



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

March 25, 2020

Mr. John Dent, Jr.
Vice President-Nuclear and CNO
Nebraska Public Power District
Nebraska Public Power District -CNS
72676 648A Avenue
Brownville , NE 68321

SUBJECT: COOPER NUCLEAR STATION – NRC INSPECTION
REPORT 05000298/2020010

Dear Mr. Dent:

On February 13, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Cooper Nuclear Station and discussed the results of this inspection with Khalil M. Dia, Director of Engineering, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

If you contest the violations or the significance or severity of the violations documented in this inspection report, 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 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 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 Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Vincent G. Gaddy, Chief
Engineering Branch 1
Division of Reactor Safety

Docket No. 05000298
License No. DPR-46

Enclosure:
As stated

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COOPER NUCLEAR STATION – NRC INSPECTION REPORT 05000298/2020010 –
March 25, 2020

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number: 05000298

License Number: DPR-46

Report Number: 05000298/2020010

Enterprise Identifier: I-2020-010-0029

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: Brownville, Nebraska

Inspection Dates: January 27, 2020 to February 13, 2020

Inspectors: W. Cullum, Reactor Inspector
M. Jones, Reactor Inspector
R. Kopriva, Senior Reactor Inspector

Approved By: Vincent G. Gaddy, Chief
Engineering Branch 1
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a NRC 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.

List of Findings and Violations

Failure to Translate Acceptance Criteria From Design Calculation Into Motor Operated Valve Testing Procedure			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-01 Open	None (NPP)	71111.21N.02
The inspectors identified a Green finding and associated non-cited violation of Title 10 of the <i>Code of Federal Regulations</i> , Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to translate the appropriate acceptance criteria from a design calculation to the motor-operated valve (MOV) testing procedure for CS-MOV-MO12A.			

Inadequate Procedure For Evaluating MOV overtorque/overthrust			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-02 Open	[H.14] - Conservative Bias	71111.21N.02
The inspectors identified a Green finding and associated non-cited violation of Title 10 of the <i>Code of Federal Regulations</i> , Part 50, Appendix B, Criterion V, "Procedures," for using a nonconservative torque value when evaluating MOV overtorque and overthrust events.			

Failure to Verify or Check the Adequacy of Design of Safety-Related MOV by the Performance of Design Reviews			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-03 Open	None (NPP)	71111.21N.02
The inspectors identified a Green finding and associated non-cited violation of Title 10 of the <i>Code of Federal Regulations</i> , Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify or check the adequacy of weak link calculations associated with safety related MOVs.			

Additional Tracking Items

None.

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 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

71111.21N.02 - Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements

POV Review (IP Section 03) (11 Samples)

The inspectors:

- a. Determined whether the sampled POVs are being tested and maintained in accordance with NRC regulations along with the licensee's commitments and/or licensing bases
- b. Determined whether the sampled POVs are capable of performing their design-basis functions
- c. Determined whether testing of the sampled POVs is adequate to demonstrate the capability of the POVs to perform their safety functions under design-basis conditions
- d. Evaluate maintenance activities including a walkdown of the sampled POVs (if accessible)

Selected samples included:

- (1) CS-MOV-MO12A, Core Spray Loop A Injection Block Valve
- (2) DGSA-SOV-DG1 20SW, DG1 Diesel Generator Service Water Supply Valve - Pilot Solenoid Valve
- (3) MS-AOV-AO80A, Main Steam Isolation Valve A Inboard Valve
- (4) MS-AOV-AO86A, Main Steam Isolation Valve A Outboard Valve
- (5) PC-AOV-246AV, Primary Containment Drywell Exhaust Outboard Isolation Valve
- (6) PC-MOV-233MV, Containment Vent Valve – South West Torus Inboard Isolation Valve
- (7) RCIC-MOV-MO21, Reactor Core Isolation Cooling Injection Valve to Reactor
- (8) RHR-MOV-MO31A, Drywell Spray Loop A Inboard Isolation Valve
- (9) RWCU-MOV-MO15, Reactor Water Cleanup Supply Inboard Isolation Valve
- (10) SW-AOV-2797AAV, Service Water DG1 Supply Valve
- (11) SWS-MOV-36MV, Service Water Loop 'A' Crosstie Header Isolation Valve

