



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

June 12, 2020

Mr. Fadi Diya
Senior Vice President and
Chief Nuclear Officer
Ameren Missouri
Callaway Plant
8315 County Road 459
Steedman, MO 65077

SUBJECT: CALLAWAY PLANT – BIENNIAL PROBLEM IDENTIFICATION AND
RESOLUTION INSPECTION REPORT 05000483/2020010

Dear Mr. Diya:

On May 7, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Callaway Plant and 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.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment, and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews, the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No findings or violations of more than minor significance were identified during this inspection.

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* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Ami N. Agrawal, Team Lead
Inspection Programs and Assessment Team
Division of Reactor Safety

Docket No. 05000483
License No. NPF-30

Enclosure: As stated

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CALLAWAY PLANT – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION
INSPECTION REPORT 05000483/2020010 – June 12, 2020

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number: 05000483

License Number: NPF-30

Report Number: 05000483/2020010

Enterprise Identifier: I-2020-010-0002

Licensee: Union Electric Company

Facility: Callaway Plant

Location: Steedman, Missouri

Inspection Dates: April 20 to May 7, 2020

Inspectors: R. Azua, Senior Reactor Inspector
J. Braisted, Reactor Inspector
P. Jayroe, Senior Reactor Inspector
J. Melfi, Project Engineer

Approved By: Ami N. Agrawal, Team Leader
Inspection Programs and Assessment Team
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at the Callaway Plant, 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

No findings or violations of more than minor significance were identified.

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 and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), regional inspectors were directed to begin telework. The inspection documented below was determined that the objectives and requirements stated in the IP could be completed remotely.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment.

- **Corrective Action Program Effectiveness:** The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems. The inspectors also conducted a five-year review of the control rod drive mechanism.
- **Operating Experience, Self-Assessments and Audits:** The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits, and self-assessments.
- **Safety Conscious Work Environment:** The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

INSPECTION RESULTS

Assessment	71152B
<u>Effectiveness of Problem Identification:</u> Based on the samples reviewed, the team determined that the licensee's performance in this area adequately supported nuclear safety. Overall, the team found that the licensee was identifying and documenting problems at an appropriately low threshold that supported nuclear safety. On average, the licensee was identifying and documenting approximately 562 condition reports (CRs) per month.	
<u>Effectiveness of Prioritization and Evaluation of Issues:</u> Overall, the team found that the licensee was appropriately prioritizing and evaluating issues to support nuclear safety. Of the	

samples reviewed, the team found that the licensee correctly characterized each condition report as to whether it represented a condition adverse to quality, and then prioritized the evaluation and corrective actions in accordance with program guidance.

Effectiveness of Corrective Actions: Overall, the team concluded that the licensee's corrective actions supported nuclear safety. Specifically, the Callaway Plant developed effective corrective actions for the problems evaluated in the corrective action program and generally implemented these corrective actions in a timely manner commensurate with their safety significance.

- As part of this inspection, the team selected the control rod drive mechanism for a focused review within the corrective action program. For this system, the team performed sample selections of condition reports, looking at the adequacy of the licensee's evaluation process for determining which items are placed in the corrective actions process, and the corrective actions taken. The team also reviewed the licensee's use of operational experience and the Part 21 process with respect to this system. As a result of the off-site nature of this inspection, due to COVID-19 restrictions at the time of the inspection, the team was not able to walk down portions of this system. However, the team did not identify any concerns with this system.

Corrective Action Program Assessment: Based on the samples reviewed, the team determined the licensee's corrective action program complied with regulatory requirements and self-imposed standards, and the licensee's implementation of the corrective action program adequately supported nuclear safety. The team found that management's oversight of the corrective action program process was effective.

Assessment	71152B
<p><u>Operating Experience:</u> The team reviewed a variety of sources of operating experience including Part 21 notifications and other vendor correspondence, NRC generic communications, and publications from various industry groups including Institute of Nuclear Power Operations (INPO) and Electric Power Research Institute (EPRI). The team determined that the Callaway Plant, is adequately screening and addressing issues identified through operational experience that apply to the station and that this information is evaluated in a timely manner once it is received.</p> <p><u>Self-Assessments and Audit Assessments:</u> The team reviewed a sample of the licensee's departmental self-assessments and audits to assess whether they regularly identified performance trends and effectively addressed them. The team also reviewed audit reports to assess the effectiveness of assessments in specific areas. Overall, the team concluded that the licensee had an adequate departmental self-assessment and audit process.</p>	

Assessment	71152B
<p><u>Safety-Conscious Work Environment:</u> The team interviewed nine individuals. The purpose of these interviews was (1) to evaluate the willingness of the licensee staff to raise nuclear safety issues, either by initiating a CR or by another method, (2) to evaluate the perceived effectiveness of the corrective action program at resolving identified problems, and (3) to evaluate the licensee's safety-conscious work environment (SCWE). The focus group participants were from the security organization. Due to the challenges brought on by the COVID-19 pandemic, and the Callaway Plant's performance in this area prior to this</p>	

inspection, the NRC chose to limit the number of personnel interviewed. Overall, the Callaway Plant has an adequate SCWE.

