



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

**REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511**

January 28, 2019

Mr. John Dent, Jr.  
Vice President-Nuclear and CNO  
Nebraska Public Power District  
Cooper Nuclear Station  
72676 648A Avenue  
P.O. Box 98  
Brownville, NE 68321

**SUBJECT: COOPER NUCLEAR STATION – NRC INTEGRATED INSPECTION  
REPORT 05000298/2018004**

Dear Mr. Dent:

On December 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. On January 17, 2019, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

Further, inspectors documented a licensee-identified violation, which was determined to be of very low safety significance (Green) and Severity Level IV, in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

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

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

*/RA/*

Jason W. Kozal, Chief  
Project Branch C  
Division of Reactor Projects

Docket No. 50-298  
License No. DPR 46

Enclosure:  
Inspection Report 05000298/2018004  
w/attachments:

1. Documents Reviewed
2. Request for Information for the Inservice Inspection
3. Request for Information for the Occupational Radiation Safety Inspection

**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Number: 05000298

License Number: DPR-46

Report Number: 05000298/2018004

Enterprise Identifier: I-2018-004-0003

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: Brownville, Nebraska

Inspection Dates: October 1, 2018 to December 31, 2018

Inspectors: P. Vossmar, Senior Resident Inspector  
M. Stafford, Resident Inspector  
C. Alldredge, Health Physicist  
B. Baca, Health Physicist  
D. Proulx, Senior Project Engineer  
I. Anchondo, Reactor Inspector, Inservice Inspection Activities  
R. Deese, Senior Reactor Analyst

Approved By: J. Kozal  
Chief, Project Branch C  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Cooper Nuclear Station in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. NRC-identified violations and additional items are summarized in the tables below. A licensee-identified non-cited violation is documented in the Inspection Results at the end of this report.

### List of Findings and Violations

Failure to Identify and Correct Nonconforming Safety-related Relays			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000298/2018004-01 Closed	P.2 – Problem Identification and Resolution - Evaluation	71111.15 – Operability Determinations and Functionality Assessments
<p>The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the licensee's failure to identify and correct a condition adverse to quality associated with safety-related low pressure coolant injection relays installed in reactor recirculation discharge valves RR-MO-53A and RR-MO-53B. Specifically, between October 8, 2018, and November 12, 2018, the licensee failed to identify that three Allen Bradley relays installed in the plant had serial numbers that were identified in a Nutherm Part 21 Notification, and were subject to infant mortality failure during the first 2 months of energized life. As a result, one of the three relays failed shortly after being installed in valve RR-MO-53B, rendering the low pressure coolant injection subsystem B inoperable, and the remaining two relays were inappropriately justified for continued use without consideration of the Part 21 Notification.</p>			

Failure to Manage the Increase in Risk During Shutdown Cooling Maintenance			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Initiating Events	Green NCV 05000298/2018004-02 Closed	H.1 – Human Performance - Resources	71153 – Follow-up of Events and Notices of Enforcement Discretion
<p>The inspectors identified a Green, non-cited violation of 10 CFR 50.65(a)(4) for the licensee's failure to manage the increase in risk that resulted from maintenance activities. Specifically, when the licensee removed shutdown cooling from service for planned maintenance, the licensee failed to protect the reactor equipment cooling system which was being utilized as the credited support system to satisfy the shutdown key safety function of decay heat removal. This resulted in the licensee failing to recognize the risk of performing maintenance on the reactor equipment cooling system and inadvertently isolating cooling flow to the fuel pool cooling heat exchangers which were removing decay heat from the reactor vessel.</p>			

### Additional Tracking Items

Type	Issue Number	Title	Inspection Procedure	Status
LER	05000298/2016-001-01 05000298/2016-001-02	De-Energized High Pressure Coolant Injection Auxiliary Lube Oil Pump Caused by Relay Failure Results in Loss of Safety Function, a Condition Prohibited by Technical Specifications, and a 10 CFR Part 21 Report	71153 – Follow-up of Events and Notices of Enforcement Discretion	Closed
LER	05000298/2017-001-00 05000298/2017-001-01	Residual Heat Removal Minimum Flow Valves Out of Position Results in Loss of Safety Function and Condition Prohibited by Technical Specifications	71153 – Follow-up of Events and Notices of Enforcement Discretion	Closed
LER	05000298/2017-003-01	Mispositioned Control Room Emergency Filter System Supply Fan Damper Causes Loss of Safety Function	71153 – Follow-up of Events and Notices of Enforcement Discretion	Closed
URI	05000298/2016008-01	Possible Failure to Ensure that the Assumptions in the Engineering Analysis Remain Valid	71111.05XT – Fire Protection – NFPA 805 (Triennial)	Closed

## PLANT STATUS

The Cooper Nuclear Station began the inspection period in a shutdown status for Refueling Outage 30, which started on September 29, 2018. On November 15, 2018, the station commenced reactor startup and the reactor was made critical. On November 17, 2018, the station synchronized the main generator to the grid and began power ascension. The plant returned to full power on November 20, 2018, and remained there for the rest of the inspection period, with the exception of minor reductions in power for planned rod pattern adjustments.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

## REACTOR SAFETY

### 71111.04—Equipment Alignment

#### Partial Walkdown (2 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Fuel pool cooling while credited for decay heat removal on October 25, 2018
- (2) Core spray B while credited as an inventory control system on October 25, 2018

### 71111.05AQ—Fire Protection Annual/Quarterly

#### Quarterly Inspection (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Reactor water cleanup (RWCU) heat exchanger room, RWCU pump rooms, and reactor building 931 feet elevation, Fire Areas RB-M and RB-N, Zones 3D and 3E, on October 11, 2018
- (2) Control building basement 882 feet elevation, Fire Area CB-A, Zone 7A, on October 23, 2018
- (3) Fuel pool cooling room, Fire Area RB-P, Zone 4C, on October 25, 2018

(4) Drywell, Fire Area Reactor Building - Drywell, on November 9, 2018

71111.08—Inservice Inspection Activities (1 Sample)

The inspectors evaluated boiling water reactor nondestructive testing by observing or reviewing the following examinations from October 1, 2018, to October 5, 2018:

(1) Ultrasonic Testing

- a) Reactor recirculation pump (RRP-1B-BG1) studs, Report UT-F18-006

(2) Visual Testing

- a) Main steam system, mechanical snubber VRS-21, Report VT-F18-037
- b) Main steam system, mechanical snubber VRS-22, Report VT-F18-038
- c) Reactor feedwater, constant support RFH-71A, Report VT-F18-048
- d) Reactor feedwater, constant support RFH-71, Report VT-F18-047
- e) Reactor feedwater, mechanical snubber RFS-11, Report VT-F18-049

(3) Magnetic Particle Testing

- a) Main steam system, lugs on support PSA-BK1-19, Report MT-F18-003

The inspector evaluated welding activities by observing the following welding activities or reviewing the following records:

(1) Gas Tungsten Arc Welding (GTAW)

- a) Residual heat removal system, welds 2 through 9, Weld Record 18-152

The inspector evaluated a sample of condition reports associated with inservice inspection activities and found the corrective actions were appropriate.

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed and evaluated just-in-time training for reactor vessel pressure testing on October 28, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated reactor startup from the refueling outage, including pulling rods to bring the reactor critical, on November 14, 2018.

71111.12—Maintenance Effectiveness

Routine Maintenance Effectiveness (2 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety-significant functions:

- (1) Drywell fan coil unit D bearing failure on November 30, 2018
- (2) Reactor equipment cooling and fuel pool cooling on December 20, 2018

Quality Control (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance issues:

- (1) Residual heat removal low-pressure coolant injection on December 20, 2018

71111.13—Maintenance Risk Assessments and Emergent Work Control (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities. The inspectors used information from Operating Experience Smart Sample (OpESS) 2007/03, "Crane and Heavy Lift Inspection, Supplemental Guidance to IP 71111.20 and IP 71111.13," to inform baseline inspection sample (1) below:

- (1) Reactor pressure vessel head removal during disassembly on October 2, 2018
- (2) Emergency station service transformer Yellow risk window during bus replacement on October 3, 2018
- (3) Shutdown cooling Yellow risk window on October 19, 2018
- (4) Reactor recirculation M-G set B speed control failure during reactor pressure vessel pressure test Yellow risk window on November 8, 2018

71111.15—Operability Determinations and Functionality Assessments (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Residual heat removal pump C casing vent leak on October 4, 2018
- (2) Steam dryer lower guide bracket cracking on October 12, 2018
- (3) Level instrumentation operability following pressure transient on November 2, 2018
- (4) Reactor pressure vessel upper top guide cracking identified during in-vessel visual inspection (IVVI) on November 8, 2018
- (5) Part 21 relays installed in reactor recirculation pump discharge valve RR-MO-53A and RR-MO-53B power circuits on November 10, 2018
- (6) Scram outlet valve drain time following tagging error on October 3, 2018