INSPECTION RESULTS

Failure to Translate Acceptance Criteria From Design Calculation Into MOV Testing Procedure			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-01 Open	None (NPP)	71111.21N.02
<p>The inspectors identified a Green finding and associated non-cited violation of Title 10 of the <i>Code of Federal Regulations</i>, Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to translate the appropriate acceptance criteria from a design calculation to the MOV testing procedure for CS-MOV-MO12A.</p> <p><u>Description:</u> CS-MOV-MO12A is a motor-operated Anchor/Darling gate valve used as the core spray loop A injection valve. While reviewing NEDC 95-003, Attachment A, Sheet 5 of 99, "Design Calculation Sheet for CS-MOV-MO12A," the inspectors observed Note 3 on the calculation which states: "Measured maximum opening thrust must remain below 23,766 lbs. for NEDC 00-083 to remain valid." NEDC 00-083 is the calculation for determining the Electric Power Research Institute (EPRI) Performance Prediction Methodology (PPM) for the unwedging thrust on CS-MOV-MO12A. The inspectors reviewed Work Order 494454 which, on October 26, 2014, authorized static testing on CS-MOV-MO12A using Procedure 7.5.3, "MOV Diagnostics." In Attachment 2 of Procedure 7.5.3, the acceptance criteria for maximum opening thrust on the "as left" data sheet was listed as 26,481 lbs., which contradicts the design calculation value of 23,766 lbs. found in NEDC 95-003 and NEDC 00-083. During the as left test on October 26, 2014, the measured opening thrust was 24,925 lbs. and this value was recorded as satisfactory with the listed acceptance value of 26,481 lbs. However, this value was actually above the design value of 23,766 lbs. As a result, the valve could have exceeded the maximum allowable opening thrust of 30,915 lbs. under design loading conditions based on the weak link analysis for the valve, which shows the T-head as the limiting component. This condition continued until October 15, 2016, when the licensee performed additional maintenance on the valve after it failed to close during a surveillance test. At that time, the as-left maximum opening thrust was lowered to 23,766 lbs.</p> <p>Corrective Actions: After the inspectors identified the concern with maximum opening thrust, the licensee reviewed the previous valve test results and confirmed that there is no current concern pertaining to the maximum opening thrust for this valve. The licensee entered the issue into the corrective action program in CR-CNS-2020-0457.</p> <p>Corrective Action References: CR-CNS-2020-0457</p> <p><u>Performance Assessment:</u></p> <p>Performance Deficiency: The licensee's failure to translate the appropriate acceptance criteria from design calculations into maintenance procedures was a performance deficiency. Specifically, the licensee failed to translate the correct value of maximum opening thrust for CS-MOV-MO12A from NEDC 95-003 and NEDC 00-083 into the acceptance criteria of Procedure 7.5.3 "MOV Diagnostics," Attachment 2, "Evaluation Summary Sheet."</p> <p>Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the</p>			

availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, having a maximum opening thrust on CS-MOV-MO12A in excess of the design calculated maximum thrust could impact the availability and reliability of the core spray system if called upon during a design basis accident. An opening thrust above the maximum calculated design value could challenge the T-head of the valve, which is listed as the weak link. Should the overthrust shear the T-head, it would result in a stem-to-disc separation of the valve and preclude it from opening, thereby preventing injection from core spray loop A.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process for Findings At-Power." Using Exhibit 2, "Mitigating Systems Screening Questions," the finding screened as having very low safety significance (Green) because the finding did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, from October 26, 2014, to October 15, 2016, the licensee failed to ensure that the design basis was correctly translated into specifications, drawings, procedures, and instructions. Specifically, the licensee failed to translate the correct value of maximum opening thrust for CS-MOV-MO12A from NEDC 95-003 and NEDC 00-083 into the acceptance criteria of Procedure 7.5.3, "MOV Diagnostics," Attachment 2, "Evaluation Summary Sheet."

