



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE RD, STE 102
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

January 11, 2024

David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer (CNO)
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – AGE-RELATED
DEGRADATION REPORT 05000352/2023010 AND 05000353/2023010

Dear David Rhoades:

On November 30, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Limerick Generating Station, Units 1 and 2, and discussed the results of this inspection with Michael Gillin, 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,

Mel Gray, Chief
Engineering Branch 1
Division of Operating Reactor Safety

Docket Nos. 05000352 and 05000353
License Nos. NPF-39 and NPF-85

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – AGE-RELATED
 DEGRADATION REPORT 05000352/2023010 AND 05000353/2023010 DATED
 JANUARY 11, 2024

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

Docket Numbers: 05000352 and 05000353

License Numbers: NPF-39 and NPF-85

Report Numbers: 05000352/2023010 and 05000353/2023010

Enterprise Identifier: I-2023-010-0024

Licensee: Constellation Energy Generation, LLC

Facility: Limerick Generating Station, Units 1 and 2

Location: Limerick, PA

Inspection Dates: November 13, 2023 to November 30, 2023

Inspectors: J. Kulp, Senior Reactor Inspector
K. Mangan, Senior Reactor Inspector
A. Turilin, Reactor Inspector

Approved By: Mel Gray, Chief
Engineering Branch 1
Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an Age-Related Degradation at Limerick Generating 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.

REACTOR SAFETY

71111.21N.04 - Age-Related Degradation

Age-Related Focused Engineering Inspection (Section 03.01) (12 Samples)

The inspectors selected a sample of components and structures to verify that engineering performance and maintenance activities addressed age-related degradation and that problems were appropriately identified, addressed, and corrected. Samples were selected considering risk insights and the potential for degradation. Specifically, the inspectors selected samples that were risk-significant and either had indications of age-related degradation or were exposed to environments that could cause age-related degradation. The inspectors considered site-specific and industry-wide operating experience to identify samples and included both active and passive sub-components within each component or structure.

For each selected sample listed below, the inspectors reviewed the licensee's engineering and maintenance activities credited to address age-related degradation to assess whether they were being performed using applicable standards and procedures, evaluated against appropriate acceptance criteria, and that maintenance and condition monitoring was completed at an appropriate interval. The inspectors also assessed whether issues identified during licensee activities were being entered into and addressed by the applicable station processes including the corrective action program, and whether periodic assessments of maintenance effectiveness and operating experience were being completed, including feedback and process adjustments.

- (1) High Pressure Coolant Injection (HPCI) Pump Lube Oil Cooler Cooling Water Regulating Valve (F035)
- (2) HPCI System Cannon Plug Inspection and Repairs
- (3) Reactor Core Isolation Cooling (RCIC) System Cannon Plug Inspection Repairs
- (4) Spray Pond Pump House Heating Ventilation and Air Conditioning Fans and Motors
- (5) Spray Pond Pump House Heating Ventilation and Air Conditioning Damper and Damper Motors
- (6) Air Operated Scram Valve Diaphragm Replacement and Overhaul Frequency Extension
- (7) Emergency Diesel Generator Lube Oil Hose Commercial Grade Replacement Testing
- (8) Emergency Diesel Generator Service Water Expansion Joint Period Replacement Frequency
- (9) Emergency Diesel Generator Output Breaker Undervoltage Relay Calibration

- (10) Inspection of Fire and Flooding Doors Important to Emergency Operating Procedures
- (11) Emergency Core Cooling System Room Cooler Control Systems
- (12) Emergency Diesel Generator Oil System Pipe Nipple Replacement due to Vibration Induced Fatigue

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 30, 2023, the inspectors presented the Age-Related Degradation results to Michael Gillin, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.04	Corrective Action Documents	AR 02432718		
		AR 02674817		
		AR 02679860		
		AR 02679862		
		AR 02705256		
		AR 02723451		
		AR 02728912		
		AR 03964204		
		AR 03964205		
		AR 03987385		
		AR 03987387		
		AR 04062096		
		AR 04070641		
		AR 04084494		
		AR 04084499		
		AR 04084504		
		AR 04084506		
		AR 04084508		
		AR 04084509		
		AR 04084532		
		AR 04101347		
		AR 04103053		
		AR 04103682		
		AR 04162106		
		AR 04163765		
		AR 04202112		
		AR 04271187		
		AR 04276739		
AR 04297445				
AR 04297452				
AR 04297452				

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		AR 04304778		
		AR 04362155		
		AR 04371570		
		AR 04376066		
		AR 04376077		
		AR 04393780		
		AR 04393986		
		AR 04396784		
		AR 04396786		
		AR 04406284		
		AR 04417812		
		AR 04425022		
		AR 04427066		
		AR 04429023		
		AR 04429910		
		AR 04429953		
		AR 04429961		
		AR 04430581		
		AR 04430806		
		AR 04435022		
		AR 04445003		
		AR 04446301		
		AR 04447540		
		AR 04447551		
		AR 04447770		
		AR 04456180		
		AR 04461504		
		AR 04466300		
		AR 04466481		
		AR 04466481		
		AR 04472437		
		AR 04478262		
		AR 04478327		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date	
		AR 04484878			
		AR 04487590			
		AR 04504648			
		AR 04504907			
		AR 04505351			
		AR 04506468			
		AR 04529448			
		AR 04541720			
		AR 04548804			
		AR 04549901			
		AR 04554468			
		AR 04554851			
		AR 04559686			
		AR 04673656			
		AR 04673675			
		AR 04691494			
		AR 04696376			
	AR 04966756				
			AR 04720580		
		Drawings	E-471	Schematic Diagram RCIC, HPCI, RHR and Core Spray Unit Coolers -1 and 2 Units	Revision 17
	Engineering Changes	EC 6295363	Pressure Indicator PI-GA-202D Instrument Line Repair	Revision 0	
	Engineering Evaluations	MPL # E41-C002	Environmental Qualification Report for HPCI Steam Turbine Assembly	dated 10/13/1983	
		PMC-04	Reclassify Motor and Deactivate PM for Motor Electrical Test MA-MA-7171-009	dated 10/24/2008	
		PMC-18-115429	VBM SOE Phase 2 System 81 (2.1/NDD) Noncritical PM Reevaluation	dated 2/14/2019	
	Miscellaneous	LIM-15864	Failure Analysis of Cannon Plug Manufacturer: Cannon Model: 262A6523G001	dated 11/30/22	
	Procedures	1037567	SFCP-4KV EDG Undervoltage Relays	Revision 0a	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ST-2-051-105-1	Div I RHR (LPCI) LSF/SAA-Non-Outage	Revision 12
		ST-2-092-323-1	4KV Emergency D13 Undervoltage Channel/Functional Test	Revision 28
	Work Orders	4242163		
		4242164		
		4822782		
		4854329		
		4974173		
		5086082		
		5087771		
		5130685		
		5141409		
		5146098		
		5172995		
		5301803		
		5328600		
		5359683		
		5361369		
		M1769719		
		M1769719		
		M2029369		
R1101661				
R1101663				
R1140030				
R1174656				