71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following permanent modification:

- (1) Reactor core isolation cooling governor control modification on December 14, 2018



#### 71111.19—Post Maintenance Testing (7 Samples)

The inspectors evaluated the following post-maintenance tests:

- (1) Service water system post loss-of-coolant accident testing following service water piping disassembly on October 19, 2018
- (2) Low pressure permissive interlock functional testing following relay maintenance on October 21, 2018
- (3) Reactor core isolation cooling relay testing following maintenance on October 24, 2018
- (4) Reactor equipment cooling to reactor recirculation lube oil cooler testing on October 25, 2018
- (5) Reactor building ventilation exhaust outlet isolation damper HV-MO-258 and HV-MO-260 testing on October 30, 2018
- (6) Reactor pressure vessel pressure test following maintenance on multiple reactor coolant system valves on November 6, 2018
- (7) High pressure coolant injection digital controller modification testing on November 15, 2018

#### 71111.20—Refueling and Other Outage Activities (1 Sample)

The inspectors evaluated Refueling Outage 30 activities from September 29, 2018, to November 17, 2018.

#### 71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

##### Routine (3 Samples)

- (1) Division 2 emergency diesel generator sequential load test on October 19, 2018
- (2) Division 1 emergency diesel generator sequential load test on October 23, 2018
- (3) Control rod scram time testing on November 7, 2018

##### Containment Isolation Valve (1 Sample)

- (1) Main steam isolation valve local leak-rate test on October 15, 2018

#### 71114.06—Drill Evaluation

##### Drill/Training Evolution (1 Sample)

The inspectors evaluated a full team drill on December 18, 2018.

## **RADIATION SAFETY**

### 71124.01—Radiological Hazard Assessment and Exposure Controls

#### Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls.

#### Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions.

#### Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls.

#### Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage.

#### High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

#### Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

### 71124.02—Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

#### Implementation of ALARA and Radiological Work Controls (1 Sample)

The inspectors reviewed ALARA practices and radiological work controls by reviewing the following activities:

- (1) ALARA Package 2017-01, Spent Fuel Pool Cleanup
- (2) ALARA Package 2018-05, RE30 Reactor Disassemble, Refueling, and Reactor Reassembly
- (3) ALARA Package 2018-17, RE30 Miscellaneous Maintenance, Electrical, Instrumentation and Control work not covered under Turbine Generator Building or other ALARA Packages
- (4) ALARA Package 2018-56, Planned Outage in 2018

#### Radiation Worker Performance (1 Sample)

The inspectors evaluated radiation worker and radiation protection technician performance.

## **OTHER ACTIVITIES – BASELINE**

### 71151—Performance Indicator Verification (7 Samples)

The inspectors verified licensee performance indicators submittals listed below:

- (1) MS06: Emergency AC Power Systems (October 1, 2017 – September 30, 2018)
- (2) MS07: High Pressure Injection Systems (October 1, 2017 – September 30, 2018)
- (3) MS08: Heat Removal Systems (October 1, 2017 – September 30, 2018)
- (4) MS09: Residual Heat Removal Systems (October 1, 2017 – September 30, 2018)
- (5) MS10: Cooling Water Support Systems (October 1, 2017 – September 30, 2018)
- (6) OR01: Occupational Exposure Control Effectiveness Sample (April 1, 2017 – September 30, 2018)
- (7) PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample (April 1, 2017 – September 30, 2018)

### 71152—Problem Identification and Resolution

#### Annual Follow-up of Selected Issues (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) Emergency diesel generator 1 voltage regulator cabinet on December 21, 2018
- (2) Torus-drywell vacuum breaker failure to close on December 11, 2018

### 71153—Follow-up of Events and Notices of Enforcement Discretion

#### Events (3 Samples)

- (1) The inspectors evaluated the loss of reactor recirculation pump B during startup on November 18, 2018
- (2) The inspectors evaluated the loss of fuel pool cooling due to reactor equipment cooling isolation on December 19, 2018
- (3) The inspectors evaluated a Notification of Unusual Event due to toxic gas caused by a fire in the radwaste building on December 29, 2018

#### Licensee Event Reports (3 Samples)

The inspectors evaluated the following licensee event reports which can be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- (1) Licensee Event Report 05000298/2016-001-01 and 05000298/2016-001-02, De-Energized High Pressure Coolant Injection Auxiliary Lube Oil Pump Caused by

Relay Failure Results in Loss of Safety Function, a Condition Prohibited by Technical Specifications, and a 10 CFR Part 21 Report, on November 28, 2018

(2) Licensee Event Report 05000298/2017-001-00 and 05000298/2017-001-01, Residual Heat Removal Minimum Flow Valves Out of Position Results in Loss of Safety Function and Condition Prohibited by Technical Specifications, on November 29, 2018

(3) Licensee Event Report 05000298/2017-003-01, Mispositioned Control Room Emergency Filter System Supply Fan Damper Causes Loss of Safety Function, on November 21, 2018

## INSPECTION RESULTS

Unresolved Item (Closed)	Possible Failure to Ensure that the Assumptions in the Engineering Analysis Remain Valid URI 05000298/2016008-01	71111.05XT – Fire Protection – NFPA 805 (Triennial)
<p><u>Description:</u> During the NRC triennial fire protection inspection in 2016 (see NRC Inspection Report 0500298/2016008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16270A561), the inspectors reviewed the licensee’s implementation of the monitoring program required in Section 2.6 of National Fire Protection Association (NFPA) Standard 805, “Performance-Based Standard for Fire Protection for Light-Water Reactor Electric Generating Plants.” NFPA 805 requires the following in Section 2.6:</p> <p><b>Monitoring.</b> A monitoring program shall be established to ensure that the availability and reliability of the fire protection systems and features are maintained, and to assess the performance of the fire protection program in meeting the performance criteria. Monitoring shall ensure that the assumptions in the engineering analysis remain valid.</p> <p>The inspectors reviewed selected samples of equipment monitored by the licensee using Procedure 3-CNS-DC-357, “National Fire Protection Association (NFPA) 805 Monitoring Program,” Revision 0, to ensure that the licensee’s program properly implemented the requirements of NFPA 805, Section 2.6. The inspectors also reviewed Engineering Report ER-2015-002, “National Fire Protection Association (NFPA) 805 Fire Protection Monitoring Program,” Revision 2. The inspectors observed that for many components used in the fire probabilistic risk assessment, the unavailability time for those components were monitored using the existing maintenance rule (10 CFR 50.65) monitoring program.</p> <p>The inspectors noted that the action levels for availability in the maintenance rule monitoring program were greater than the assumptions in the fire probabilistic risk assessment and questioned whether this met the requirement in NFPA 805 to maintain the assumptions in the engineering analysis.</p> <p>At the time of the original inspection, clarifications of the monitoring program requirements were being discussed between the industry and the NRC’s Office of Nuclear Reactor Regulation during periodic public meetings which discussed Frequently Asked Question (FAQ) 10-0059, “National Fire Protection Association (NFPA) 805 Monitoring.” With the further clarification pending, the inspectors documented the issue as an unresolved item.</p>		

On August 7, 2018, staff from the Office of Nuclear Reactor Regulation found that the proposed changes set forth by the Nuclear Industry Institute and industry contained in FAQ 10-0059, "National Fire Protection Association (NFPA) 805 Monitoring," Revision 6, were acceptable for meeting the provisions of National Fire Protection Standard 805. The inspectors reviewed the licensee's actions relative to the approved guidance in the FAQ and determined that the licensee met the guidance delineated in the FAQ resolution. This guidance ensured the licensee was conducting effective monitoring by ensuring that the increase in core damage frequency was very small (less than 1.0E-6/year) from their monitoring process and actions were taken in the licensee's corrective action program to ensure performance of the fire protection program is maintained over the life of the plant.

Based upon the above review, the NRC determined there was no violation of NRC requirements. This Unresolved Item is closed.