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

Inadequate Procedure For Evaluating MOV overtorque/overthrust			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-02 Open	[H.14] - Conservative Bias	71111.21N.02
The inspectors identified a Green finding and associated non-cited violation of Title 10 of the <i>Code of Federal Regulations</i> , Part 50, Appendix B, Criterion V, "Procedures," for using a nonconservative torque value when evaluating MOV overtorque and overthrust events.			
Description: While conducting reviews of MOVs, the inspectors noted that there were numerous instances when valves had been overtorqued or overthrust. In evaluating these events, the licensee used Procedure 3.31, "MOV Overthrust/Overtorque Evaluation." In step 3.1.1, the overtorque or overthrust is compared with the Level D allowable values from			

the limiting component analysis for the specific valve. The Service Level D load combinations are described in NEDC 96-018, "Design Specification for Valve Limiting Component Analysis," as a one stroke survivable torque/thrust level under faulted conditions. This wording is derived from ASME SEC III NCA-2142.4 where Service Level D is described as a limit that "permits gross general deformations with some consequential loss of dimensional stability and damage requiring repair, which may require removal of the component from service." Upon questioning from the inspectors, the licensee determined that Service Level D limits were nonconservative to use when evaluating overtorque/overthrust events.

Corrective Actions: The licensee verified that no Service Level D limits had been exceeded during the overtorque and overthrust events. The licensee documented the issue in the corrective action program in CR-CNS-2020-0756.

Corrective Action References: CR-CNS-2020-0756

Performance Assessment:

Performance Deficiency: The licensee's procedure describing the use of nonconservative allowable overtorque and overthrust values when analyzing MOV overtorque and overthrust events was a performance deficiency. Specifically, Procedure 3.31, step 3.1.1, "MOV Overthrust/Overtorque Evaluation," directs staff to compare the overtorque or overthrust values with nonconservative values from the Service Level D Limiting Component Analysis which allows for gross general deformations with some consequential loss of dimensional stability and damage requiring repair, which may require removal of the component from service.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the current procedure allows for gross general deformations with some consequential loss of dimensional stability.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process for Findings At-Power." Using Exhibit 2, "Mitigating Systems Screening Questions," the finding screened as having very low safety significance (Green) because the finding did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather.

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision-making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion V, "Procedures," requires, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, from 1995 to present, instructions, procedures, or drawings did not include appropriate quantitative or qualitative acceptance criteria for determining that

important activities have been satisfactorily accomplished. Specifically, Procedure 3.31 directed the use of nonconservative values when evaluating MOV overtorque and overthrust events.

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

Failure to Verify or Check the Adequacy of Design of Safety-Related MOV by the Performance of Design Reviews

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000298/2020010-03 Open	None (NPP)	71111.21N.02

The inspectors identified a Green finding and associated non-cited violation of Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to verify or check the adequacy of weak link calculations associated with safety-related MOVs.

Description: For valves RHR-M0-31A/B and RHR-M0-26A/B, the licensee originally evaluated the MOV weak link as required by MOV Program Procedure 3.33 by using ADVENT Specification No. 96007SP-1, "Design Specification for Valve Limiting Component Analysis (LCA)". In September 2003, the licensee completed two modifications for valves RHR-MOV-MO26B, -031A, and -031B. The first modification was Change Evaluation Document (CED) 2000-0103 for valves RHR-MOV-MO31A/B which was for a motor operator upgrade. The second modification, CED 2000-0108, for containment spray valves RHR-MOV-MO26B, -031A, and -031B, was for adding auxiliary yoke supports to the valves. The intent of these modifications was to address nonconforming conditions associated with the valve's lack of safety margin for their intended safety function to close and provide primary containment isolation under certain design basis assumptions. These issues were captured in CED 2000-0108 as Problem Identification Report (PIR) PIR 4-08332 and PIR 4-08486.

Inspectors reviewed Limiting Component Analysis (LCA) document NEDC 00-041, "Limiting Component Analysis for Containment Spray Motor-Operated Valves," Revision 2. The calculation concluded, in part, "The containment spray motor-operated valves will withstand the postulated structural dynamic loading with adequate stress margin to accommodate the expected MOV operating torque and thrust loads under design basis conditions." The inspectors noted that Limiting Component Analysis NEDC 00-041 is required by NEDC 96-018, "Design Specification for Valve Limiting Component Analysis," which stated that the Limiting Component Analysis fulfills the requirements of the Generic Letter GL 96-05 for the design basis calculations of Category II program valves.

The inspectors reviewed the calculated maximum allowed thrust and torque for each component analyzed for RHR-MOV-031A and noted that each component had been analyzed and revised to capture the yoke leg analysis, but not the auxiliary yoke structure added during the CED 2000-0108 modification performed in 2003. Inspectors noted that the licensee failed to update the analysis since its last revision in March 2011 and should have calculated the actual stress capability and margin provided by the auxiliary yoke structure. Inspectors noted that by neglecting the yoke modification, the valve's limiting

component for thrust was the disc-to-stem T-head (open) (22,245 lbs) and the limiting component for torque was the yoke legs (464.2 ft-lbs).

