



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

November 24, 2021

Mr. David Rhoades
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION – DESIGN BASIS ASSURANCE
INSPECTION (PROGRAMS) INSPECTION REPORT 05000254/2021010 AND
05000265/2021010

Dear Mr. Rhoades:

On November 18, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Quad Cities Nuclear Power Station and discussed the results of this inspection with Mr. B. Wake, Site Vice President and other members of your staff. The results of this inspection are documented in the enclosed report.

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,

A handwritten signature in cursive script that reads "Karla K. Stoedter".

Signed by Stoedter, Karla
on 11/24/21

Karla K. Stoedter, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 05000254 and 05000265
License Nos. DPR-29 and DPR-30

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to David Rhoades from Karla K. Stoedter dated November 24, 2021.

SUBJECT: QUAD CITIES NUCLEAR POWER STATION – DESIGN BASIS ASSURANCE
INSPECTION (PROGRAMS) INSPECTION REPORT 05000254/2021010 AND
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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000254 and 05000265

License Numbers: DPR-29 and DPR-30

Report Numbers: 05000254/2021010 and 05000265/2021010

Enterprise Identifier: I-2021-010-0057

Licensee: Exelon Generation Company, LLC

Facility: Quad Cities Nuclear Power Station

Location: Cordova, IL

Inspection Dates: November 01, 2021 to November 18, 2021

Inspectors: B. Daley, Senior Reactor Inspector
M. Jones, Reactor Inspector
B. Jose, Senior Reactor Inspector

Approved By: Karla K. Stodter, Chief
Engineering Branch 2
Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a design basis assurance inspection (programs) inspection at Quad Cities Nuclear Power 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

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, observed activities, 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), inspectors were directed to begin telework. In addition, regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

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

POV Review (IP Section 03) (10 Samples)

The inspectors:

- a. Determined whether the sampled power operated valves (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. Evaluated maintenance activities including a walkdown of the sampled POVs (if accessible).

- (1) 1-2301-004-MO; High Pressure Coolant Injection (HPCI) Inboard Steam Supply from Reactor Pressure Vessel (RPV) Primary Containment Isolation Valve (PCIV)
- (2) 2-1301-017-MO; Reactor Core Isolation Cooling (RCIC) Turbine Steam Supply from RPV PCIV
- (3) 1-1001-026A-MO; Residual Heat Removal (RHR) A Loop Inboard Drywell Spray PCIV
- (4) 2-0302-022A-AO; Control Rod Drive Scram Discharge Volume Drain Valve
- (5) 2-0203-001A-AO; 1A Inboard Main Steam Isolation Valve
- (6) 1-1201-005-MO; Reactor Water Cleanup Outboard PCIV
- (7) 2-1001-005B-MO; RHR Service Water B Loop Flow Control Valve
- (8) 2-1001-016A-MO; RHR A Loop Heat Exchanger Bypass Line Isolation Valve
- (9) 2-2301-005-MO; HPCI Outboard Steam Supply from RPV PCIV
- (10) 2-1001-034B-MO; RHR B Loop Torus Cooling and Spray Isolation Valve

