Manual Chapter 0609, Appendix A, "Initial Screening and Characterization of Findings," the inspectors determined that the finding is of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component, and did not result in a loss of operability or functionality; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for longer than its technical specification allowed outage time, or two separate safety systems out-of-service for longer than their technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significance in accordance with the licensee's maintenance rule program. The finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee did not ensure that the proposed action was safe in order to proceed rather than unsafe in order to disapprove the action [H.1(b)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V states, in part, that activities affecting quality shall be accomplished in accordance with procedures. Contrary to the above, an activity affecting quality was not accomplished in accordance with procedures. Specifically, from November 24, 2012, until January 26, 2013, the licensee failed to properly assess and document the basis for operability of emergency diesel generator 1 in accordance with Station Procedure 0.5OPS, "Operations Review of Condition Reports/Operability Determination," Revision 38. This violation is being treatead as a Non-cited Violation, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Report CR-CNS-2013-00386. (NCV 05000298/2013002-03, "Failure to Follow Operability Procedure")

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17)

.1 Evaluations of Changes, Tests, or Experiments

a. Inspection Scope

The inspectors reviewed eight evaluations to determine whether the changes to the facility or procedures, as described in the Updated Final Safety Analysis Report, had been reviewed and documented in accordance with 10 CFR 50.59 requirements. The inspectors verified that when changes, tests, or experiments were made, evaluations were performed in accordance with 10 CFR 50.59 and licensee personnel had appropriately concluded that the change, test, or experiment could be accomplished without obtaining a license amendment. The inspectors also verified that safety issues related to the changes, tests, or experiments were resolved. The team compared the safety evaluations and supporting documents to the guidance and methods provided in Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," as endorsed by NRC Regulatory Guide 1.187, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," to determine the adequacy of the safety evaluations.

The inspectors reviewed twenty samples of changes, tests, and experiments that licensee personnel determined did not require evaluations and verified that the licensee personnel’s conclusions were correct and consistent with 10 CFR 50.59.

The inspectors also verified that calculations, analyses, design change documentation, procedures, the Updated Final Safety Analysis Report, the Technical Specifications, and plant drawings used to support the changes were accurate after the changes had been made. Documents reviewed are listed in the attachment.

These activities constitute completion of eight samples of evaluations and twenty samples of changes, tests, and experiments that were screened out by licensee personnel as defined in Inspection Procedure 71111.17-04.

b. Findings

No findings were identified.

.2 Permanent Plant Modifications

a. Inspection Scope

The inspectors verified that calculations, analyses, design change documentation, procedures, the Updated Final Safety Analysis Report, the Technical Specifications, and plant drawings used to support the modifications were accurate after the modifications had been made. The inspectors verified that modifications were consistent with the plant’s licensing and design bases. The inspectors confirmed that revised calculations and analyses demonstrated that the modifications did not adversely impact plant safety.

Additionally, inspectors interviewed design and system engineers to assess the adequacy of the modifications.

These activities constitute completion of ten samples of permanent plant modifications as defined in Inspection Procedure 71111.17-04, and specific documents reviewed during this inspection are listed in the attachment.

.2.1 SRM and IRM Modification to change the Loss of Negative Voltage INOP trip

The inspectors reviewed Change Evaluation Document (CED) 6028500, implemented to remove a CNS modification that was installed under Design Change 87-122. The modification was approved to be removed because GE-Nuclear redesigned the original chassis voltage card regulator, part number 194X363G001, to provide internal, "Loss of Negative Voltage," INOP trip circuitry. The inspectors reviewed the supported drawings.

.2.2 RR-MOV-MO53A&B Close Control Circuit Change to Limit Switch Control

The inspectors reviewed Change Evaluation Documnet 6032264, implemented to change the closing control circuitry for valves RR-MOV53A and RR-MOV53B. The change was necessary because of the valve factor changing, causing a reduction in margin between minimum required torque and maximum allowable torque. The torque switches will be replaced by the limit switches which will ensure the valves close. The licensee participated in an industry wide Joint Owners Group Program on Motor-Operated Valve periodic verification. The program documented a technical basis for revised industry-tested valve factors in MPR Report 2524-A, Revision 1. The revised valve factors, described as "threshold values" in the report, are based on seat and disc materials, differential pressure stroking, and system fluid and temperature. As described in the Commission's Safety Evaluation Report to MPR Report 2524-A, dated September 25, 2006, utilities are expected to adopt the threshold values in their MOV program design basis or develop a qualifying basis as to why the valve friction factor should be any lower than the threshold value for that valve's condition. The Safety Evaluation Report specified a period of 6 years to implement the requested modifications.

.2.3 Appendix R MOV Local Auxiliary Safe Shutdown Control Panels

The inspectors reviewed Change Evaluation Document 6033461, mplemented to install new and modify several existing local auxiliary safe shutdown control panels to ensure safe and reliable control of 28 motor operated valves. The modification added position indication, a control switch, an isolation switch, and control power fuses to each affected MOV control circuit. The installation of the new panels located them adjacent to each of the affected motor control centers or DC starters.

.2.4 Control Cable Separation

The inspectors reviewed Change Evaluation Document 6029921, implemented to abandon a division II control cable in place and allow use of conduit penetration through the ceiling of the cable spreading room. The division II cable identified, M259, does not

perform any design or safety function as described in the Updated Safety Analysis Report. The cable provides power to the reactor equipment cooling pumps “C” and “D” annunciators located in the control room.

.2.5 Start-Up Flow Control Valve Positioners

The inspectors reviewed Change Evaluation Document 6024380, implemented to relocate the start-up flow control valve (FCV) positioners, RF-CVP-FCV11AA and RF-CVP-FCV11BB. The flow control valve positioners are used during plant start-up to maintain reactor vessel level until the first reactor feed pump is started and its discharge valve is opened. The previous positioners had failures because of elastomer degradation associated with high temperatures. This modification relocated these positioners to a cooler environment. The inspectors verified that the licensee evaluated the differences between the old and new positioners. The inspectors also ensured that the installation of these positioners incorporated the vendor’s recommendations and didn’t add any additional failure modes to the system. The inspectors also reviewed the affected documentation to ensure that the licensee updated the documents as applicable.