Inspectors identified two instances where measured actual torque exceeded the value identified in the limiting component analyses (neglecting the auxiliary supports). Specifically, WO 4239538, "Perform Diagnostic Testing," dated March 24, 2003, documented an as-left maximum close torque of 493.9 ft-lbs, and WO 5111578, "Perform Diagnostic Testing," dated October 2, 2016, documented an as-left maximum close torque of 485.2 ft-lbs. The 2003 and 2016 work orders used higher allowable maximum load values, corresponding to calculated actuator capabilities of 500 ft-lbs and 508.6 ft-lbs, respectively. Inspectors determined that the licensee failed to capture potential over-torque concerns associated with the valve which could have resulted in a safety-related valve not being able to perform its required safety function.

Corrective Actions: As an immediate corrective action, the licensee performed a review of past torque loads (not accounting for the yoke stiffener leg installation) for RHR-MOV-031A/B to determine if the given structural limit had been exceeded (Reference CR-CNS-2020-00747). It was determined that RHR-MOV-M031A was at a maximum torque of 494 ft-lbf, compared to the NEDC 00-041 analyzed limit of 462.4 ft-lbs. An evaluation was performed using the NEDC 00-041 methodology, adjusting the yoke leg allowable stress to a slightly higher, but still conservative value. The evaluation determined that the maximum torque experienced could have reached 524.1 ft-lbf. When including the adjusted yoke leg structure, the allowable torque was 541.6 ft-lbf. The license determined that adequate margin remained for the allowable torque value for RHR-MO31A, RHR-M0-31A/B, and RHR-M0-26A/B valves are of similar design, and are bounded by the EN-DC-112.

Corrective Action References: CR-CNS-2020-0743, CR-CNS-2020-0747

Performance Assessment:

Performance Deficiency: The failure to verify or check the adequacy of safety-related MOV weak link (limiting component analysis) calculations, and not ensuring that the MOVs would remain capable of performing their accident mitigation function to provide primary containment isolation, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the design control 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 failure to verify or check the adequacy of safety-related MOV by revising the limiting component analyses to determine quantitative weak link capabilities did not ensure the MOV would remain capable of performing its accident mitigating functions. Additionally, the failure to verify the adequacy of the acceptance criteria incorporated into test procedures did not ensure an adequate test program was being implemented. Specifically, the failure to verify component availability and capability during 2003 and 2016 tests by utilizing adequate acceptance criteria did not ensure the MOV would remain capable of performing its intended safety function.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process for Findings At-Power." Using Exhibit 2, "Mitigating Systems Screening Questions," the finding screened as having very low safety significance

(Green) because the finding did not represent a loss of operability or functionality; did not represent an actual loss of safety function of the system or train; did not result in the loss of one or more trains of non-technical specification equipment; and did not screen as potentially risk-significant due to seismic, flooding, or severe weather.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations*, Part 50, Appendix B, Criterion III, Design Control," states, in part, "that design control measures shall provide for the verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program."

Contrary to the above, prior to February 11, 2020, the licensee failed to verify or check the adequacy of the design of safety-related MOVs. Specifically, the licensee failed to demonstrate the adequacy of the design of safety-related valves by completing the required limiting component analysis (weak link) to ensure they would remain capable of performing their accident mitigation function under design basis conditions.