Willingness to Raise Nuclear Safety Issues: In the assessed focus group, the team found no evidence of challenges to SCWE. Individuals in this group expressed a willingness to raise nuclear safety concerns and other issues through at least one of the several means available.

Overall, the team concluded that the Callaway Plant maintained a healthy SCWE.

Employee Concerns Program: The team looked at the Callaway Plant's Employee Concerns Program (ECP). The team interviewed the ECP manager and discussed her cases. Unfortunately, the team was unable to review the ECP's investigative packages due to the challenges created by the COVID-19 pandemic and the personal nature of the documents. Overall, the team did not identify any concerns with the program.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified that no proprietary documents were retained or documented in this report.

- On May 7, 2020, the inspectors presented the biennial problem identification and resolution inspection results to Mr. Fadi Diya and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Corrective Action Documents	Condition Reports	199001400, 199301554, 201302358, 201302424, 201502077, 201502077, 201505100, 201508347, 201604507, 201604820, 201609281, 201700788, 201700883, 201704393, 201705228, 201706617, 201707190, 201707502, 201800323, 201800866, 201801304, 201801760, 201801773, 201801783, 201801971, 201802129, 201802155, 201802212, 201802362, 201802509, 201802600, 201802633, 201802725, 201802727, 201802821, 201802938, 201803026, 201803067, 201803083, 201803201, 201803204, 201803234, 201803252, 201803300, 201803405, 201803580, 201803671, 201803716, 201804026, 201804051, 201804211, 201804212, 201804236, 201804251, 201804276, 201804434, 201804579, 201804654, 201804863, 201804925, 201805870, 201806199, 201806334, 201806389, 201806479, 201806593, 201900050, 201900066, 201900103, 201900136, 201900529, 201900788, 201900887, 201901077, 201901330, 201901423, 201901550, 201901764, 201901857, 201901903, 201902606, 201902636, 201902698, 201903070, 201903222, 201903406, 201903431, 201903552, 201903596, 201903630, 201903712, 201803787, 201903832, 201904071, 201904098, 201904168, 201904171, 201904220, 201904306, 201904591, 201904713, 201904807, 201904897, 201904906, 201904921, 201904983, 201904995, 201905140, 201905145, 201905250, 201905354, 201905364, 201905440, 201905495, 201905498, 201905641, 201905652, 201905654, 201905676, 201905708, 201905718, 201905722, 201905728, 201905752, 201905777, 201905827, 201905843, 201905850, 201905859, 201905901, 201906017, 201906022,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			201906202, 201906298, 201906374, 201906404, 201906444, 201906686, 201906744, 201906847, 201906868, 201906878, 201907043, 201907047, 201907073, 201907171, 201907252, 201907361, 201907476, 201907630, 201907735, 201907784, 201907799, 201907807, 201907876, 201907884, 201907900, 201907951, 201907960, 201907973, 201908019, 201908040, 202000122, 202000212, 202000245, 202000314, 202000346, 202000352, 202000360, 202000364, 202000367, 202000371, 202000393, 202000476, 202000491, 202000511, 202000598, 202000625, 202000628, 202000689, 202000825, 202000856, 202000975, 202001216, 202001264, 202001296, 202001417, 202001438, 202001455, 202001556, 202001566, 202001573, 202001602, 202001983, 202001999, 202002007, 202002018, 202002025	
	Drawing	110D873	Rod Drive Power Supply System Reactor Trip Switchgear Rod Drive MG Set - Outline	A
		3688C42-S011	Generator No. 1 Voltage Regulator	5
		E-23SF21	Schematic Diagram Rod Drive M-G Sets	5
		J-23SF01A	Rod Control Loop Diagram, Sheet 1 of 2	5
		J-23SF01B	Rod Control Loop Diagram, Sheet 2 of 2	3
		M-U2GD01 (Q)	Piping and Instrumentation Diagram Essential Service Water Pumphouse & Ultimate Heat Sink Elec. Rm. HVAC	12
	Miscellaneous		Night Order: Atmospheric Steam Dump Insulation	01/09/2019
			Night Order: Boric Acid Identification and Monitoring During Implementation of POL0049	03/23/2020
			Night Order: Guidance for NN Inverter Alignment Following Inverter Failure	11/15/2019
			Night Order: RCP Vibration Inputs Defeated to Annunciators 70A and 70B	08/20/2019
			Night Order: Sluggish Operation of the Moveable Gripper on Control Rod H08	03/19/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Night Order: Steam Generator and RCS Pressure Equalization	11/26/2019
			Night Order: Temporary Safety Monitor Thresholds Accounting for BBHV8000B Closure	09/16/2019
			Night Order: Trigger Points and Actions for Elevated Main Generator Hydrogen Consumption Levels	04/14/2020
			Nuclear Oversight Audit of Operations and Chemistry – AP19003	06/18/2019
			Nuclear Oversight Audit of Materials Services - AP20001	02/26/2020
			Callaway Semiannual Trend Report – July through December 2019	0
			Employee Concerns Program - ECP Investigator's Desk Top Instructions	6
		Proprietary Document	WCAP - 17625-P MG Set Manual	April 2013, Revision 0
		AUCA 20190005	Unplanned Loss of 'B' Switchyard Bus	07/18/2019
		LER 1985-022-00	Manual Reactor Trips following CRD motor Generator Output Breaker Trips	05/10/1985
		LER 1985-026-00	Dropped Control Rods Cause High Negative Flux Rate Reactor Trip	07/08/1985
		LER 1986-024-02	Technical Specification 3.0.3 Entered Due to a Rod Control Card Failure	01/30/1987
		LER 1986-029-00	Manual Reactor Trip Due to a Rod Control Card Failure	09/23/1986
		LER 1990-002-00	Electrical Problem in the Control Rod System Led to a Condition Prohibited by the Plant's Technical Specifications and a Temporary Waiver of Compliance	03/05/90
		LER 1990-009-00	Technical Specification (3.0.3) Entry Due to Loss of the Digital Rod Position Indication System on a Failed Central Control Card	09/04/1990
		Training Manual	T63.0110 6 Rod Control System Introduction	02/15/1987
		Training Manual	T61.0110.6/T61.016D.6 SF -Rod Control Systems	6/6/2016
		Training Manual	T63.0110.6 Rod Control Logic Cabinet	02/15/1987
		Training Manual	T63.0110.6 Rod Control System Power Cabinet	02/15/1987
	Procedures	A210.0012	Operating Quality Assurance Manual (OQAM)	34