Corrective Action Reference: Condition Report CR-CNS-2016-05109

Licensee-Identified Non-Cited Violation	71111.22 – Surveillance Testing
<p>This violation of very low safety-significance was identified by the licensee and has been entered into the licensee's corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.</p>	
<p>Violation: Title 10 CFR 50.55a(g)(4) requires, in part, that components (including supports) that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions and addenda of the ASME Boiler and Pressure Vessel (BPV) Code to the extent practical. Title 10 CFR 50.55a(z) states, "alternatives to the requirements of paragraphs (b) through (h) of this section or portions thereof may be used when authorized by the Director, Office of Nuclear Reactor Regulation, or Director, Office of New Reactors, as appropriate. A proposed alternative must be submitted and authorized prior to implementation." ASME Section XI, IWB-5222(a) requires, in part, that the pressure retaining boundary during the system leakage test shall correspond to the reactor coolant boundary, with all valves in the position required for normal reactor operation startup.</p>	
<p>Contrary to the above, between November 2, 2016, and November 5, 2018, the licensee failed to ensure that components that were classified as ASME Code Class 1 met the requirements set forth in Section XI of editions and addenda of the ASME BPV Code to the extent practical, and failed to ensure a proposed alternative was submitted and authorized prior to implementation. Specifically, the licensee failed to meet component testing requirements of ASME, Section XI, IWB-5222(a), during the 2016 refueling outage reactor pressure vessel (RPV) pressure test, and failed to obtain relief from these requirements prior to performance of the test. In particular, the licensee performed RPV pressure testing with certain Class 1 pressure retaining components in a modified valve lineup rather than in the configuration required for normal reactor operation startup, as required by IWB-5222(a). The relief request had been used and approved in previous ASME Code inservice inspection (ISI) intervals, but had been inadvertently omitted in the submittal to the NRC for the 5<sup>th</sup> ISI interval that began on April 1, 2016. On November 5, 2018, the licensee requested and received emergent relief for testing activities related to the 2018 refueling outage.</p>	

Significance/Severity Level: The performance deficiency was more than minor because it was associated with the reactor coolant system (RCS) equipment and the barrier performance attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (RCS) protect the public from radionuclide releases caused by accidents or events. Using Inspection Manual Chapter 0609 Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," dated May 9, 2014, the inspectors determined the finding was of very low safety significance (Green) in accordance with the Exhibit 4 Barrier Integrity screening questions. Traditional enforcement also applied to this finding because the failure to submit a relief request to the NRC prior to implementation of an alternative to the ASME Code impacted the regulatory process. The inspectors determined that this issue represented a Severity Level IV violation because it was similar to Enforcement Policy Example 6.1.d.2, "Violations of 10 CFR 50.59 result in conditions evaluated as having very low safety significance (i.e., Green) by the SDP."

Corrective Action Reference: CR-CNS-2018-07312

Failure to Identify and Correct Nonconforming Safety-related Relays			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Mitigating Systems	Green NCV 05000298/2018004-01 Closed	P.2 – Problem Identification and Resolution - Evaluation	71111.15 – Operability Determinations and Functionality Assessments
<p>The inspectors identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the licensee's failure to identify and correct a condition adverse to quality associated with safety-related low pressure coolant injection relays installed in reactor recirculation discharge valves RR-MO-53A and RR-MO-53B. Specifically, between October 8, 2018, and November 12, 2018, the licensee failed to identify that three Allen Bradley relays installed in the plant had serial numbers that were identified in a Nutherm Part 21 Notification, and were subject to infant mortality failure during the first 2 months of energized life. As a result, one of the three relays failed shortly after being installed in valve RR-MO-53B, rendering the low pressure coolant injection subsystem B inoperable, and the remaining two relays were inappropriately justified for continued use without consideration of the Part 21 Notification.</p>			
<p><u>Description:</u> On October 30, 2018, during the licensee's refuel outage, the licensee experienced a failure of 'B' reactor recirculation discharge valve RR-MO-53B. The valve lost power and failed "as is" due to the failure of a relay coil that had been installed in the power circuit for valve RR-MO-53B for approximately 430 hours. This relay was an Allen-Bradley commercial relay that had been purchased by Nutherm, had its 24 Vdc relay coil replaced with a 250 Vdc coil, and then had been dedicated for safety-related applications. Initially, the licensee determined that both valve RR-MO-53B and the 'A' reactor recirculation discharge valve RR-MO-53A were inoperable, due to having the same model of relay installed in both locations within a few days of each other, and due to internal operating experience associated with this model of relay. Because these valves are required to close upon a low pressure coolant injection (LPCI) injection signal, the licensee declared both LPCI A and B inoperable. Subsequently, the licensee replaced the failed RR-MO-53B relay with another of the same</p>			

model, and performed an evaluation that concluded that these relays would successfully perform their required functions.

The inspectors reviewed the evaluation and the licensee's internal operating experience, noting that in April 2016, the licensee experienced a loss of the high pressure coolant injection (HPCI) system due to failure of the same model of relay. That relay had been energized for 133 hours before it experienced coil failure. The inspectors also identified an NRC Part 21 report that had been made by Nutherm in 2017. This Part 21 report was issued by Nutherm as a result of Cooper's 2016 relay failure, and as a follow-up report to an initial report made by Cooper. The Nutherm Part 21 report included the serial numbers for the relays that remained installed in valves RR-MO-53A and RR-MO-53B, and the serial number for the relay that had just failed. The Part 21 stated that the manufacturing flaw that led to Cooper's 2016 event presented an infant mortality vulnerability up until 2 months after the relays have been installed and energized.

On November 11, 2018, the residents challenged the licensee's conclusion that the two relays installed in the power circuits for valves RR-MO-53A and RR-MO-53B would function properly and that the LPCI A and B subsystems were operable. Specifically, the inspectors observed that the licensee had experienced two failures of the same model of relay over the course of the last 2 years, despite the fact that a total of only 12 relays of this type had been installed in the plant during the same time span. The inspectors also presented the licensee with the Nutherm Part 21, highlighting the 2 month vulnerability period. The inspectors observed that the licensee's evaluation had not considered the Nutherm Part 21 report, and the licensee was not aware of it. The inspectors observed that the RR-MO-53A and RR-MO-53B relays had been installed on October 20 and October 31, 2018, which was within the period of vulnerability. The licensee reviewed the Part 21 report, determined that the operability of valves RR-MO-53A and RR-MO-53B was not assured, and declared LPCI A and B inoperable for this condition. The licensee took action to replace the vulnerable relays with the previously installed relays, which still had 18 months of environmentally qualified (EQ) life remaining.

**Corrective Actions:** The licensee replaced the Part 21 nonconforming relays with the previously installed relays in both the RR-MO-53A and B valve control logic cabinets, since these relays had 18 months remaining on their EQ life. The licensee also took action to send the failed RR-MO-53B relay to the vendor for failure mode evaluation.

**Corrective Action References:** CR-CNS-2018-07146; CR-CNS-2018-07207; CR-CNS-2018-07608; CR-CNS-2018-07620

Performance Assessment:

**Performance Deficiency:** The inspectors determined that the failure to identify and correct a condition adverse to quality associated with LPCI relays installed in the reactor recirculation discharge valves was a performance deficiency.

**Screening:** The inspectors determined the performance deficiency was more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the performance deficiency resulted in the inoperability of low pressure coolant injection A and B subsystems.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," dated May 9, 2014. Using Exhibit 3, "Mitigating Systems Screening Questions," the inspectors determined that this finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating system, structure, or component where operability was maintained; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function for greater than technical specification allowed outage times; (4) did not represent an actual loss of function of one or more highly safety-significant nontechnical specification trains for greater than 24 hours with the cavity flooded; (5) did not degrade a functional residual heat removal auto-isolation; (6) did not pertain to external events; and (7) did not pertain to the fire brigade.

Cross-cutting Aspect: This finding had a problem identification and resolution cross-cutting aspect associated with evaluation, in that the organization failed to thoroughly evaluate premature Allen Bradley relay failures and the applicable Nutherm Part 21 Notification, in order to ensure that the resolution addressed causes and extent of conditions commensurate with their safety significance. [P.2]

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XVI, requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, between October 8, 2018, and November 12, 2018, the licensee failed to establish measures to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances were promptly identified and corrected. Specifically, the licensee failed to identify that three quality-related LPCI relays installed in RR-MO-53A and RR-MO-53B control circuitry had serial numbers that were identified in a Nutherm Part 21 Notification, and were subject to infant mortality failure during the first 2 months of energized life. As a result, one of the three relays failed shortly after being installed in RR-MO-53B, rendering the LPCI B subsystem inoperable, and the remaining two relays were inappropriately justified for continued use without consideration of the Part 21 Notification.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Failure to Manage the Increase in Risk During Shutdown Cooling Maintenance			
Cornerstone	Significance	Cross-cutting Aspect	Inspection Procedure
Initiating Events	Green NCV 05000298/2018004-02 Closed	H.1 – Human Performance - Resources	71153 – Follow-up of Events and Notices of Enforcement Discretion
The inspectors identified a Green, non-cited violation of 10 CFR 50.65(a)(4) for the licensee's failure to manage the increase in risk that resulted from maintenance activities. Specifically,			



when the licensee removed shutdown cooling from service for planned maintenance, the licensee failed to protect the reactor equipment cooling system which was being utilized as the credited support system to satisfy the shutdown key safety function of decay heat removal. This resulted in the licensee failing to recognize the risk of performing maintenance on the reactor equipment cooling system and inadvertently isolating cooling flow to the fuel pool cooling heat exchangers which were removing decay heat from the reactor vessel.