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

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On February 13, 2020, the inspectors presented the NRC inspection results to Khalil M. Dia, Director of Engineering, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.02	Calculations	NEDC 00-041	Limiting Component Analysis for Containment Spray Motor-Operated Valves	2
71111.21N.02	Calculations	NEDC 00-059	Functional and MEDP Evaluation for PC-AOV-246AV	0C1
71111.21N.02	Calculations	NEDC 00-083	Review of MPR Calculation 0315-0082-CALC-001, EPRI PPM for CS-MOV-MO12A and B	2
71111.21N.02	Calculations	NEDC 00-093	Review of MPR Report 1876, Part 6, EPRI PPM For RCIC-MOV-MO21	0
71111.21N.02	Calculations	NEDC 00-093	Review of MPR Report 1876, Part 6, EPRI PPM for RCIC-MOV-MO21	1
71111.21N.02	Calculations	NEDC 00-094	Review if MPR Report 1876, Part 7, EPRI PPM for RWCU-MOV-MO15 and 18	1
71111.21N.02	Calculations	NEDC 00-110	MOV Program Valve Margin Determination	13
71111.21N.02	Calculations	NEDC 03-015	Review of Main Steam Isolation Valve (MSIV) Air Operated Valves Testing.	0
71111.21N.02	Calculations	NEDC 03-028	AOV Component Level Calculation for PC-AOV-244AV, 245AV, 246AV, SW-AOV-2797AAV and 2797BAV	2C1
71111.21N.02	Calculations	NEDC 03-028	AOV Component Level Calculation PC-AOV-244AV, -245AV, -246AV, SW-AOV-2797AAV and SW-AOV-2797BAV	2
71111.21N.02	Calculations	NEDC 09-060	Kasli Torque Uprate for SW and RHR Valves	0C1
71111.21N.02	Calculations	NEDC 88-286	MSIV Accumulator Capacity Evaluation	1
71111.21N.02	Calculations	NEDC 91-077	System Level Design Basis Review of Core Spray (CS) System Program MOVs	4
71111.21N.02	Calculations	NEDC 91-080	System Level Design Basis Review of Residual Heat Removal (RHR) System Program MOVs	7
71111.21N.02	Calculations	NEDC 91-081	Review of MRP's system Level Design Basis Review for Reactor Water Cleanup System MOV's.	2
71111.21N.02	Calculations	NEDC 91-081	Review of MPR's System Level Design basis Review for Reactor Water Cleanup System MOV's.	2C1
71111.21N.02	Calculations	NEDC 91-087E	Review of ADVENT LCA Calculation 96007TR-25, Rev. o for CS-MOV-MO12A and MO12B	3
71111.21N.02	Calculations	NEDC 91-091	Review of ADVENT LCA calculation and 96007TR-05,	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			R/O for RWCU-MOV-MO15 and 18	
71111.21N.02	Calculations	NEDC 91-242	Review of ERIN's System Level Design Basis Review for the Primary Containment System MOVs	2C1
71111.21N.02	Calculations	NEDC 91-245	System Lvel Design Basis Review of Service Water (SW) System Program MOVs	4
71111.21N.02	Calculations	NEDC 91-253E	Review of ADVENT LCA Calculation 96007TR-40 Rev. 0 for REC-MOV712MV, REC-MOV-713MV; SW-MOV-650MV, 651MV, SW-MOV-37MV & 36MV	3C1
71111.21N.02	Calculations	NEDC 91-89	Review of Advent LCA Calculation 9600 TR-01 Rev. 0 for RCIC-MOV-MO21	3
71111.21N.02	Calculations	NEDC 92-179	Actuator Sizing Verification for SW-AOV-2797AAV/BAV	0
71111.21N.02	Calculations	NEDC 94-034D	Small Steam Line Break (SSLB) Analysis	3
71111.21N.02	Calculations	NEDC 94-037	Thrust Rating Increase of Limitorque SMB-000, SMB-00, SMB-0, and SMB-1 Actuators	0
71111.21N.02	Calculations	NEDC 95-003	Design Calculation Sheet (Pg 59 and Pg 98) for RWCU-MOV-MO15	34
71111.21N.02	Calculations	NEDC 96-018	Design Specification for Vlve Limiting Component Analysis	1C1
71111.21N.02	Calculations	NEDC 96-025B	Review of ADVENT LCA Calculation 96007TR-41B, Rev. 1 for PC-MOV-232MV and 233MV	1C1
71111.21N.02	Corrective Action Documents	CR-CNS-	2001-00136, 2001-04658, 2001-05916, 2001-06196, 2002-01839, 2004-02806, 2006-00630, 2006-02950, 2006-06153, 2006-07607, 2006-09279, 2006-09296, 2007-00100, 2007-01251, 2007-02455, 2009-02540, 2009-05964, 2009-07145, 2009-09220, 2009-10747, 2010-06532, 2010-06532, 2011-03512, 2012-07185, 2012-07601, 2013-01898, 2013-02071, 2014-06054, 2015-01579, 2015-02883, 2015-02884, 2016-00820, 2016-02709, 2016-03970, 2016-05512, 2016-05588, 2016-06470, 2016-06593, 2016-06596, 2016-07031, 2016-07085, 2016-07090, 2016-07219, 2016-07247, 2016-07294, 2016-07329, 2017-00696, 2017-00710, 2017-05560, 2018-03862, 2018-06167, 2018-07062, 2019-02313, 2019-05753, 2019-05945,	