.2.6 HPCI/RCIC Low Suction Pressure Trip (LSPT) Time Delay

The inspectors reviewed Change Evaluation Document 6029441, implemented to replace low suction pressure trip instantaneous relays with solid-state time delay relays. The function of the low suction pressure trip is to protect the pump from a loss of the suction path during a swap, or failure to swap, from the emergency condensate storage tank to the suppression pool. Because of the configuration of instantaneous relays, the licensee was receiving low suction alarms during surveillance runs. This modification replaces the original relays with solid-state time delay relays. The inspectors reviewed the calculation to ensure the licensee evaluated an adequate setpoint to ensure that the relay was still achieving its design function. The inspectors also reviewed industry information to ensure operating experience was incorporated into the modification. The inspectors verified the affected calibration procedures to ensure the setpoint values were incorporated into the procedures.

.2.7 Diesel Generator (DG) Mechanical Overspeed Cable Removal

The inspectors reviewed Change Evaluation Document 6029922, implemented to remove one of the mechanical overspeed trips for the diesel generator. This was done by installing a locking pin to keep the butterfly valve open and removing the trip cable. This overspeed trip was one of the three trips the licensee had for the diesel generator. The function of this trip was to shut down the diesel generator in case of an overspeed condition. The inspectors reviewed the modification package to ensure that the locking pins and bolts would withstand a seismic event. The inspectors also reviewed the procedure to verify the steps to inspect the pins were added. The inspectors verified that removing this trip did not adversely impact the system’s required design function.

.2.8 Sump Pump Replacements

The inspectors reviewed Change Evaluation Document 6032720, implemented to replace 20 existing Aurora vertical sump pumps and motors with new Ebara submersible sump pumps with integral motors. The sump pumps are part of the equipment and floor drain sump system and are located in the reactor building, turbine building, and radwaste building. The new sump pump flow and hydraulic characteristics are equivalent to the existing pumps and the inspectors verified that electrical calculations were revised to incorporate changes to motor parameters. The inspectors also reviewed the station's internal flooding analysis for high energy line breaks (HELBs), moderate energy line breaks (MELBs), and the feedwater line break to verify that the sump pumps in the Reactor Building would continue to perform their design functions for internal flooding. No sump pumps for this modification have been replaced at this time.

.2.9 Zurn Service Water Strainer Replacements

The inspectors reviewed Change Evaluation Document 6029209, implemented to replace the existing service water Zurn strainers with new Energy Steel strainers. The modification replaced the existing carbon steel strainers with new stainless steel strainers in addition to replacing control panels and portions of associated service water piping. The replacement strainers have the same backwash flowrate as the existing strainers, but the replacement strainers have the ability of the backwash arm to rotate a full 360 degrees while the existing strainers and backwash arms only covered 240 degrees and required changing the direction of the backwash arm. The inspectors reviewed design drawings and flow diagrams as well as the new vendor manual to verify that the modification will not affect the safety design function of the service water strainers. The inspectors walked down the service water strainers, control panels, instrumentation piping, and pipe supports and anchorage to ensure installation of the modification was in accordance with design.

.2.10 Evaluation of the Diesel Generator Fuel Oil Tank Vents After a Tornado Strike

The inspectors reviewed Engineering Evaluations 10-060 and 10-061, implemented to add a requirement to the station's adverse weather procedure for a visual inspection of the diesel fuel oil storage tank vents following a tornado strike. In the event that a tornado strike clamps off both vents for the diesel fuel oil storage tanks, operators would open a storage tank fill connection fitting to provide a vent system while maintenance worked to repair the vents. The diameter of the fill connection piping is the same as the diameter of the vent line and the storage tanks are cross tied such that only one vent path is needed to provide adequate venting. The inspectors reviewed calculations supporting the missile protection of the diesel generator day oil tank vent lines, drawings and flow diagrams of the fuel oil storage tanks, and the revised procedure with the new procedural actions. The inspectors walked down the diesel generator storage tank vents, diesel generator day tank vents, and diesel storage tank fill connections to ensure that the procedural actions could be implemented as written and that the diesel storage tank fill connections did not require any special tools to be opened.

b. Findings

Introduction. The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to provide adequate work order instructions associated with the installation of anchors for the emergency diesel generator 1 voltage regulator cabinet.

Description. During refueling outage 27 (RE27), the licensee intended to implement a modification to install new voltage regulator cabinets for the emergency diesel generators. The licensee encountered issues while installing the new voltage regulator cabinet in the emergency diesel generator 1 room and ultimately decided to re-install the original voltage regulator cabinet. Because the licensee had already installed the new adapter plates and anchors, the licensee generated a Change Evaluation Document (CED 6035563) to evaluate the original cabinet being mounted on the new cabinet adapter hardware. The licensee evaluated and approved the new configuration, re-installed the original voltage regulator for emergency diesel generator 1 during refueling outage 27, and returned diesel generator 1 to service following the outage.

During re-installation of the original voltage regulator on the new adapter plates and anchors, the licensee encountered the need to use shims to level the voltage regulator cabinet. The contractor that performed the seismic qualification of the voltage regulator cabinet determined that shims up to 0.15-inches thick could be installed without adversely affecting the seismic qualification calculations. The allowable shim thickness was translated to the licensee's Change Evaluation Document for the modification and then to the work order package for installation.

On March 6, 2013, the inspectors completed a walkdown of the emergency diesel generator 1 voltage regulator cabinet. During this walkdown, the inspectors measured the total shim thickness of the as-built condition in the field and found the maximum thickness of the shimming plates to be approximately 0.22 inches. The licensee subsequently performed qualified field measurements and determined that the maximum shim thickness was 0.228 inches. The inspectors reviewed the work package that installed the voltage regulator cabinet and associated anchorage. The work order included the step for the field revision, allowing the voltage regulator cabinet to be leveled to the foundation using shims. Work Order 4791771 specified, "Maximum shimming allowed between foundation and adapter plates is 0.15 inches." However, the work order instruction did not include a step to record the final thickness of shims used after the voltage regulator was determined to be level. The inspectors determined that because the allowable value was so small and could not be ensured without instrument measurement, a work instruction step for a field measurement was necessary, and could have revealed that the workers had exceeded the allowable shim thickness.