Description: In order to help manage the increase in risk when a piece of equipment is taken out of service for maintenance, the licensee will protect other important systems or trains per Administrative Procedure 0-PROTECT-EQP, "Protected Equipment Program," Revision 44. Section 4.1.2.1 of this procedure outlines the necessary equipment to be protected during the outage. It states, in part, that the equipment to be protected is based upon protecting the key safety function of decay heat removal.

Administrative Procedure 0.50.5, "Outage Shutdown Safety," Revision 39, defines the shutdown key safety functions and what equipment can be credited in order to meet these functions. Attachment 1 of this procedure states, in part, that General Operating Procedure 2.1.20.2, "Cycle Specific Fuel Transfer and Alternate Cooling Guideline," Revision 21, provides guidance on alternate system lineups needed to accomplish the decay heat removal safety function. These alternate systems would be utilized when the residual heat removal (RHR) pumps are removed from service or when RHR shutdown cooling (SDC) is removed from service.

Procedure 2.1.20.2, Section 3.2.2, outlines specific equipment lineups, called cases, which have adequate capacity to be credited to remove heat from the reactor vessel. Each of these cases requires reactor equipment cooling (REC) flow to the fuel pool cooling (FPC) heat exchangers. Based on this requirement, and per the protected equipment procedure, the inspectors determined that the licensee should have protected the REC system when RHR SDC was removed from service.

On October 17, 2018, during the recent refueling outage, the licensee removed the RHR SDC subsystem from service for planned maintenance. At this stage of the refueling outage, the licensee can utilize the FPC system as a backup to the RHR SDC subsystem. The FPC system removes decay heat from the reactor vessel through as many as three heat exchangers, all of which are cooled by the REC system. When the RHR SDC subsystem was removed from service the licensee had not protected the REC system.

On October 21, 2018, the licensee authorized post work testing to be performed on a portion of the REC system. During this testing, a low pressure condition in the REC system caused the REC to FPC heat exchangers supply valve to go closed, thereby removing the flow path to remove decay heat from the reactor vessel. The licensee was able to reestablish flow to the heat exchangers in approximately 1 minute. Had this equipment been protected, the licensee could have recognized the risk impacts that this testing had to the plant and postponed the test or taken additional risk mitigation actions to ensure the isolation would not have occurred.

The inspectors determined this non-cited violation was NRC identified because earlier in the outage, around October 7, 2018, the residents challenged the lack of REC protection and the licensee failed to take action to protect the system. Additionally, following the unplanned isolation, the residents pointed out to the licensee that the shutdown risk management process outlined above should have driven the licensee to protect the REC system prior to performing the shutdown cooling maintenance.

Corrective Actions: The licensee protected the REC system for the remainder of the RHR SDC maintenance period.

Corrective Action References: CR-CNS-2018-06797, CR-CNS-2018-07108

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to manage the increase in risk that resulted from maintenance activities associated with removing shutdown cooling from service was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the configuration control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee's failure to protect the reactor equipment cooling system while shutdown cooling was removed from service led to the licensee inadvertently isolating cooling flow to the fuel pool cooling heat exchangers, thereby changing the shutdown equipment lineup and challenging the shutdown key safety function of decay heat removal.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix G, Exhibit 2, "Initiating Events Screening Questions," dated May 9, 2014. The inspectors determined that this finding was of very low safety significance (Green) because the finding: (1) did not increase the likelihood of a shutdown initiating event; (2) did not pertain to a loss of inventory initiator; (3) did not pertain to a loss of offsite power initiator; (4) occurred when the refuel canal/cavity was flooded; (4) did not pertain to a loss of level control; and (5) did not increase the likelihood of a fire or internal/external flood that could cause a shutdown initiating event.

Cross-cutting Aspect: This finding had a human performance cross-cutting aspect associated with resources, in that the licensee failed to ensure that the protected equipment procedure was adequate to support successful work performance, and thereby, nuclear safety. [H.1]

Enforcement:

Violation: Title 10 CFR 50.65(a)(4) requires, in part, that prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities.

Contrary to the above, from October 17, 2018, to October 22, 2018, prior to performing a maintenance activity, the licensee failed to assess and manage the increase in risk that could result from the proposed maintenance activity. Specifically, when the licensee removed shutdown cooling from service for planned maintenance, the licensee failed to protect the reactor equipment cooling system which was being utilized as the credited support system to satisfy the shutdown key safety function of decay heat removal. This resulted in the licensee failing to recognize the risk of performing maintenance on the reactor equipment cooling system and inadvertently isolating cooling flow to the fuel pool cooling heat exchangers which were removing decay heat from the reactor vessel.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

## **EXIT MEETINGS AND DEBRIEFS**

On October 5, 2018, the inspector presented the inservice inspection results to Mr. J. Dent, Jr., Site Vice President and Chief Nuclear Officer, and other members of the licensee staff. The inspector verified no proprietary information was retained or documented in this report.

On October 19, 2018, the inspectors presented the occupational radiation safety inspection results to Mr. J. Dent, Jr., Site Vice President and Chief Nuclear Officer, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

On January 17, 2019, the inspectors presented the quarterly resident inspector inspection results to Mr. J. Dent, Jr., Site Vice President and Chief Nuclear Officer, and other members of the licensee staff. The inspectors verified no proprietary information was retained or documented in this report.

## DOCUMENTS REVIEWED

### 71111.04 – Equipment Alignment

#### Condition Reports (CR-CNS-)

---

2018-06814	2018-06828	2018-06949	2018-06950	2018-06951
------------	------------	------------	------------	------------

---

Procedures Number	Title	Revision
2.2.32	Fuel Pool Cooling and Demineralizer System	99
2.2.32A	Fuel Pool Cooling and Demineralizer System Component Checklist	20
2.2.32B	Fuel Pool Cooling and Demineralizer System Instrument Valve Checklist	4
2.2.69.2	RHR System Shutdown Operations	101
2.2A.CS.DIV2	Core Spray Component Checklist	3
2.2B.CS.DIV2	Core Spray System Instrument Valve Checklist (Div 2)	0

---

Drawings Number	Title	Revision
2045	Flow Diagram – Core Spray System	N58

#### Miscellaneous Documents

---

Title	Date
Protected Equipment Tracking Form	October 25, 2018
Protected Equipment Tracking Form – RE30 Div 2 Protected ADHR	October 24, 2018

### 71111.05 – Fire Protection

#### Condition Reports (CR-CNS-)

---

2018-07604

---

Procedures Number	Title	Revision
0.7.1	Control of Combustibles	40
0.23	CNS Fire Protection Plan	79
0-BARRIER-MAPS	Barrier Maps	9
0-BARRIER-MISC	Miscellaneous Buildings	5
2.1.6	Primary Containment Access Preparation and Closeout Activities	15
3.6.1	Fire Barrier Control	21

Drawings Number	Title	Revision
2016, Sheet 7	Fire Protection System Site Plan	12

Miscellaneous Documents Number	Title	Revision
CNS-FP-218	Reactor Building – Second Floor	AB/11
CNS-FP-224	Control Building Basement Floor	AB/05
NEDC 10-080	Fundamental Fire Protection Program and Design Element Review EPM Report R1906-002-001	3
NEDC 11-104	Fire Safety Analysis for Fire Area AB/05 Control Building Basement Floor Elevation 882	4

71111.08 – Inservice Inspection Activities

Condition Reports (CR-CNS-)

2016-06259	2016-06277	2016-06453	2016-07398	2016-08790
2018-00599	2018-05403	2018-05439	2018-05470	2018-05863
2018-05898	2018-05908	2018-05909		

Work Orders

5062934	5153932	5172664	5173010	5173011	5183072	5234301
5239533						

Procedures Number	Title	Revision
7.2.57	ASME Category F-A Component Supports Examination and Adjustments	20
7.7.3.1	General Welding Standard for ASME and ANSI Code Applications	20
7.7.50.1	Visual Inspection Procedure for ANSI B31.1	2

Drawings Number	Title	Revision
RR-H7-A	Pipe Support – RR System	N00

Miscellaneous Documents Number	Title	Revision/Date
	Cooper Nuclear Station 5 <sup>th</sup> 10-Year Interval Inservice Inspection Program and 3 <sup>rd</sup> 10-Year Interval Containment Inservice Inspection Program	August 27, 2018
EDP-50	Processing ASME Class 2 and 3 Pressure Boundary Integrity Challenges	0