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71111.21N.02	Corrective Action Documents Resulting from Inspection	CR-CNS-	2020-00457, 2020-00467, 2020-00489, 2020-00504, 2020-00524, 2020-00743, 2020-00747, 2020-00756	
71111.21N.02	Drawings	2022 SH 1	Flow Diagram Primary Containment Cooling and Nitrogen Inerting System Cooper Nuclear Station	82
71111.21N.02	Drawings	2042 (Burns & Roe)	Cooper Nuclear Station Flow Diagram Reactor Water Clean-up System.	37
71111.21N.02	Drawings	2045 SH 1	Cooper Nuclear Station Flow Diagram Core Spray System	58
71111.21N.02	Drawings	311792	Rockwell-Edward-Flite-Flow Stop Valve Fig. 1612 Jmmny for General Electric Atomic Power Equipment Department.	3
71111.21N.02	Drawings	3257, Sheet 48A	Cooper Nuclear Station Local Rack and Panels Connection Wiring Diagrams	27
71111.21N.02	Drawings	45016233	Cooper Nuclear Station Diesel Generator 1 & 2 Cooling Water schematic	27
71111.21N.02	Drawings	452212589	6"-900 Weld Ends Stainless Steel Flex Wedge Gate Valve for SMB-00-15 Limitorque Actuator	B
71111.21N.02	Drawings	454243032, Sheet 1A	Cooper Nuclear Station Emergency Diesel Generator # 1 Electrical Schematic	12
71111.21N.02	Drawings	928-3	10" - 900# Gate Valve, R.S. Press. Seal Cast STL.(LCB) Stellite Trim B.W. Ends SB-2 Motor Operator Cooper Nuclear Station	6
71111.21N.02	Drawings	CNS-CS-15	Disc Vent Hole for CS-MOV-MO12A and B	1
71111.21N.02	Drawings	CNS-EQ-116	Cooper Nuclear Station EQ Configuration Detail NAMCO-Limit Switch EA189 Series Revision P & Higher	5
71111.21N.02	Drawings	CNS-EQ-172	EQ Configuration Detail MSIV Control Manifold Valve Tabulation Sheet Cooper Nuclear Station	4
71111.21N.02	Drawings	CNS-PC-28	Purge and Vent Valve Mechanical Stop	0
71111.21N.02	Drawings	E501	Burns & Roe, Nebraska Public Power District - Cooper Nuclear Station Integrated Control Circuit Diagram, RWCU-MOV-MO15 RWCU Supply Inboard Isolation.	NO2
71111.21N.02	Drawings	E510, Sheet 5	Cooper Nuclear Station Diesel Generator BLDG	4

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			Connection Wiring Diagram Terminal Box DG 131, DG 226	
71111.21N.02	Drawings	SAA085	Ralph A Killer Company, Pilot Control Three Valve Manifold For Nebraska Public Power District.	2
71111.21N.02	Drawings	SKD628242	Edward Vogt Valve Company, Size 24x20x24 Fig. 1612 JMMNY Product Improvement Drawing for Cooper Nuclear Station Nebraska Public Power District.	3
71111.21N.02	Engineering Changes	CED 2000-0108	Auxiliary Yoke Support for Containment Spray Valves (RHR-MOV-MO26B, -MO31A, -MO31B)	09/15/2003
71111.21N.02	Engineering Evaluations	EE 01-046	Evaluation of R.A. Hiller Report # ER-ST-4000 Rev 0 "MSIV Actuator Qualified Life Extension for Nebraska Public Power District Cooper Nuclear Station Customer Order Number 002785	0
71111.21N.02	Miscellaneous	Vender Manual VM-0000030	Vendor Manual Anchor Darling Valve Co. Motor Operated Gate Valve	6
71111.21N.02	Miscellaneous	Vendor Manual VM-0000227	Vendor Manual Anchor Darling Valve Company Cast Steel Valves	75
71111.21N.02	Miscellaneous	Vendor Manual VM-000052	Vendor Manual Henry Pratt Company Valves and Actuators	8
71111.21N.02	Miscellaneous	Vendor Manual VM-0000986	Limitorque Corp. Limitorque Composite Manual	34
71111.21N.02	Miscellaneous	Vendor Manual VM-0092	Cooper Nuclear Station Vendor Manual Rockwell Main Steam Isolation Valves	13
71111.21N.02	Miscellaneous	Vendor Manual VM-0394	Allis-Chalmers Corp. Rubber Seat Butterfly Valves - H&V	20
71111.21N.02	Miscellaneous	Vendor Manual VM-1017	Cooper Nuclear Station Vendor Manual Ralph A. Hiller Company Model SAA085 Valve Actuator Maintenance Instructions.	12
71111.21N.02	Miscellaneous	Vendor Manual VM-1048	Cooper Nuclear Station Vendor Manual Automatic Switch Co. - ASCO.	12
71111.21N.02	Miscellaneous	Vendor Manual VM-1229	Vendor Manual - Cooper Nuclear Station Vendor Manual, Automatic Switch Co. - ASCO, ASCO Solenoid Valves Composite Manual.	34
71111.21N.02	Procedures	0-CNS-12	Administrative Procedure	04/04/2013