The licensee entered this issue into their corrective action program as Condition Report CR-CNS-2013-01769. The seismic qualification contractor re-evaluated the acceptability of the larger shims between the adapter plates and concrete. The contractor determined that the larger shims could potentially affect the design calculations for the anchor bolts and the structural analysis for seismic qualification. The

structural analysis calculation utilized a finite element analysis to apply the earthquake acceleration time history to the bottom faces of the adapter plates. The adapter plates and concrete were now separated by the thickness of the shims at the ends of the adapter plates. The contractor determined that in order for the larger shims to be acceptable and the seismic qualification to remain valid, the adapter plates must contact the concrete pad under the entire cabinet footprint. The licensee walked down the cabinet anchorage and concluded that there were no gaps under the adapter plates below the cabinet footprint, and the voltage regulator cabinet met its seismic design.

Analysis. The failure to provide work instructions appropriate to the circumstance is a performance deficiency. This finding was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the Mitigating System Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because it did not result in the loss of the safety function of any system or train and did not screen as potentially risk significant due to seismic, flooding, or severe weather initiating events. The inspectors determined that the finding included a cross-cutting aspect in the area of human performance associated with the work practices component because the licensee did not appropriately plan the work activities to install the anchorage for the voltage regulator cabinet. Specifically, the licensee did not include instructions in the work package to measure and record the total thickness of shimming plates used [H.3.(a)].

Enforcement. 10 CFR Part 50, Appendix B, Criterion V requires, in part, that activities affecting quality shall be prescribed by instructions appropriate to the circumstances. Contrary to the above, an activity affecting quality was not prescribed by instructions appropriate to the circumstances. Specifically, on October 25, 2012, the work instructions associated with the emergency diesel generator 1 voltage regulator cabinet were not appropriate to the circumstancese because they did not include a step to record the final thickness of shims used to level the voltage regulator cabinet and, as a result, the total shim thickness of the as-built condition exceeded the allowable value. This violation is being treated as a Non-cited Violation, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Report CR-CNS-2013-01769 to address recurrence. (NCV 05000298/2013002-04, "Failure to Provide Adequate work Instructions.")

1R18 Plant Modifications (71111.18)

Permanent Modifications

a. Inspection Scope

The inspectors reviewed key parameters associated with energy needs, materials, replacement components, timing, heat removal, control signals, equipment protection from hazards, operations, flow paths, pressure boundary, ventilation boundary,

structural, process medium properties, licensing basis, and failure modes for the permanent modification identified as control room security upgrade.

The inspectors verified that modification preparation, staging, and implementation did not impair emergency/abnormal operating procedure actions, key safety functions, or operator response to loss of key safety functions; postmodification testing will maintain the plant in a safe configuration during testing by verifying that unintended system interactions will not occur; systems, structures, and components' performance characteristics still meet the design basis; the modification design assumptions were appropriate; the modification test acceptance criteria will be met; and licensee personnel identified and implemented appropriate corrective actions associated with permanent plant modifications. Specific documents reviewed during this inspection are listed in the attachment.

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

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- January 4, 2013, Standby liquid control pump A
- January 4, 2013, Service water booster pump A and C
- January 4, 2013, 125 Vdc charger A
- January 23, 2013, Residual heat removal B limiting condition for operation maintenance window
- March 7, 2013, Reactor core isolation cooling limiting condition for operation maintenance window
- March 14, 2013, Emergency diesel generator 2

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 post-maintenance 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 six post-maintenance testing inspection samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings 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 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.

- January 4, 2013, 125 Vdc charger A
- January 23, 2013, Residual heat removal motor-operated valve operability from ASD-RHR panel
- January 23, 2013, SW-MOV-89B
- January 23, 2013, Residual heat removal valve B inservice test
- March 21, 2013, High pressure coolant injection inservice test on rebase lining for fouled restricting orifice in test line

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 were identified.

Cornerstone: Emergency Preparedness

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

a. Inspection Scope

The NSIR headquarters staff performed an in-office review of the latest revisions of various Emergency Plan Implementing Procedures (EPIPs) and the Emergency Plan

located under ADAMS accession numbers ML12340A526, ML13022A574, ML13032A217, and ML130020481 as listed in the Attachment.

The licensee determined that in accordance with 10 CFR 50.54(q), the changes made in the revisions resulted in no reduction in the effectiveness of the Plan, and that the revised Plan continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment.

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

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on March 5, 2013, which required emergency plan implementation by a licensee operations crew. This evolution was planned to be evaluated and included in performance indicator data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the postevolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that the licensee evaluators noted the same issues and entered them into the corrective action program. As part of the inspection, the inspectors reviewed the scenario package and other documents listed in the attachment.

These activities constitute completion of one sample as defined in Inspection Procedure 71114.06-05.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams per 7000 Critical Hours (IE01)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned scrams per 7000 critical hours performance indicator for the period from the first quarter 2012 through the fourth quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, and NRC integrated inspection reports for the period of January 2012 through December 2012, 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 per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.2 Unplanned Power Changes per 7000 Critical Hours (IE03)

a. Inspection Scope

The inspectors sampled licensee submittals for the unplanned power changes per 7000 critical hours performance indicator for the period from the first quarter 2012 through the fourth quarter 2012. To determine the accuracy of the performance indicator data reported during those periods, the inspectors used definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors reviewed the licensee's operator narrative logs, issue reports, maintenance rule records, event reports, and NRC integrated inspection reports for the period of January 2012 through December 2012, 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 transients per 7000 critical hours sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.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

No findings were identified.

.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

Introduction. The inspectors reviewed a self-revealing Green non-cited violation of Technical Specification 5.4.1.a, associated with an operator's failure to follow the requirements of a radiation work permit.

Description. On December 28, 2012, a radiation protection technician provided a station operator an ALARA pre-job briefing for entry into high radiation areas for performing required shift activities on Special Work Permit (SWP) 2012-051, "Operations Activities in SWP Areas," with a dose limit of 30 millirem and dose rate limit of 300 millirem. The scope of the work was operations rounds, surveillances, and tagging. The ALARA briefing provided information to the operator about general area dose rates (2-60 millirem per hour), electronic dosimetry setpoints (30 millirem dose and 300 millirem dose rate), and the expected total dose for these tasks (5 millirem). However, the ALARA briefing did not discuss or provide dose rate information for entry into the overheads in any areas because the operator did not tell radiation protection personnel such areas would be entered. The briefing materials, which were acknowledged by the operator, stated to avoid overheads and also required that high noise dosimetry be worn in high radiation areas posted as hearing protection required.