Miscellaneous Documents		
Number	Title	Revision/Date
HEH-VT-103	Procedure for VT-3 Examination	11
NEDC 90-222	Calc. No. 150-88-S-RR-005 for Pipe Support Mark No. RR-H7A	May 2, 1990
PT.CNS.1224	Liquid Penetrant Examination	0

71111.11 – Licensed Operator Requalification Program

Condition Reports (CR-CNS-)				
2018-07742	2018-07798	2018-07830	2018-07831	

Procedures Number	Title	Revision
2.0.3	Conduct of Operations	99
2.1.1	Startup Procedure	194
2.1.10	Station Power Changes	116
2.2.75	Steam Sealing System	40
6.MISC.502	ASME Class 1 System Leakage Test	55

Miscellaneous Documents		
Number	Title	Revision
	TS LCO 3.0.4b Risk Evaluation – Mode 2 and 1 Entry with Drywell Atmospheric Monitoring System Inoperable	November 13, 2018
RMP 31-001	Beginning of Cycle Startup Reactivity Maneuvering Plan	0

71111.12 – Maintenance Effectiveness

Condition Reports (CR-CNS-)				
2018-02869	2018-03244	2018-03245	2018-03260	2018-04693
2018-04901	2018-05421	2018-05438	2018-05845	2018-06137
2018-06193	2018-06238	2018-06239	2018-06347	2018-06797
2018-06924	2018-06950	2018-07146	2018-07207	2018-07279
2018-07311	2018-07608	2018-07620	2018-07859	2018-08019

Work Orders		
5172338	5273392	5273393

Procedures Number	Title	Revision
2.2.40	Drywell Cooling System	31
3-EN-DC-204	Maintenance Rule Scope and Basis	3C1
3-EN-DC-205	Maintenance Rule Monitoring	5C1

Drawings Number	Title	Revision
2022, Sheet 3	Primary Containment Cooling & Nitrogen Inerting System	4

Miscellaneous Documents Number	Title	Revision/Date
	Maintenance Rule Function FPC-F01 Performance Criteria Basis	1
	Maintenance Rule Function HV-F09 Performance Criteria Basis	3
	Maintenance Rule Function REC-F01 Performance Criteria Basis	5
	Maintenance Rule Functional Failure Evaluations for HV-F09	2004 through 2018
	Nutherm Part 21 Evaluation – Allen Bradley Model 700DC Control Relay	August 30, 2017
22A1271AC	Drywell Cooling System	0
CNS-HV-39	Reactor Building Drywell Cooling Developed Flow Diagram w/ Measurement & Damper Locations	1
NEDC 89-1439	Drywell Air Cooling System Upgrade Air Flow Derivation	3
NUMARC 93-01	Industry Guideline for Monitoring The Effectiveness of Maintenance at Nuclear Power Plants	4F

71111.13 – Maintenance Risk Assessments and Emergent Work Control

Condition Reports (CR-CNS-)

2018-05835	2018-05853	2018-05864	2018-06308	2018-06309
2018-06313	2018-06694	2018-07300	2018-07359	

Work Orders

5173242    5273261

Procedures Number	Title	Revision
0.50.5	Outage Shutdown Safety	38
0-PROTECT-EQP	Protected Equipment Program	42
2.2.69.2	RHR System Shutdown Operations	101
6.RR.601B	RRMG B Positioner Maintenance and Setting Electrical and Mechanical Stops	13
7.4Disassembly	Reactor Vessel Disassembly	18

Drawings Number	Title	Revision
045107-01	Interconnect Wiring SM-5360/AD-9120 Relay Panel	N04
730E197BB, Sheet 4	Variable Speed Recirc Pump & MG Set Recirculation System	AM/31
730E197BB, Sheet 6	Variable Speed Recirc Pump & MG Set Recirculation System	N14

Miscellaneous Documents

Number	Title	Revision/Date
	Outage System Status Report	October 3, 2018
	Outage System Status Report	October 17-18, 2018
	Protected Equipment Tracking Form – RE30 Initial Protected Equip with ESST Unavailable	September 11, 2018
	Protected Equipment Tracking Form – RE30 Initial Protected Equip with ESST Unavailable	October 2, 2018
11564325	Notification	
EE 01-088	Assessment of the Possibility of Fuel Damage From a Drop of the Concrete Shield Plugs, Drywell Head, RPV Head Insulation, RPV Head, Bellows Shield, Steam, Dryer, MS Line Plugs, and Steam Separator During Lifting or Movement of these Structures	1
EE 14-030	Evaluation in Support of Reactor Vessel Head Drop Analysis	0
NEDC 94-033	Evaluation/Structural Analysis of Cooper RPV Head, Steam Dryer, Shroud Head/Steam Separator Assembly Drop Conditions	1
RE30-0007	ESST and SDG Unavailable Prior to Backfeed	September 29, 2018
RE30-0009	R101/R102 Containment Closure Plan	September 29, 2018

71111.15 – Operability Determinations and Functionality Assessments

Condition Reports (CR-CNS-)

2018-05786	2018-05817	2018-05820	2018-05866	2018-05879
2018-05894	2018-05965	2018-05987	2018-06420	2018-07134
2018-07146	2018-07207	2018-07608	2018-07620	

Work Orders

5172338	5270466	5273392	5273393
---------	---------	---------	---------



Procedures Number	Title	Revision
0.50.5	Outage Shutdown Safety	38
6.LOG.602	Daily Surveillance Log – Modes 4 and 5	69
6.1CSCS.301	CSCS Water Level Channel Calibration (Div 1)	13

Drawings Number	Title	Revision
2026, Sheet 1	Flow Diagram Reactor Vessel Instrumentation	AC/68
115D6009	Rack 25-5	N09
CNS-NBI-10	Reactor Water Level Indication Correlation	N06

Miscellaneous Documents Number	Title	Date
	Nutherm Part 21 Evaluation – Allen Bradley Model 700DC Control Relay	August 30, 2017
	Safety Evaluation by the Office of Nuclear Reactor Regulation Related to Amendment No. 260 to Renewed Facility Operating License No. DPR-46 Nebraska Public Power District Cooper Nuclear Station Docket No. 50-298	August 1, 2018
11556454	Notification	
EC 6039901	Stop Drill for Steam Dryer Skirt Crack Mitigation Near 180 Degrees	0

71111.18 – Post Maintenance Testing

Procedures Number	Title	Revision
6.RCIC.102	RCIC IST and 92 Day Test	36
6.RCIC.105	RCIC Turbine Overspeed Functional Test	24
6.RCIC.502	ASME Section XI System Leakage Test of the Class 2 Reactor Core Isolation Cooling (RCIC) System in Steam Tunnel	7
Special Procedure SP18-001	RCIC Turbine Control Upgrade Test	2

Miscellaneous Documents Number	Title
6028320	Change Evaluation Document, RCIC Turbine Governor Control System Replacement

## 71111.19 – Post Maintenance Testing

### Condition Reports (CR-CNS-)

2018-06622	2018-06664	2018-06666	2018-06902	2018-06903
2018-07064	2018-07184	2018-07280	2018-07301	2018-07312
2018-07314	2018-07319	2018-07348	2018-07349	2018-07366
2018-07372	2018-07444	2018-07827	2018-07828	

### Work Orders

5039053	5149734	5172612	5172674	5172870	5173263	5173264
5238288	5271305					

### Procedures

Number	Title	Revision
6.CSCS.302	CS, RR, and RHR Valve Low Pressure Permissive Interlock Functional Test	11
6.HPCI.313	HPCI (<165 PSIG) Beginning of Cycle Test	36
6.MISC.502	ASME Class 1 System Leakage Test	53, 54
6.SC.201	Secondary Containment (Reactor Building H&V) Valve Operability Test	39
6.SW.102	Service Water System Post-LOCA Flow Verification	51
7.0.5	CNS Post-Maintenance Testing	57
7.3.1.16	GE CFD (87) Relay Testing and Maintenance	6

### Miscellaneous Documents

Title	Date
RE30 Fall 2018 6.MISC.502 System Leakage Test PWT List	November 2, 2018

### Drawings

Number	Title	Revision
2031, Sheet 3	Flow Diagram Reactor Building – Closed Cooling Water System	AB/34
791E264, Sheet 3	RCIC Control Power	7

## 71111.20 – Refueling and Other Outage Activities

### Condition Reports (CR-CNS-)

2018-05791

### Procedures

Number	Title	Revision
0.50.5	Outage Shutdown Safety	38
2.2.32	Fuel Pool Cooling and Demineralizer System	100
2.2.69.2	RHR System Shutdown Operations	101