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71111.21N.02	Procedures	3-CNS-DC-329	Engineering Program Control and Oversight	07/17/2017
71111.21N.02	Procedures	3-EN-DC-304	MOV Thrust/Torque Setpoint Calculations	1C0
71111.21N.02	Procedures	3-EN-DC-312	Motor-Operated Valve (MOV) Test Data Review	2C1
71111.21N.02	Procedures	6.1RUCU.701	PCIS RWCU High Flow Channel Functional Test (DIV 1)	03/06/2017
71111.21N.02	Procedures	6.1RWCU.302	RWCU Space High Temperature Channel Functional Test (DIV 1)	01/08/2017
71111.21N.02	Procedures	6.MISC.401	Surveillance Procedure Position Indicator Inservice Testing (IST)	11/10/2018
71111.21N.02	Procedures	6.MS.201	Surveillance Procedure Main Steam Isolation Valve Operability Test (IST), MSIV Not Full Open Logic Test	02/11/2017
71111.21N.02	Procedures	6.PC.513	Surveillance Procedure Main Steam Local Leak Rate Tests, Informational Testing of Penetration X-7A/B/C/D Outboard MSIV Leakage	09/29/2016
71111.21N.02	Procedures	6.PC.520	Surveillance Procedure Reactor Water Cleanup (RWCU) Local Leak Rate Tests	10/07/2016
71111.21N.02	Procedures	PBD-AOV	Air Operated Valves Program Basis Document	0
71111.21N.02	Procedures	Procedure 3.33	Motor Operated Valve Program	12/24/2002
71111.21N.02	Procedures	Procedure 3.33	Motor Operated Valve Program	09/05/2018
71111.21N.02	Procedures	Surveillance Procedure 6.MS.302	MSIV Accumulator Functional Test, Inboard MSIV Accumulator and Instrument Air Check Valves	10/26/2016
71111.21N.02	Procedures	Surveillance Procedure 6.MS.302	MSIV Accumulator Functional Test, Inboard and Outboard MSIV Accumulator and Instrument Air Check Valves.	10/23/2018
71111.21N.02	Work Orders	WO	4209016, 4209543, 4306875, 4368402, 4427649, 4523442, 4745161, 4747405, 4825073, 4848147, 4848626, 4911478, 4919243, 4945163, 4945302, 4945454, 4949508, 4950055, 5003523, 5056278, 5057242, 5057250, 5057608, 5057770, 5057854, 5057874, 5058053, 5060920, 5061461, 5061462, 5061462, 5061510, 5066697, 5066697, 5066702, 5069272, 5073331, 5084932, 5088127, 5101205, 5101205, 5101206, 5111578, 5117781, 5117782, 5117782, 5117818, 5121816, 5152224, 5152225,	

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			5153228, 5164174, 5166861, 5172608, 5172696, 5173174, 5173203, 5173218, 5173284, 5173294, 5173294, 5173301, 5175105, 5175375, 5180981, 5196859, 5198815, 5209524, 5209551, 5209612, 5209614, 5210241, 5268468, 5271330, 5769787	