Subsequently, the operator entered the condensate filter demineralizer valve room, a posted high radiation and high noise (hearing protection required) area and entered the overhead areas without high noise dosimetry. Following completion of this task, the operator exited the radiologically controlled area and upon signing out of the special work permit, the computer identified that the operator had received a dose rate alarm and identified that the highest dose rate recorded was 311 millirem per hour, with a total dose received of 5.9 millirem. This dose rate demonstrated the operator had entered a high radiation area that was not allowed by the special work permit or the pre-job ALARA briefing which had only briefed on dose rates as high as 60 millirem per hour. The operator notified the shift radiological protection technician who subsequently surveyed the area and determined that the dose rates in the area were consistent with the current survey maps.

The licensee's evaluation determined that the operator had failed to follow the requirements of radiation work permit SWP 2012-051. Specifically, the operator had failed to wear high noise dosimetry when entering a high radiation area that was posted as requiring hearing protection, and the operator had failed to obtain a new ALARA briefing prior to entry into different high radiation area than was previously briefed, which resulted in entry into an area not allowed by the special work permit on which the operator was signed in. Through interviews with the operator, the licensee determined that the operator had not closely reviewed radiation work permit SWP 2012-051 before acknowledging it, and assumed that radiation work permit SWP 2012-051 allowed entry into the overhead areas. The inspectors determined that the apparent cause of this finding was that the operator failed to verify his assumptions associated with the Radiation Protection Pre-job brief form which was received prior to starting the shift.

Analysis. The failure to follow special work permit requirements when entering a high radiation/high noise area was a performance deficiency. The performance deficiency was more than minor, and therefore a finding, because it is associated with the program and process attribute of the Occupational Radiation Safety cornerstone. Specifically, an operator entered a high radiation area without an appropriate brief and received an unintended and unexpected radiation exposure, thereby affecting the associated cornerstone objective to ensure the adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," the inspectors determined that the finding was of very low safety significance (Green) because: (1) it was not associated with as low as is reasonably achievable (ALARA) planning; (2) it did not involve an overexposure; (3) there was no substantial potential for an overexposure; and (4) the licensee's ability to assess dose was not compromised. The operator incorrectly assumed entry into the overheads in high radiation areas was allowed. Therefore, finding has a cross-cutting aspect in the area of human performance associated with the decision-making component because the licensee failed to use conservative assumptions in decision-making and ensure that the proposed action is safe in order to proceed, rather than a unsafe in order to disapprove the action [H.1(b)].

Enforcement. Technical Specification 5.4.1.a requires, in part, implementation of applicable procedures recommended Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 7(e), of Appendix A requires, in part, procedures for access control to radiation areas including a radiation work permit system. Station Procedure 9.ALARA.4, "Radiation Work Permits," Revision 17, implements this requirement and Section 7.3 states that each individual is responsible for complying with radiation work permit (RWP) requirements. Special Work Permit 012-051, "Operations Activities in SWP Areas," implemented this requirement and required that operators receive an ALARA pre-job briefing by radiation protection prior to entry into a high radiation area, and that they use high-noise dosimetry for entries into high radiation areas posted as requiring hearing protection. Contrary to the above, on December 28, 2013, a station operator did not receive an ALARA pre-job briefing by radiation protection prior to entry into certain overhead areas within a high radiation area, and did not use high-noise dosimetry for entry into a high radiation area posted as requiring hearing protection. This is being treated as a Non-cited Violation, consistent with Section 2.3.2.a of the Enforcement Policy. The violation was entered into the licensee's corrective action program as Condition Report CR-CNS-2012-10636. (NCV 05000298/2013002-05, "Failure to Implement a Radiation Protection Procedure")

.4 In-depth Review of Operator Workarounds

a. Inspection Scope

The inspectors performed a review of control room deficiencies to ensure that the licensee is identifying operator work around problems at an appropriate threshold and entering them in the corrective action program, and has proposed or implemented appropriate corrective actions.

These activities constitute completion of one in-depth review of operator workarounds sample as defined in Inspection Procedure 71152-05.

b. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000298/2012001-00, "Prohibited Condition Due to Fuse Size of Battery Charger"

On March 7, 2012, Cooper Nuclear Station discovered that the fuse rating associated with the "C" battery charger disconnect switches may prevent the "C" battery charger from fulfilling a Updated Safety Analysis Report and Technical Specification Bases function.

The 125 Vdc and 250 Vdc "C" battery chargers can be used as a spare to either the "A" battery charger or "B" battery charger. The "A" and "B" battery charger fuses and fuse disconnects are sized at 300 amperes, while the "C" battery charger fuses and fuse disconnects are sized at 200 amperes. Operations declared the "C" battery chargers inoperable.

The licensee determined that the root cause was that the design preparation, review, and approval process when the original design documents were prepared for installation of "C" battery chargers was not sufficiently rigorous to detect the fuse sizing error. To prevent recurrence, the licensee plans to implement design evaluations and any necessary design changes to the size of the fuses in the "C" battery chargers.

The LER was reviewed. No findings or violations of NRC requirements were identified.

.2 (Closed) LER 05000298/2012002-00, "Improper Installation Causes Failure of Diesel Generator to Start"

On April 9, 2012, the licensee declared the diesel generator 1 and diesel generator 1 starting air systems inoperable for on-line maintenance activities.

On April 11, 2012, diesel generator 1 failed to start. After the first failure to start, the licensee vented the fuel oil line to remove suspected air, and diesel generator 1 subsequently started successfully. On April 12, 2012, diesel generator 1 failed to start. Further troubleshooting identified that during on-line maintenance in October 2011, workers had installed the rotor in the left bank starting air distributor 180 degrees out of alignment. This resulted in diesel generator 1 being inoperable from the last successful surveillance on March 6, 2012, until April 15, 2012, when diesel generator 1 was declared operable.

On March 12, 2012, the licensee declared diesel generator 2 inoperable. It remained inoperable until March 18, 2012, so a loss of safety function for both diesel generators occurred during that time.

The root cause of this event was that procedural guidance was inadequate to ensure the rotor was properly reinstalled in the diesel generator 1 left bank starting air distributor after the work scope changed in October 2011. To prevent recurrence of this condition, the licensee plans to revise the procedure and develop guidance that ensures vendor recommendations and cautions are included. They also plan to revise the procedure for diesel maintenance runs to ensure detection of air distributor malfunctions.

The enforcement aspects of this LER are discussed in NRC inspection Report 05000298/2013-003. A green non-cited violation was identified.