71111.22 – Surveillance Testing

Condition Reports (CR-CNS-)

2018-05904	2018-05907	2018-06714	2018-06728	2018-06737
2018-06759	2018-07312	2018-07395	2018-07404	2018-07405
2018-07406	2018-07408	2018-07425	2018-07431	

Work Orders

5166554	5166628
---------	---------

Procedures  
Number

Title	Revision
Reactor Scram	76
Main Steam Local Leak Rate Tests	28
Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test (DIV 1)	93
Undervoltage Logic Functional, Load Shedding, and Sequential Loading Test (DIV 2)	84
Control Rod Scram Time Evaluation	69

Miscellaneous  
Documents

Number	Title
2018-034	Engineering Report, RE30 Past Operability of MSIVs and MS Pathway

Drawings  
Number

Title	Revision
Flow Diagram Reactor Building Main Steam System	90

71114.06 – Drill Evaluation

Condition Reports (CR-CNS-)

2018-08527	2018-08528	2018-08530
------------	------------	------------

Procedures  
Number

Title	Revision
Notification	74

Miscellaneous Documents  
Title

Date
December 18, 2018

71124.01 – Radiological Hazard Assessment and Exposure Controls

Condition Reports (CR-CNS-)

2017-03176	2017-03218	2017-03279	2017-03285	2017-04128
2017-04132	2017-04187	2017-05412	2017-05538	2017-05683
2017-05895	2017-05924	2017-06407	2017-07042	2017-07355
2018-01234	2018-01296	2018-01378	2018-01772	2018-02328
2018-02376	2018-03125	2018-03954	2018-03990	2018-04488
2018-04795				

Air Sample Surveys

Building	Elevation	Area	RWP/SWP	Date
Reactor	859	NW Quad	2017-001	May 31, 2017
ARW	903	HIC Pit	2017-101	June 14, 2017
Radwaste	903	Filter Demin Valve Room	2017-001	June 21, 2017
Reactor	903	SE CRD Valve Room	2017-001	June 27, 2017
Reactor	859	“E” Sump	2017-051	July 10, 2017
Reactor	903	TIP Room	2017-052	July 12, 2017
Reactor	859	HPCI Quad	2018-051	January 17, 2018
ARW	903	HIC Pit	2018-001	February 21, 2018
Reactor	859	RCIC Quad Sump	2018-051	March 12, 2018
Reactor	976	HV-Fan (EF-R-1A) Ducting	2018-051	April 10, 2018
ARW	903	HIC Pit	2018-102	August 15, 2018
Reactor	1001	Spent Fuel Pool	2018-060	August 24, 2018

Audits and Self-Assessments

Number	Title	Date
	Radiation Protection Program Annual Report (2017)	
QA Audit 18-05	Radiological Controls	August 23, 2018

Procedures

Number	Title	Revision
7.4.32	Work Over, Near, or In Reactor Vessel, Dyer/Separator, Storage Pool, or Spent Fuel Storage Pool	18
9.EN-RP-100	Radiation Worker Expectations	14
9.EN-RP-101	Access Control for Radiologically Controlled Areas	20
9.EN-RP-104	Personnel Contamination	16
9.EN-RP-108	Radiation Protection Posting and Labeling	15
9.EN-RP-113	Response to Contaminated Spills/Leaks	4
9.EN-RP-121	Radioactive Material Control	4
9.EN-RP-123	Radiological Controls for Highly Radioactive Objects	4
9.ENN-RP-102	Radiological Control	3

Procedures Number	Title	Revision
9.ENN-RP-106	Radiological Survey Documentation	12
9.ENN-RP-106-1	Radiation and Contamination Surveys	22
9.RADOP.1	Radiation Protection at CNS	14
9.RADOP.2	Radiation Safety Standards and Limits	18
9.RADOP.5	Airborne Radioactivity Sampling	31
9.RADOP.10	Radioactive Sources Control and Accountability	23
9.RADOP.21	Radiological Control of Systems with Potential for Changing Radiological Conditions	1

#### Miscellaneous Documents

Title	Date
Personnel Contamination Monitor (PCM) Alarm Report: October 4 – 16, 2018	October 16, 2018
Source Report – Inventory Only	October 17, 2018
Source Report – Leak Test Source	October 17, 2018

#### Radiation Work

Permits Number	Title	Revision
2018-529	Under Vessel Misc (TIP Tubing, Connectors, RPIS I&C, Cable Repairs, LPRMs, Decon, IRM/SRM (High Risk)	0
2018-537	Misc – Maint., Electrical, I/C Support in SWP Areas (NOT for TG Bldg. Work)	0
2018-547	Refuel Floor Misc. - SWP	1
2018-549	Cavity and DS Pit Decon	0
2018-556	RWCU-AOV-13A/B and RWCU-AOV-14A/B Replacements in RWCU Valve Room	0

#### Radiation Surveys

CNS-1810-0177	CNS-1810-0178	CNS-1810-0182	CNS-1810-0191	CNS-1810-0194
CNS-1810-0196	CNS-1810-0201			

#### 71124.02 – Occupational As Low As Reasonably Achievable (ALARA) Planning and Controls

##### Condition Reports (CR-CNS-)

2016-07888	2017-04132	2017-04187	2017-04201	2017-04288
2017-05332	2017-06352	2017-06638	2017-07355	2018-01725
2018-03954	2018-06530			

ALARA Planning, In-Progress Reviews, and Post-Job Reviews

Number	Title
2017-01	Spent Fuel Pool Cleanup
2018-05	RE30 Reactor Disassemble, Refueling, and Reactor Reassembly
2018-17	RE30 Misc. Maintenance, Electrical, I/C work not covered under TG Building or other ALARA Packages
2018-56	Planned Outage in 2018

Audits and Self-Assessments

Number	Title	Date
	5 Year CRE Reduction Plan 2017-2021	
	Radiation Protection Program Annual Report (2017)	
FO-1802	Lessons Learned	September 6, 2018
QA Audit 18-05	Radiological Controls	August 23, 2018

Procedures

Number	Title	Revision
9.ALARA.4	Radiation Work Permits	23
9.EN-RP-110	ALARA Program	10
9.EN-RP-110-05	ALARA Planning and Controls	5
9.ENN-RP-102	Radiological Control	3
9.RADOP.1	Radiation Protection at CNS	14

Radiation Work Permits

Number	Title	Revision
2018-537	Misc – Maint, Electrical, I/C support in SWP areas	0
2018-547	Refuel Floor Misc. - SWP	1

71151 – Performance Indicator Verification

Condition Reports (CR-CNS-)

2017-03218	2017-03279	2017-04132	2017-04187
------------	------------	------------	------------

Procedures

Number	Title	Revision
0-EN-LI-114	Performance Indicator Process	5C2

Miscellaneous Documents Number	Title	Revision/Date
	2017 Annual Radioactive Effluent Release Report CNS Station Logs, October 1, 2017 – September 30, 2017 MSPI Derivation Reports, October 1, 2017 – September 30, 2018	April 26, 2018
LO-2018-0155 NEI 99-02	NRC PI Occupational Exposure Control Effectiveness Regulatory Assessment Performance Indicator Guideline	July 27, 2018 7

71152 – Problem Identification and Resolution

Condition Reports (CR-CNS-)				
2017-01168	2017-04980	2017-07489	2017-07490	2018-06694
2018-07068	2018-07069	2018-07072	2018-08166	
Work Orders				
5229311	5229312			

Miscellaneous Documents Number	Title	Date
MB-2007-01	MPR Maintenance Bulletin: Potential for Solder Joint Cracks on Basler SBSR AVR Cards	December 15, 2017

71153 – Follow-up of Events and Notices of Enforcement Discretion

Condition Reports (CR-CNS-)				
2016-02281	2017-00553	2017-00558	2017-03723	2018-06797
2018-07108	2018-07934	2018-07935	2018-08621	2018-08632
2018-08638	2018-08639	2018-08644	2018-08647	2018-08657
2019-00026				
Work Orders				
4783927	5179313			

Procedures Number	Title	Revision
0.50.5	Outage Shutdown Safety	39
0-BARRIER-MAPS	Barrier Maps	9
0-PROTECT-EQP	Protected Equipment Program	44
2.1.20.2	Cycle Specific Fuel Transfer and Alternate Cooling Guideline	21

Procedures Number	Title	Revision
2.2.32	Fuel Pool Cooling and Demineralizer System	100
2.2.69.2	RHR System Shutdown Operations	103
2.4FPC	Fuel Pool Cooling Abnormal	36
2.4RR	Reactor Recirculation Abnormal	43
2.4SDC	Shutdown Cooling Abnormal	16
5.7.1	Emergency Classification	61
5.7.1, Att. 4	Cooper Nuclear Station Emergency Action Level Matrix	17
7.2.78.2	Pipe Penetration Seal Installation Using Gasket Placement	1
7.3.30.2	RRMG Set Voltage Regulator Tuning	8

Miscellaneous Documents Number	Title	Date
AV-248	Avanti AV-248 Flexseal Material Safety Data Sheet	May 5, 2010

Drawings Number	Title	Revision
4428, Sheet 1	Structural Augmented Radwaste Building Modifications to Existing Radwaste Building	4
44D209845	Voltage Regulator	N04
44D209846	Static Exciter & Voltage Regulator	N03



## **PAPERWORK REDUCTION ACT STATEMENT**

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, Control Number 31500011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, and Requests for withhold."