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		APA-ZZ-00500	Corrective Action Program	71
		APA-ZZ-00500, Appendix 1	Operability Determinations	35
		APA-ZZ-00500 Appendix 3	Past-OP Reportability	26
		APA-ZZ-00500, Appendix 7	Effectiveness Reviews	14
		APA-ZZ-00500, Appendix 8	Corrective Action Program Training Requirements	17
		APA-ZZ-00500, Appendix 10	Trending Program	18
		APA-ZZ-00500, Appendix 12	Significant Adverse Condition - ADCN-1	36
		APA-ZZ-00500, Appendix 13	Adverse Condition - ADCN-2	32
		APA-ZZ-00500, Appendix 14	Adverse Condition - ADCN-3	38
		APA-ZZ-00500, Appendix 15	Adverse Condition - ADCN-4	33
		APA-ZZ-00500, Appendix 16	Other Issue - OI-A	23
		APA-ZZ-00500, Appendix 17	Screening Process Guidelines	39
		APA-ZZ-00500, Appendix 18	Equipment Failure Analysis	15
		APA-ZZ-00500, Appendix 19	Common Cause Evaluation (CCE)	06
		APA-ZZ-00500, Appendix 21	Other Issues - OI-B	28
		APA-ZZ-00500 Appendix 22	Corrective Action Program Definitions	21
		APA-ZZ-00930	Employee Concerns Program	20
		APA-ZZ-00932	Nuclear Safety Culture	2
		APA-ZZ-00932,	Nuclear Safety Culture Monitoring	12