.3 (Closed) LER 05000298/2012003-00, "Reactor Building Doors Opened Simultaneously Causes Loss of Safety Function"

On September 10, 2012, both airlock doors of the Reactor Building were inadvertently opened simultaneously, breaching the secondary containment boundary.

Personnel were attempting to exit the Reactor Building through the inner personnel airlock while personnel were also entering the Reactor Building through the outer personnel airlock. This condition resulted in the two airlock doors being open simultaneously for approximately two minutes. As a result, an indication was received in the Control Room and Limiting Condition for Operation 3.6.4.1, Condition A, was entered to restore secondary containment. An operator was dispatched to the airlock, reset the door interlocks; the doors were declared operable, and Limiting Condition for Operation 3.6.4.1, Condition A, was exited.

The licensee determined that the root cause of this event was that previous reportability practices had minimized the significance of having both airlock doors open, which had prompted the licensee to defer installing equipment that would have precluded this event. Interim corrective actions included assigning persons to serve as door monitors until the licensee installs an automated warning device or system. To prevent recurrence of this event, the licensee has adoped a change in the reportability guidance and plans to install new doors with a different interlock during Refueling Outage 28.

The LER was reviewed. No findings or violations of NRC requirements were identified.

.4 (Closed) LER 05000298/2012004-00, "Isolation of Shutdown Cooling Results in Loss of Safety Function"

a. Inspection Scope

On October 14, 2012, station operators were flushing the residual heat removal B loop in accordance with station procedures in preparation for the start of the shutdown cooling mode of operation.

Operators slowly throttled open the radwaste discharge valve per station procedure. Due to existing reactor temperature and pressure, and the position of the radwaste discharge valve, flashing of the hot reactor coolant to steam occurred. The pressure perturbation isolated the residual heat removal shutdown cooling loop. Subsequently, operators vented the residual heat removal system and successfully re-performed the flush.

The licensee determined that the root cause of this event was that the station procedure provided insufficient guidance to avoid automatic closure of the isolation valves during shutdown cooling heatup and flush when the reactor temperature is higher than 212 degrees Fahrenheit.

To prevent recurrence of this event, the licensee plans to revise the station procedure so that the isolation of residual heat removal is an expected effect that will occur during shutdown cooling heatup and flush, and to provide more specific instructions concerning throttling time versus reactor vessel conditions.

The LER was reviewed. No findings or violations of NRC requirements were identified.

.5 (Closed) LER 05000298/2012005-00, "Prohibited Condition for Service Water Booster Pump Leak"

On October 17, 2013, station personnel discovered that a service water booster pump was leaking. Operators secured the pump and stopped the leak. Investigation revealed that the flushing port of the pump was only partially filled with plug material.

The licensee determined that the root cause of this event was that corrective actions, put in place to preclude the purchase of service water booster pumps with high pressure volute area flushing ports, had not been effectively implemented.

To prevent recurrence of this event, the licensee plans to revise the service water booster pump vendor manual to include reference to correspondence regarding providing service water booster pumps without high pressure flushing holes. The licensee also plans to revise the purchase order and the service water booster pump drawing to state: "Pump shall not have side flushing holes in the high pressure volute area of the pump case. The only hole in the high pressure volute area of the pump case should be the top vent hole located at the top of the pump case." In addition, the licensee plans to develop a change evaluation document to change the design of the service water booster pumps to remove the high pressure volute area flushing water ports and accept it as permanent.

The LER was reviewed. No findings or violations of NRC requirements were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On March 7, 2013, the inspectors presented the preliminary inspection results to Mr. K. Higginbotham, General Manager of Plant Operations, and other members of the licensee's staff. The licensee acknowledged the results as presented. While some proprietary information was reviewed during this inspection, no proprietary information was included in this report.

On April 1, 2013, the inspectors presented the inspection results to Mr. Rod Penfield, Director Nuclear Safety Assurance, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

A. Able, I&C Design Supervisor
T. Barker, Manager, Engineering Programs and Components
R. Beilke, Manager, Radiation Protection
D. Buman, Director, Engineering
S. DeRosier, Operator Training Superintendent
L. Dewhirst, Corrective Action and Assessments
K. Dia, Manager, System Engineering
R. Estrada, Manager, Design Engineering
J. Flaherty, Sr. Staff Engineer
K. Higginbotham, General Plant Manager, Operations
J. Horn, Mechanical Engineering Supervisor
D. Madsen, 50.59 Program Owner
T. Ocken, Procurement Engineering Supervisor
R. Penfield, Director Nuclear Safety Assurance
J. Schroeder, Manager, Operations
D. Van Der Kamp, Manager, Licensing
M. Van Winkle, Design Engineering Department Supervisor

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000298/2013002-01	NCV	Failure to Maintain Design Control of the High Pressure Coolant Injection System (Section 1R04)
05000298/2013002-02	NCV	Failure to Maintain Design Control of the Internal Flooding Analysis (Section 1R06)
05000298/2013002-03	NCV	Failure to Follow Operability Procedure (Section 1R15)
05000298/2013002-04	NCV	Failure to Provide Adequate Work Instructions(Section 1R17)
05000298/2013002-05	NCV	Failure to Implement a Radiation Protection Procedure (Section 4OA2.2)

Closed

05000298/2012001-00	LER	Prohibited Condition Due to Fuse Size of Battery Charger (Section 4OA3)
05000298/2012002-00	LER	Improper Installation Causes Failure of Diesel Generator to Start (Section 4OA3)
05000298/2012003-00	LER	Reactor Building Doors Opened Simultaneously Causes Loss of Safety Function (Section 4OA3)
05000298/2012004-00	LER	Isolation of Shutdown Cooling Results in Loss of Safety Funtion (Section 4OA3)
05000298/2012005-00	LER	Prohibited Condition for Service Water Booster Pump Leak (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

PROCEDURES

NUMBER	TITLE	REVISION
5.1FLOOD	Emergency Procedure, “Flood”	14
7.0.11	Emergency Procedure, “Flood Control Barriers”	26

CONDITION REPORTS

CR-CNS-2011-03050

WORK ORDERS

4749402 4802528

Section 1R04: Equipment Alignment

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
2044	Burns & Roe Drawing	
3.9.1	USAR	
6	USAR, Chapter VIII, “125/250 Volt DC Power Systems”	
81-092	Design Change	
89-023	Design Change	
89-1621	NEDC, “HPCI C.W. Subsystem Flow Analysis”	0
89-1628	NEDC	
94-67-8	NEDC, “Relief Valve HPCI-RV-12RV Sizing”	0
32687P	NEDC	
4435367	Part Evaluation	