**Information Request  
August 16, 2018  
Notification of Inspection and Request for Information  
Cooper Nuclear Station  
NRC Inspection Report 05000298/2018004**

### **INSERVICE INSPECTION DOCUMENT REQUEST**

Inspection Dates: October 1<sup>st</sup> through October 5<sup>th</sup>, 2018  
Inspector: Isaac Anchondo

#### **A. Information Requested for the In-Office Preparation Week**

The following information should be sent to the Region IV office in hard copy or electronic format ([ims.certrec.com](mailto:ims.certrec.com) preferred), in care of Isaac Anchondo, by September 19, 2018, to facilitate the selection of specific items that will be reviewed during the onsite inspection week. The inspector will select specific items from the information requested below and then request from your staff additional documents needed during the onsite inspection week (Section B of this enclosure). We ask that the specific items selected from the lists be available and ready for review on the first day of inspection. Please provide requested documentation electronically if possible. If requested documents are large and only hard copy formats are available, please inform the inspector(s), and provide subject documentation during the first day of the onsite inspection.

If you have any questions regarding this information request, please call the inspector as soon as possible.

On October 1, 2018, a reactor inspector from the Nuclear Regulatory Commission's (NRC) Region IV office will perform the baseline inservice inspection at Columbia Generating Station, using NRC Inspection Procedure 71111.08, "Inservice Inspection Activities." Experience has shown that this inspection is a resource intensive inspection both for the NRC inspector and your staff. The date of this inspection may change dependent on the outage schedule you provide. In order to minimize the impact to your onsite resources and to ensure a productive inspection, we have enclosed a request for documents needed for this inspection. These documents have been divided into two groups. The first group (Section A of the enclosure) identified information to be provided prior to the inspection to ensure that the inspector is adequately prepared. The second group (Section B of the

enclosure) identifies the information the inspector will need upon arrival at the site. It is important that all of these documents are up to date and complete in order to minimize the number of additional documents requested during the preparation and/or the onsite portions of the inspection.

We have discussed the schedule for these inspection activities with your staff and understand that our regulatory contact for this inspection will be Thomas Forland of your licensing organization. The tentative inspection schedule is as follows:

Preparation week: September 24, 2018  
Onsite week: October 1, 2018

Our inspection dates are subject to change based on your updated schedule of outage activities. If there are any questions about this inspection or the material requested, please contact Isaac Anchondo at (817) 200-1152. ([email to: isaac.anchondo@nrc.gov](mailto:isaac.anchondo@nrc.gov)).

#### A.1 ISI/Welding Programs and Schedule Information

1. A detailed schedule (including preliminary dates) of:
  - 1.1. Nondestructive examinations planned for ASME Code Class Components performed as part of your ASME Section XI, risk informed (if applicable), and augmented inservice inspection programs during the upcoming outage.
  - 1.2. Examinations planned for Alloy 82/182/600 components that are not included in the Section XI scope (If applicable)
  - 1.3. Welding activities that are scheduled to be completed during the upcoming outage (ASME Class 1, 2, or 3 structures, systems, or components)
2. Copies of ASME Section XI Code Relief Requests and associated NRC safety evaluations applicable to the examinations identified above.
  - 2.1. A list of ASME Code Cases currently being used to include the system and/or component the Code Case is being applied to.
3. A list of nondestructive examination reports which have identified recordable or rejectable indications on any ASME Code Class components since the beginning of the last refueling outage. This should include the previous Section XI pressure test(s) conducted during start up and any evaluations associated with the results of the pressure tests.
4. A list including a brief description (e.g., system, code class, weld category, nondestructive examination performed) associated with the repair/replacement activities of any ASME Code Class component since the beginning of the last outage and/or planned this refueling outage.
5. If reactor vessel weld examinations required by the ASME Code are scheduled to occur during the upcoming outage, provide a detailed description of the welds to be examined and the extent of the planned examination. Also provide reference numbers for applicable procedures that will be used to conduct these examinations.

6. Copies of any 10 CFR Part 21 reports applicable to structures, systems, or components within the scope of Section XI of the ASME Code that have been identified since the beginning of the last refueling outage.
7. A list of any temporary non-code repairs in service (e.g., pinhole leaks).
8. Copies of the most recent self-assessments for the inservice inspection, welding, and Alloy 600 programs.
9. Copies of the procedures for welding techniques and NDE that will be used during the outage.

A.2 Additional Information Related to all Inservice Inspection Activities

1. A list with a brief description of inservice inspection entered into your corrective action program since the beginning of the last refueling outage. For example, a list based upon data base searches using key words related to piping such as: inservice inspection, ASME Code, Section XI, NDE, cracks, wear, thinning, leakage, rust, corrosion, or errors in piping examinations.
2. Provide training (e.g. Scaffolding, Fall Protection, FME, Confined Space) if they are required for the activities described in A.1.
3. Provide copies of the applicable editions of the ASME Code (Sections V, VIII, IX, and XI) for the inservice inspection program and the repair/replacement program.
4. Provide names and phone numbers for the following program leads:

Inservice inspection (examination, planning)  
 Containment exams  
 Snubbers and supports  
 Repair and replacement program  
 Licensing  
 Site welding engineer

B. Information to be Provided Onsite to the Inspector(s) at the Entrance Meeting (October 1, 2018):

B.1 Inservice Inspection / Welding Programs and Schedule Information

1. Updated schedules for inservice inspection/nondestructive examination activities, including planned welding activities, and schedule showing contingency repair plans, if available.
2. For ASME Code Class welds selected by the inspector from the lists provided from section A of this enclosure, provide copies of the following documentation for each subject weld:
  - Weld data sheet (traveler).
  - Weld configuration and system location.
  - Applicable Code Edition and Addenda for weldment.

- Applicable Code Edition and Addenda for welding procedures.
  - Applicable welding procedures used to fabricate the welds.
  - Copies of procedure qualification records (PQRs) supporting the weld procedures from B.1.b.v.
  - Copies of welder's performance qualification records (WPQ).
  - Copies of the nonconformance reports for the selected welds (If applicable).
  - Radiographs of the selected welds and access to equipment to allow viewing radiographs (if radiographic testing was performed).
  - Copies of the preservice examination records for the selected welds.
  - Readily accessible copies of nondestructive examination personnel qualifications records for reviewing.
3. For the inservice inspection related corrective action issues selected by the inspector from Section A of this enclosure, provide copies of the corrective actions and supporting documentation.
  4. For the nondestructive examination reports with relevant conditions on ASME Code Class components selected by the inspector from Section A above, provide copies of the examination records, examiner qualification records, and associated corrective action documents.
  5. Copy of (or ready access to) most current revision of the inservice inspection program manual and plan for the current interval.
  6. For the nondestructive examinations selected by the inspector from section A of this enclosure, provide copies of the nondestructive examination procedures used to perform the examinations (including calibration and flaw characterization/sizing procedures). For ultrasonic examination procedures qualified in accordance with ASME Code, Section XI, Appendix VIII, provide documentation supporting the procedure qualification (e.g. the EPRI performance demonstration qualification summary sheets). Also, include qualification documentation of the specific equipment to be used (e.g., ultrasonic unit, cables, and transducers including serial numbers) and nondestructive examination personnel qualification records.

## B.2 Codes and Standards

1. Ready access to (i.e., copies provided to the inspector(s) for use during the inspection at the onsite inspection location, or room number and location where available):
  - Applicable Editions of the ASME Code (Sections V, IX, and XI) for the inservice inspection program and the repair/replacement program.
2. Copies of the performance demonstration initiative (PDI) generic procedures with the latest applicable revisions that support site qualified ultrasonic examinations of piping welds and components (e.g., PDI-UT-1, PDI-UT-2, PDI-UT-3, PDI-UT-10, etc.).