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

- On November 18, 2021, the inspectors presented the design basis assurance inspection (programs) inspection results to Mr. B. Wake, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.02	Calculations	002N3585	Main Steam Isolation Valve (MSIV) Calculation Bases for Minimum Air Supply Pressure	12/03/2014
		04692920	C Residual Heat Removal (RHR) Service Water Pump Comprehensive Test	06/18/2019
		0591-544-03	Motor Operated Valve (MOV) Accumulator 1-220-82A Capacity Check	0
		27.02000.1100	MOV Structural Integrity Calculation	0
		AOV-MEDP-QDC-RX-002	Inboard Main Steam Isolation Valve - Design Basis Calculation Report	0
		AOV-MEDP-QDC-RX-002	Inboard Main Steam Isolation Valve	0
		MIDACALC QUA-2-1001-5B	MIDACALC Results	11
		NED-M-MSD-075	The Thrust Seismic Limits of the Quad Cities Non-Mark I MOVs	0A
		QC-MISC-010	Quad Cities MOV Risk Ranking Input	003
		QDC-0203-M-0968	Main Steam Isolation Valves Sizing Calculation	1
		QDC-0203-M-0968	Main Steam Isolation Valve Sizing Calculation	1
		QDC-1000-M-1318	Residual Heat Removal System Combined Design Basis Document and Differential Pressure Calculation	000
		QDC-1000-S-1827	Review of Flowserve Seismic and Maximum Thrust Analysis Report RAL-20588 for FLOWserve 12" Class 300 Carbon Steel Globe Valve with SMB-0-25	0
		QDC-1200-M-1319	Reactor Water Cleanup (RWCU) System Combined Design Basis Document and Differential Pressure Calculation	000
		QUA-1-1201-5	MIDACALC Results QUA-1-1201-5	14
		QUA-2-1001-16A	MIDACALC Results QUA-1-1001-16A	7
RAL-70296	Weak Link Supplement to Report R89.124 Analysis of the Stem-Wedge Threaded and Pinned Connection	03/05/2018		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents	04116815	MO 2-1301-16 Reactor Core Isolation Cooling (RCIC) Inboard Valve Local Leak Rate Exceeds Alert Limit	04/19/2018
		04132420	Main Steam Isolation Valves 2-0203-1A and 2-0203-1C Closure Times Exceeded the Maximum Technical Specification Limit of 5 Seconds	03/19/2018
		04442618	Power Operated Valve Self-Assessment GAP Discovered on 1-1001-26A MIDAS Calculation	11/01/2021
	Corrective Action Documents Resulting from Inspection	04458885	NRC POV DBAI QUA-2-2301-5, MIDAS Calculation Revision	11/05/2021
		04461879	NRC DBAI POV: SharePoint Issues for External Users	11/18/2021
	Drawings	DR-33834	18" - 300 Pound Cast Steel Globe Valve	09/27/1968
		DR-34289	20 Inch Y Pattern Globe Valve	4
		M-79	Diagram of RHR Service Water Piping	BJ
		M-81	Diagram of RHR Piping	BL
	Miscellaneous	LAR	Application to Revise Technical Specifications to Adopt Technical Specifications Task Force (TSTF)-545	07/26/2016
		NA	Quad Cities Station 180-Day Response to Generic Letter (GL) 95-07	11/09/1995
	Procedures	ER-AA-200	Preventive Maintenance Program	6
		ER-AA-200-1001	Equipment Classification	6
		ER-AA-200-1003	Maintenance Strategy Analysis	1
		ER-AA-302-1009	Final Joint Owners Group (JOG) MOV Periodic Verification Program Implementation	3
		MA-AA-716-012	Post Maintenance Testing	25
		MA-AA-716-230	Predictive Maintenance Program	12
		NES-EIC-10.02	Standard for Thermal Overload Relay Element Selection for Motor Operated Valves	0
		NES-MS-06.6	MOV Valve Factors	2
	Work Orders	00587694	Stem Needs Replacement 2-1301-17	01/20/2004
		00979119	Perform Mechanical MOV Inspection Only 2-1001-16A	08/01/2011
01010549		Open and Inspect Valve for Corrosion/Erosion	03/05/2008	
01126921		Replace MO 2-1001-5B IN Q2R20	12/10/2009	
01255655		Mechanical Inspection and Stem Lube (MOV) 1-1201-5	02/12/2011	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		01470514	Prog Diagnostic Test - MOV 2-1001-16A PMID 25505-01	10/07/2011
		01547997	Perform Static Testing MO 2-1301-17	04/25/2014
		01578831	Prog Mechanical Inspection and Stem Lube (MOV)	02/03/2014
		01611462	MOV Grease Inspection and Stem Lube 2-1301-17	04/10/2014
		01630656	High Pressure Coolant Injection Steam Supply Local Leak Rate Test (LLRT)	03/02/2015
		01722591	Perform Borescope Inspection on MOV 2-1001-16A	12/07/2015
		01752229	1A MSIV Air/Hydraulic O/H	10/09/2015
		01775693	Program Diagnostic Test	02/06/2016
		01794491	RHR B Loop Valve Position Indication	06/12/2016
		01819374	HPCI Steam Supply LLRT	03/27/2017
		01819403	Prog Mechanical Inspection and Stem Lube (MOV)	07/03/2017
		01834738	Program Diagnostic Test	10/15/2016
		01908235	RCIC Steam Supply LLRT In-Service Test (IST)	03/19/2018
		01908692	MOV Grease Inspection and Stem Lube 2-1001-16A	12/06/2017
		01916764	LLRT - Main Steam Isolation Valves (IST)	03/11/2018
		01933785	Perform Diagnostic Test MO 2-1001-16A	10/16/2017
		01955867	Drywell Valve Position Indication Verification (IST)	04/04/2018
		04580778	RHR B Loop Valve Position Indication (IST)	06/12/2018
		04620642	Mechanical Maintenance (MM) Part 21 Action Item for MOV 1-1201-5 IN Q1R25	11/08/2018
		0462944	HPCI Low-Medium Risk Power Operated Valve Test	03/22/2019
		04682289	Drywell Valve Position Indication Verification (IST)	04/04/2019
		04682302	Reactor Water Cleanup (RWCU) Valve Timing Test (IST)	03/21/2019
		04687701	Replace Flexible Hose - 'A' Inboard Main Steam Isolation Valve	04/02/2020
		04690786	Electrical Maintenance Perform Diagnostic Test MO 1-1201-5	03/19/2021
		04712364	RWCU System LLRT, (IST)	03/11/2019
		0471941	MM Replace Q2R24 2-0203-1A MSIV Airpack Manifold	03/21/2018
		04798515	MSIV Closure Time (IST)	03/23/2020
		04800217	Drywell Valve Position Indication Verification Test (IST)	04/12/2020
		04818043	LLRT - Main Steam Isolation Valves (IST)	03/30/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		04914708	RWCU System LLRT (IST)	03/08/2021
		04918468-24	HPCI Preventive Maintenance Tests (PMTs) Required Prior to Mode 2	04/12/2020
		04918468-25	RCIC PMTs Required Prior to Mode 2	04/12/2020
		04962559	HPCI Low-Medium Risk Power Operated Valve Test	03/19/2021
		0497715	RWCU Valve Timing Test (IST)	03/24/2021
		05010921	Lube MO 1-1201-5 Valve Stem	03/15/2021
		05073968	RHR A Pump Flow Rate (IST)	11/22/2020
		05120452	Scram Discharge Volume (SDV) Vent and Drain Valve Test	04/21/2021
		05140184	Drywell Valve Position Indication Verification	03/29/2021
		WO 04750335	RHR Low Risk Power Operated Valve Test	12/12/2019
		WO 04829572	RCIC Low-Medium Risk Power Operated Valve Test	04/02/2020
		WO 04867443	RHR Low Risk Power Operated Valve Test	05/27/2020
		WO 05053088	RHR Low Risk Power Operated Valve Test	10/21/2020
		WO 05063982	Scram Discharge Volume (SDV) Vent and Drain Valve Test	10/21/2020
		WO 05090424	SDV Vent and Drain Valve Test	01/19/2021
		WO 05120452	SDV Vent and Drain Valve Test	04/21/2021