PROCEDURES

NUMBER	TITLE	REVISION
2.2.24.2	Operations Procedure, “250 VDC Electrical System (DIV 2)”	14
2.2.25.2	Operations Procedure, “125 VDC Electrical System (DIV 2)”	21
2.2.74	Operations Procedure, “Standby Liquid Control System”	11

CONDITION REPORTS

CR-CNS-2012-07790 CR-CNS-2012-07838 CR-CNS-2013-00304 CR-CNS-2013-00467
CR-CNS-2013-00474 CR-CNS-2013-00475 CR-CNS-2013-00507 CR-CNS-2013-00559
CR-CNS-2013-00790

Section 1R06: Flood Protection Measures

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
09-102	NEDC, "Internal Flooding – HELB, MELB, and Feedwater Line Break"	0

PROCEDURES

NUMBER	TITLE	REVISION
2.3_S-1	Alarm Procedure, "Panel S – Annunciator S-1"	17
5.1Break	Emergency Procedure, "Pipe Break Outside Secondary Containment"	12
8.2	USAR, Chapter X, "Auxiliary Systems"	

CONDITION REPORTS

CR-CNS-2013-00579 CR-CNS-2013-00619 CR-CNS-2013-01553

Section 1R11: Licensed Operator Requalification Program

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE
13-001	Special Procedure

Section 1R12: Maintenance Effectiveness

MISCELLANEOUS PROCEDURES

NUMBER	TITLE
09-0102	NEDC
FDN-F02	Performance Criteria Basis Document
HV-F02	Performance Criteria Basis
SW-F06	Performance Criteria Basis

PROCEDURES

NUMBER	TITLE	REVISION
6.HV.602	Surveillance Procedure, "Air Flow Test of Fan Coil Units: FC-R-1KA, FC-R-1KB, and FC-C-1A"	5

PROCEDURES

NUMBER	TITLE	REVISION
6.SW.102	Surveillance Procedure, “Service Water System Post-LOCA Flow Verification”	44

CONDITION REPORTS

CR-CNS-2013-00619

Section 1R13: Maintenance Risk Assessment and Emergent Work Controls

PROCEDURES

NUMBER	TITLE	REVISION
0.49	Administrative Procedure, “Schedule Risk Assessment”	32
0-Protect Eqp	Administrative Procedure, “Protected Equipment Program”	24

CONDITION REPORTS

CR-CNS-2013-00467 CR-CNS-2013-00474 CR-CNS-2013-00475

WORK ORDERS

4868492 4889131 4889274 4900568
4934981

Section 1R15: Operability Evaluations

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
5.9	USAR, Chapter XIV, “Station Safety Analysis”	
13-008	NEDC, “Control Building, Diesel Generator Building, and Reactor Building Roof Secondary Drainage System Analysis”	
94-034D	NEDC, “Small Steam Line Break Analysis”	3
94-34H	NEDC	2
KSV-47-8	“Diesel Generator 1 & 2 Cooling Water Schematic”	N27
NLS2012127	“Reply to Notice of Violation 2012004-02; EA-12-206, Cooper Nuclear Station, Docket No. 50-298, DRP-46”	

PROCEDURES

NUMBER	TITLE	REVISION
5.4Fire/SD	Emergency Procedure, “Fire Induced Shutdown from Outside Control Room”	50

CONDITION REPORTS

CR-CNS-2012-03039	CR-CNS-2012-05300	CR-CNS-2012-05873	CR-CNS-2012-09072
CR-CNS-2013-00240	CR-CNS-2013-00386	CR-CNS-2013-00467	CR-CNS-2013-00474
CR-CNS-2013-00475	CR-CNS-2013-00581	CR-CNS-2013-00644	CR-CNS-2013-00646
CR-CNS-2013-00885	CR-CNS-2013-01343	CR-CNS-2013-01899	CR-CNS-2013-01935
CR-CNS-2013-01956	CR-CNS-2013-02004		

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

CALCULATIONS

NUMBER	TITLE	REVISION
65112-C-001	Burns & McDonnell – Seismic Interaction Analysis of Control Rod Blade Storage Container	1
NEDC 93-050W	HPCI-PS-97A and HPSI-PS-97B Setpoints	1
NEDC 00-095A	EQ Normal Temperature, Relative Humidity, Pressure and Radiation	4
NEDC 00-111	CNS Auxiliary Power System AC Loads	5
NEDC 01-053	MSIV Limit Switch Temperature	0
NEDC 09-102	Internal Flooding – HELB, MELB, and Feedwater Line Break	0
NEDC 11-077	DG Day Oil Tank Vent Line Missile Protection Evaluation	1
NEDC 12-019	SW Post-LOCA Flow Test Revised Acceptance Criteria	0

DRAWINGS

NUMBER	TITLE	REVISION
14EK-0144	Diesel Engine Generator Schematic Diagram	N44

DRAWINGS

NUMBER	TITLE	REVISION
2006 SH1	Burns & Roe, Flow Diagram – Circulating, Screen Wash & Service Water Systems	N54
2011 SH1	Burns & Roe, Flow Diagram Turbine Oil Purification & Transfer Sys & Diesel Oil Sys	N77
2038 SH1	Flow Diagram Reactor Building Floor & Roof Drain Systems	N22
2077	Burns & Roe, Flow Diagram – Diesel Gen. Bldg. Service Water, Starting Air, Fuel Oil, Sump System & Roof Drains	49
3001	Main One Line Diagram	N28
3002	Auxiliary One Line Diagram MCC Z, SWGR BUS 1A, 1B, 1E, & Critical SWGR Bus 1F 1G	N00
3203	Turbine Generator Building Mezzanine- Instrumentation Conduit & Tray Plan	19
CNS-SW-35	SW A STR S-191 INSTR TUBING	N02
G5-262-743	Emergency Diesel Generator No. 1, Sh. 2	N01
KSV-102-8	Fuel Oil Tank Outline	0
KSV-72-24	Mechanical Butterfly Valve Overspeed Shutdown	
SKE 4699557-2	Assembly Drawing for Locking Open Device on DG Overspeed Valve	