**The following items are requested for the  
Occupational Radiation Safety Inspection  
at Cooper**

**Dates of Inspection: 10/15/2018 to 10/19/2018**

**Integrated Report 2018004**

Inspection areas are listed in the attachments below.

Please provide the requested information on or before **Monday, September 24, 2018**.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.01 should be in a file/folder titled "1-A," applicable organization charts in file/folder "1-B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the onsite inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Bernadette Baca at 817-200-1235 or via e-mail at [Bernadette.Baca@nrc.gov](mailto:Bernadette.Baca@nrc.gov).

**PAPERWORK REDUCTION ACT STATEMENT**

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

**1. Radiological Hazard Assessment and Exposure Controls (71124.01) and Performance Indicator Verification (71151)**

Date of Last Inspection: **May 22, 2017**

- A. List of contacts and telephone numbers for the Radiation Protection Organization Staff and Technicians, as well as the Licensing/Regulatory Affairs staff. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
- B. Applicable organization charts including position or job titles. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, self-assessments, LARs, and LERs written since the last inspection date, related to this inspection area
- D. Procedure indexes for the radiation protection procedures and other related disciplines.
- E. Please provide procedures related to the following areas noted below. Additional procedures may be requested by number after the inspector reviews the procedure indexes.
  - 1. Radiation Protection Program
  - 2. Radiation Protection Conduct of Operations, if not included in #1.
  - 3. Personnel Dosimetry
  - 4. Posting of Radiological Areas
  - 5. High Radiation Area Controls
  - 6. RCA Access Controls and Radiation Worker Instructions
  - 7. Conduct of Radiological Surveys
  - 8. Radioactive Source Inventory and Control
  - 9. Fuel Pool Inventory Access and Control
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) since the last inspection date.
  - 1. Initiated by the radiation protection organization
  - 2. Assigned to the radiation protection organization

NOTE: These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are “sortable” and “searchable” so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.
- H. List of radiologically significant work activities scheduled to be conducted during the inspection period. (If the inspection is scheduled during an outage, please also include a list of work activities greater than 1 rem, scheduled during the outage with the dose estimate for the work activity.) Please include the radiological risk assigned to each activity.

- I. Provide a summary of any changes to plant operation that have resulted or could result in a significant new radiological hazard. For each change, please provide the assessment conducted on the potential impact and any monitoring done to evaluate it.
- J. List of active radiation work permits and those specifically planned for the on-site inspection week.
- K. Please provide a list of air samples taken to verify engineering controls and a separate list for breathing air samples in airborne radiation areas or high contamination work areas. Please include the RWP the breathing air sampling supports.
- L. Please provide the current radioactive source inventory, listing all radioactive sources that are required to be leak tested. Indicate which sources are deemed 10 CFR Part 20, Appendix E, Category 1 or Category 2. Please indicate the radioisotope, initial and current activity (w/assay date), and storage location for each applicable source.
- M. The last two leak test results for all required/applicable radioactive sources that have failed its leak test within the last two years. Provide any applicable condition reports.
- N. A list of all non-fuel items stored in the spent fuel pools, and if available, their appropriate dose rates (Contact / @ 30cm)
- O. A list of radiological controlled area entries greater than 100 millirem, since the last inspection date. The list should include the date of entry, some form of worker identification, the radiation work permit used by the worker, dose accrued by the worker, and the electronic dosimeter dose alarm set-point used during the entry (for Occupational Radiation Safety Performance Indicator verification in accordance with IP 71151).
- P. A list describing VHRAs and TS HRAs (> 1 rem/hour) that are current and historical. Include their current status, locations, and control measures.
- Q. Temporary effluent monitor locations and calibrations (AMS-4) used to monitor normally closed doors or off-normal release points (e.g., equipment hatch or turbine heater bay doors). Include any CRs associated with this monitoring or instrumentation.



## 2. Occupational ALARA Planning and Controls (71124.02)

Date of Last Inspection: **February 12, 2018**

- A. List of contacts and telephone numbers for ALARA program personnel, as well as the Licensing/Regulatory Affairs staff. Please include area code and prefix. If work cell numbers are appropriate, then please include them as well.
- B. Applicable organization charts including position or job titles. Please include as appropriate for your site, Site Management, RP, Chemistry, Maintenance (I&C), Engineering, and Emergency Protection. (Recent pictures are appreciated.)
- C. Copies of audits, self-assessments, LARs, and LERs, written since the date of last inspection, focusing on ALARA
- D. Procedure index for ALARA Program procedures and other related disciplines.
- E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures may be requested by number after the inspector reviews the procedure indexes.
  - 1. ALARA Program
  - 2. ALARA Planning
  - 3. ALARA Reviews
  - 4. ALARA Committee
  - 5. Radiation Work Permit Preparation
- F. Please provide a list of NRC Regulatory Guides and NUREGs that you are currently committed to relative to this program. Please include the revision and/or date for the commitment and where this may be located in your current licensing basis documents.
- G. Please provide a summary list of corrective action documents (including corporate and sub-tiered systems) written since the date of last inspection, related to the ALARA program, including exceeding RWP Dose Estimates.

NOTE: These lists should include a description of the condition that provides sufficient detail that the inspectors can ascertain the regulatory impact, the significance level assigned to the condition, the status of the action (e.g., open, working, closed, etc.) and the search criteria used. Please provide in document formats which are “sortable” and “searchable” so that inspectors can quickly and efficiently determine appropriate sampling and perform word searches, as needed. (Excel spreadsheets are the preferred format.) If codes are used, please provide a legend for each column where a code is used.
- H. List of work activities (RWPs) greater than 1 rem, since date of last inspection, including the original dose estimates and actual doses accrued. (Excel format preferred). Please provide all revisions/changes, as well as any related RWPs that support the work activity.
- I. List of active work activities (RWPs) that will be in use while we are onsite, including the dose and dose rate settings, and if available, the planned dose. Include planning documents and surveys. Include radiological risk assessments and proposed control measures.
- J. Site dose totals for the past 3 years (based on dose of record). Also provide the current year-to-date (YTD) collective radiation exposure (CRE). In addition, please provide another document that separates the online and outage doses for the past 3 years.

- K. Most recent assessment of your isotopic mix, including the hard-to-detect radionuclides and alpha hazards. Include a list of new and historical exposure issues (radiological source term or high exposure areas/activities).
- L. If available, provide a copy of the lessons learned from the most recently completed outage for each unit. Include a summary list of any associated corrective action documents and the current status of any corrective actions assigned.
- M. Please provide the methods/reports that are in your process to meet the requirements of 10 CFR 20.1101(c) for periodic review of your RP program.
- N. Current exposure trends (BRAC dose rates and/or source term information).

COOPER NUCLEAR STATION – NRC INTEGRATED INSPECTION  
 REPORT 05000298/2018004 – January 28, 2019

**DISTRIBUTION**

SMorris, RA  
 SMorris, RA  
 MShaffer, DRA  
 AVegel, DRP  
 MHay, DRP  
 RLantz, DRS  
 GMiller, DRS  
 DCylkowski, RC  
 JKozal, DRP  
 CYoung, DRP  
 DProulx, DRP  
 PVoss, DRP  
 MStafford, DRP  
 AElam, DRP  
 ARivera-Varona, RIV/OEDO  
 VDricks, ORA  
 JWeil, OCA  
 TWengert, NRR  
 AMoreno, RIV/CAO  
 BMaier, RSLO  
 GMiller, IPAT  
 PJayroe, IPAT  
 TDeBey, DRP  
 MHerrera, DRMA  
 R4Enforcement  
 ROP Reports

Electronic Distribution for Cooper Nuclear Station

DOCUMENT NAME: CNS2018004-IR-PV.docx  
 ADAMS ACCESSION NUMBER: ML19028A445

SUNSI Review      ADAMS:       Non-Publicly Available       Non-Sensitive      Keyword:  
 By: JKozal       Yes     No       Publicly Available       Sensitive      NRC-002

OFFICE	SRI:DRP/C	RI:DRP/C	BC:DRS/EB1	ABC:DRS/EB2	BC:DRS/OB	BC:DRS/PSB2
NAME	PVossmar	MStafford	VGaddy	JDrake	GWerner	HGepford
SIGNATURE	PJV	MHS	vgg	JD	GEW	hjj
DATE	1/23/2019	1/23/19	1/16/19	1/16/2019	01/21/2019	01/17/2019
OFFICE	ATL:DRS/IPAT	SPE:DRP/C	BC:DRP/C			
NAME	RKellar	DProulx	JKozal			
SIGNATURE	RLK	DLP	JWK			
DATE	1/16/2019	1/16/2019	1/28/2019			

OFFICIAL RECORD COPY