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Appendix 1		
		APA-ZZ-01400, Appendix A	Callaway Self-Assessment and Benchmarking Program	31
		APA-ZZ-01400, Appendix E	Operating Experience	26
		APA-ZZ-01400, Appendix F	Performance Indicators	10
		ATX-ADM-3205	Transmission Design Engineering Design Quality Review Process	06/01/2019
		EDP-ZZ-04026	10 CFR Part 21 Evaluations	14
		EDP-ZZ-04107	HVAC Pressure Boundary Control	32, 33
		EDP-ZZ-06000	Vendor Equipment Technical Information Review Program	19
		EE-006	Electrical Design Criteria/Inputs	7
		LDP-ZZ-00500	Corrective Action Review Board	34
		MPM-SK-QW001	Service and Inspection of Plant Doors	1
		NISP-PI-02	Conduct of Self-Assessments and Benchmarks	0
		ODP-AA-00002	Equipment Status Control	93
		ODP-ZZ-00001	Operations Department – Code of Conduct	106
		ODP-ZZ-00001, Addendum 10	Reactivity Management / Operating Philosophy	26
		ODP-ZZ-00001, Addendum 3	Crew Performance and Qualifications	49
		ODP-ZZ-00001, Addendum 12	Operator Burdens and Workarounds	10
		ODP-ZZ-00002, Appendix 2	Risk Management Actions for Planned Risk Significant Activities	18
		ODP-ZZ-00014	Operational Mode Change Requirements	54, 55
		OTA-RK-00026	Turbine Exhaust Hood Temperature High	4
		OTG-ZZ-00002	Reactor Startup – IPTE	62
		OTN-AC-00001	Main Turbine and Generator Systems	54
		PDP-ZZ-00023	Work Screening and Processing	38
		PDP-ZZ-00023, Appendix A	Priority Screening Matrix	6

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ZZ-009	Pre-Job Activities for Engineering Change Packages and Engineering Documents	1
	Self-Assessments	AP19001	Radiation Protection Audit	03/27/2019
		AP19004	Maintenance, Work Management, and M&TE Programs Audit	08/29/2019
		AP19005	Audit Report - Nuclear Oversight Audit of the Corrective Action Program	10/23/2019
		FSA 201807096-015	Formal Self-Assessment - Standard Design	07/25/2019
		FSA 201820044-071	Electrical Safety / Formal Self-Assessment	01/16/2019
		FSA 201900029-006	Formal Self Assessment - EQ Program	03/28/2019
		OSA 201900029-047	STARS Maintenance Self-Assessment 2019	06/20/2019
		SA 202001257	Self Assessment - Boric Acid Program	03/05/2020
		SBM 201820044-042	Cross Checks and Confirmations / Simple Benchmark	06/24/2019
		SBM 201820044-068	Passive Monitoring / Simple Benchmark	06/24/2019
		SSA 201500920-02	Self-Assessment and Benchmark Program	11/24/2015
		SSA 201807096-005	Maintenance Lockout / Simple Self-Assessment	07/02/2018
		SSA 201807096-010/201900029-036	Instrument Program and Pre-NRC Inspection	03/31/2019
		SSA 201820044-012	Simple Self-Assessment - ASME IWL Program - Containment Post Tensioning	07/31/2019
		SSA 201820044-019	Simple Self-Assessment - ASME GL89-13 Program	10/19/2018
		SSA 201820044-020	Simple Self-Assessment - ASME Maintenance Rule	05/23/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		SSA 201820044-023	Housekeeping/Material Storage	01/10/2019
		SSA 201820044-064	NRC Pre Inspection Self Assessment - Rad Safety ALARA Planning and Occupational Dose Assessment	06/14/2018
		SSA 201820044-066	Simple Self-Assessment - ASME Fire Protection Program	11/11/2018
		SSA 201900029-002	Simple Self-Assessment - ASME EN.1 Assessment on Key Component Specifications	02/15/2019
		SSA 201900029-021	MFIN Walkdown Effectiveness	01/09/2020
		SSA 201900029-022	Effluent Leak Management (ELM) Program	12/17/2019
		SSA 201900029-023	Effectiveness of Lifting & Rigging Program	07/16/2019
		SSA 201900029-027	Shipping / Returns	12/20/2019
		SSA 2019-00029-028	Procurement / Acceptance / Return backlogs	01/31/2020
		SSA-201900029-029	Parts issue with oxidation, corrosion rust that had a job or plant impact	01/16/2020
		SSA-201900029-032	Reactivity Management	12/01/2019
		SSA 201900029-035	Shipping Program	04/29/2019
		SSA 201900029-048	Simple Self-Assessment - ASME Maintenance Rule (a)(3) Assessment	10/03/2019
	Work Orders		16002805, 17005384, 18001142, 18001740, 18001740, 18002534, 18003289, 18003541, 19000268, 19001090, 19002935, 19003307, 19005361, 20000522,	