50.59 EVALUATIONS

NUMBER	TITLE	REVISION
EE 00-003	CNS Aux Power System Load Flow	6
EE 07-004	CED 6025820 Service Water Booster Pump Interlock Removal	0
EE 09-008	Post RE24 Electrical Calculation Revisions	0
EE 09-019	DG Mechanical Overspeed Cable Removal	0
EE 09-022	CED 6029940 Supplemental Diesel Generator (SDG)	1
EE 09-024	Offsite Power Voltage Limits	0
EE 09-56	Engineering Evaluation – Snubber Service Life Evaluation	0
EE 10-006	Engineering Evaluation – Evaluation of CNS-2-DGDO-TK-DOD2, Diesel Oil Day Tank 2, Anchor Bolt Discrepancy	0

50.59 EVALUATIONS

NUMBER	TITLE	REVISION
EE 10-013	Diesel Fuel Oil Day Tank Piping, CCN3	0
EE 10-025	Engineering Evaluation – Evaluation of Class I Structural Fill Penetrations Required for Cathodic Protection Anode Groundbed	0
EE 10-060	Engineering Evaluation – Evaluation of the Diesel Generator Fuel Oil Tank Vents after a Tornado Strike	0-1
EE 10-061	Engineering Evaluation – Evaluation of the Emergency Diesel Generator Day Tank Vents after a Tornado Strike	0-1
EE 11-001	Deletion of Type C Testing of One Barrier due to Closed Loop Analysis for 9 Penetrations	0
EE 11-005	CED 6016581 “DG Voltage Regulator Upgrade	1
EE 12-023	Engineering Evaluation – Extend Expected Life for CNS-9-CRD-SOV-S031A&B	0
EE 12-002	24 Month Cycle Dose Calculations	0
EE 12-008	Engineering Evaluation – Feasibility Evaluation for Installation of Temporary Equipment in the Spent Fuel Pool	1
EE 12-012	SW Discharge Pipe Repair Headwall and Tie-In Cofferdam and Missile/Freeze Protection	1
EE 12-014	Installation of Jumper to Bypass Trip Channel A1 from Group 1 Isolation	0
EE 12-015	Installation of Jumper to Bypass Trip Channel B1 from Group 1 Isolation	0
EE 12-023	Engineering Evaluation – Extend Expected Life for CNS-9-CRD-SOV-S031A&B	0
EE 12-056	Diesel Generator #1 and #2 Field Ground Detection Relay Configuration	0
EE 2012-9, ID:7	Low Condenser Vacuum Turbine Trip and Bypass Valve Low Vacuum Interlock Bypass Operation Procedure 2.2.77.1, Rev. 28	0

50.59 SCREENS

NUMBER	TITLE	REVISION / DATE
EE-12-020	Revise Acceptance Criteria of Post-LOCA Flow Verification Test (SP 6.SW.102)	0
52	EQ-MSIV Limit Switch Temperature Evaluation	1
65	Fuel Pool Cooling Strainer High dP Setpoint Change	0
106	DG Mechanical Overspeed Cable Removal	0
123	Offsite Power Voltage Limits	0
127	Relocation of Start-up Flow Control Valve Positioners, RF-CVP-FCV11AA and RF-CVP-FCV11BB	0
165	HPCI/RCIC Low Suction Pressure Trip Time Delay	0
216	Evaluation of CNS-2-DGDO-TK-DOD2, Diesel Oil Day Tank 2, Anchor Bolt Discrepancy	0
268	Evaluation of Class I Structural Fill Penetrations Required for Cathodic Protection Anode Groundbed	2
270	Correcting Temperature Adjustment for Cable Impedances	0
308	DG Mechanical Overspeed Cable Removal	0
315	Breaker 1DS Wire Change to Remove 125VDC Ground	0
332	Bases B3.3.5.1 Loss of Redundant ECCS Initiation Capability	November 18, 2010
462	Revision 1 to NEDC 92-050W, “HPCI-PS-97A and HPCI-PS-97B Setpoints”	0
488	Post RE26 Electrical Calculation Revisions	0
619	Feasibility Evaluation for Installation of Temporary Equipment in the SFP	0
623	Temporary Anti-Rotation Device for HPCI-V-44	0
643	Abandon RWCU Pump Motor Heater Circuits	0
644	Extend Expected Life for CNS-9-CRD-SOV-S031A&B	0
665	Loss of all 125VDC	0
687	Intake Structure Temperature Monitoring Compensatory Measures	1
699	Revise Fire Protection Barrier License Renewal Inspection Frequency	0

50.59 SCREENS

NUMBER	TITLE	REVISION / DATE
805	Replace Relay CNS-9-RMS-REL-K17	0
841	Diesel Generator #1 and #2 Field Ground Detection Relay Configuration	0

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION / DATE
	USA 50.59 Resource Manual	3
	Final Safety Evaluation On Join Owners' Group Program On Motor-Operated Valve Periodic Verification (TAC NOS. MC2346, MC2347, and MC2348)	September 25, 2006
	Standing Order for CR-CNS-2012-5368	August 15, 2012
	Training Records for Personnel Qualified as 10CFR50.59 Preparers and Reviewers	
257HA354AC	High Pressure Coolant Injection System – Data Sheet	2
EQDP.2.157	Pressure Switch, Static-O-Ring	4
EQDP.2.174	Environmental Qualification Data Package: Limit Switch (Outside Containment Applications)	1
IOM 2596	Vendor Manual – Eaton 24" Fabricated Model 2596 Self-Cleaning Strainer	C
NLS2012011	Revision of Commitment Date for Motor-Operated Valve Periodic Verification Program	March 7, 2012
RCE 97-014	EQ Static-O-Ring Pressure Switch Upgrade and HPCI-PS-68A Through D Upgrade	September 26, 1986
SKL060-35-17	Independent Design Verification Practical	0
VM-0167	Vendor Manual – Ebara Submersible Sump Pumps	14

MODIFICATIONS

NUMBER	TITLE	REVISION / DATE
CED 6024380	Relocation of Start-Up Flow Control Valve Positioners, RF-CVP-FCV11AA and RF-CVP-FCV11BB;	0
CED 6028500	SRM and IRM Modification to change the Loss of Negative Voltage INOP Trip	December 23, 2010
CED 6029209	Change Evaluation Document - Zurn Service Water Strainer Replacements	June 8, 2011
CED 6029441	HPCI/RCIC Low Suction Pressure Trip Time Delay	0
CED 6029921	Control Cable Separation	November 6, 2009
CED 6029922	DG Mechanical Overspeed Cable Removal	0
CED 6030461	Change Evaluation Document – DG Fuel Oil Day Tank Piping Modification, CCN3	April 20, 2010
CED 6032264	RR-MOV-MO53A&B Close Control Circuit Change to Limit Switch Control	January 16, 2012
CED 6032720	Change Evaluation Document – Sump Pump Replacements	March 9, 2011
CED 6033461	Appendix R MOV Local Auxiliary Safe Shutdown Control Panels	January 11, 2012
CED 6035563	Diesel Generator No. 1 Voltage Regulator Alternate Anchoring System	November 9, 2012
TCC 4685244	Temporary Configuration Change – Fuel Pool Cooling Strainer High dP Setpoint Change	February 24, 2009
TCC 4699557	DG Mechanical Overspeed Cable Removal	June 4, 2009
TCC 4888475	Temporary Configuration Change – Temporary Anti-Rotation Device for HPCI-V-44, TCN1, TCN2	April 26, 2012
TCC 4888475	Temporary Configuration Change – Temporary Anti-Rotation Device for HPCI-V-44, TCN1, TCN2	April 26, 2012

PROCEDURES

NUMBER	TITLE	REVISION / DATE
EN-HU-105	Human Performance – Managed Defenses	October 3, 2012

PROCEDURES

NUMBER	TITLE	REVISION / DATE
0.29.1	License Basis Document Changes	30
0.4	Procedure Change Process	57
0.40	Work Control Program	September 28, 2012
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6.SNUB.602	Snubber Service Life Evaluation	March 26, 2008
0-EN-FAP-WM-011	Work Planning Standard	October 10, 2012
3-CNS-DC-138	Technical Evaluation Process	8

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NUMBER	TITLE	REVISION / DATE
3-CNS-DC-138.1	Part Evaluations	7

CONDITION REPORTS

CR-CNS-2009-04124	CR-CNS-2009-04137	CR-CNS-2009-04414	CR-CNS-2009-08271
CR-CNS-2011-00327	CR-CNS-2011-04374	CR-CNS-2011-06685	CR-CNS-2011-07130
CR-CNS-2011-08282	CR-CNS-2011-08639	CR-CNS-2011-10026	CR-CNS-2011-12186
CR-CNS-2012-00558	CR-CNS-2012-02914	CR-CNS-2012-03776	CR-CNS-2012-05297
CR-CNS-2012-05368	CR-CNS-2012-08371	CR-CNS-2012-10026	CR-CNS-2012-10597
CR-CNS-2013-00494	CR-CNS-2013-00534	CR-CNS-2013-03806	CR-CNS-2013-01316
CR-CNS-2013-01493	CR-CNS-2013-01502	CR-CNS-2013-01510	CR-CNS-2013-01540
CR-CNS-2013-01577	CR-CNS-2013-01578	CR-CNS-2013-01585	CR-CNS-2013-01588
CR-CNS-2013-01589	CR-CNS-2013-01590	CR-CNS-2013-01704	CR-CNS-2013-01719
CR-CNS-2013-01739	CR-CNS-2013-01746	CR-CNS-2013-01751	CR-CNS-2013-01764
CR-CNS-2013-01769	LO-2012-00060		

WORK ORDERS

4688740	4731540	4791771	4834194

Section 1R18: Plant Modifications

PROCEDURES

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6030900	Change Evaluation Document	
0-BARRIER-MAPS	Administrative Procedure, “Barrier Maps”	0

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CR-CNS-2013-01957

WORK ORDERS

4745775

Section 1R19: Post-Maintenance Testing

PROCEDURES

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6.SLC.101	Surveillance Procedure, “SLC Pump Operability Test”	19
6.1SWBP.101	Surveillance Procedure, “RHR Service Water Booster Pump Flow Test and Valve Operability Test (DIV 1)”	24
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WORK ORDERS

4802786	4802821	4802898	4802965
4803372	4803414	4863885	4863886
4863887	4864075	4864079	4864080
4864144	4864212	4864213	4868814
4884790	4881874	4884827	4885216
4889449	4891233	4897417	4908157

Section 1R22: Surveillance Testing

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE	REVISION
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97-023	NEDC	3

PROCEDURES

NUMBER	TITLE	REVISION
6.EE.604	Surveillance Procedure, “125V Battery Charger Performance Test”	20
6.HPCI.103	Surveillance Procedure, “HPCI IST and 92 Day Test Mode Surveillance Operation”	46, 47
6.RHR.201	Surveillance Procedure, “RHR Motor Operated Valve Operability Test from ASD-RHR Panel”	7
6.SWBP.201	Surveillance Procedure, “SW-MO-89 A/B Full Stroke Operability (IST)”	5
6.2RHR.201	Surveillance Procedure, “RHR Power Operated Valve Operability Test (IST)(DIV 2)	25

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CR-CNS-2013-00581

WORK ORDERS

4803063	4817790	4864208	4884790
4925755			

Section 1EP4: Emergency Action Level and Emergency Plan Changes

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EPIP 5.7.17	Dose Assessment	38, 39
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	Evacuation Time Estimate Study Update	

Section 4OA2: Identification and Resolution of Problems

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE
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12-019	NEDC
12-020	Engineering Evaluation

Section 4OA2: Identification and Resolution of Problems

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE
92-63	NEDC
92-64	NEDC
92-65	NEDC

PROCEDURES

NUMBER	TITLE	REVISION
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2.2.38	Operations Procedure, “”HVAC Control Building”	37
6.SW.102	Surveillance Procedure, “Service Water System Post-LOCA Flow Verification”	44
9.EN-RP-101	Radiation Protection Procedure, “Access Control for Radiologically Controlled Areas”	10

CONDITION REPORTS

CR-CNS-2011-01694	CR-CNS-2011-05770	CR-CNS-2012-08345	CR-CNS-2012-08792
CR-CNS-2012-08821	CR-CNS-2012-09246	CR-CNS-2012-09731	CR-CNS-2012-09956
CR-CNS-2012-09996	CR-CNS-2012-10281	CR-CNS-2012-10645	CR-CNS-2013-00163

Section 4OA3: Event Follow-Up

MISCELLANEOUS DOCUMENTS

NUMBER	TITLE
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CONDITION REPORTS

CR-CNS-2012-01611	CR-CNS-2012-02532	CR-CNS-2012-02566	CR-CNS-2012-06053