

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION I 2100 RENAISSANCE BOULEVARD, SUITE 100 KING OF PRUSSIA, PENNSYLVANIA 19406-2713

March 9, 2021

Mr. David P. Rhoades Senior Vice President Exelon Generation Company, LLC President and Chief Nuclear Officer Exelon Nuclear 4300 Winfield Road Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – DESIGN BASIS ASSURANCE INSPECTION (TEAMS) INSPECTION REPORT 05000352/2021010 AND 05000353/2021010

Dear Mr. Rhoades:

On February 12, 2021, 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 Frank Sturniolo, 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 <u>http://www.nrc.gov/reading-rm/adams.html</u> 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,

X /RA/

Signed by: Melvin K. Gray Mel Gray, Chief Engineering Branch 1 Division of 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 – DESIGN BASIS ASSURANCE INSPECTION (TEAMS) INSPECTION REPORT 05000352/2021010 AND 05000353/2021010 DATED MARCH 9, 2021

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NAME	EBurket	CLally	MGray		
DATE	3/2/21	3/2/21	3/9/21		

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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:	05000352/2021010 and 05000353/2021010
Enterprise Identifier:	I-2021-010-0011
Licensee:	Exelon Generation Company, LLC
Facility:	Limerick Generating Station, Units 1 and 2
Location:	Sanatoga, PA 19464
Inspection Dates:	January 24, 2021 to February 13, 2021
Inspectors:	 E. Burket, Senior Reactor Inspector P. Cataldo, Senior Reactor Inspector C. Hobbs, Reactor Inspector K. Mangan, Senior Reactor Inspector B. Pinson, Reactor Inspector A. Turilin, Reactor Inspector
Approved By:	Mel Gray, Chief Engineering Branch 1 Division of Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a design basis assurance inspection (teams) inspection at Limerick Generating Station, Units 1 and 2, 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/readingrm/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 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

71111.21M - Design Bases Assurance Inspection (Teams)

The inspectors evaluated the following components and listed applicable attributes, permanent modifications, and operating experience during the weeks of January 25 and February 8, 2021.

For the components, the team reviewed the attributes listed in IP 71111.21M, Appendix A, *Component Review Attributes*, such as those listed below. Specifically, the team evaluated these attributes as per 71111.21M, Appendix B, *Component Design Review Considerations* and 71111.21M, Appendix C, *Component Walkdown Considerations*.

<u>Design Review - Risk-Significant/Low Design Margin Components (IP Section 02.02)</u> (4 Samples)

- (1) Time Critical Operator Action Operator Initiates Controlled Manual Reactor Pressure Vessel Depressurization
 - Material condition and installed configuration (e.g., visual inspection/walkdown)
 - Normal, abnormal, and emergency operating procedures
 - Consistency among design and licensing bases documents and procedures
 - Operator actions
 - Surveillance testing and recent test results
 - Equipment/environmental controls and qualification
 - Adequacy of electrical power supply for motor and controls
- (2) Unit 2 D214 4KV-480V transformer 20x201
 - Material condition and installed configuration (e.g., visual inspection/walkdown)
 - Normal, abnormal, and emergency operating procedures
 - Consistency among design and licensing bases documents and procedures

- System health report, maintenance effectiveness and records, and corrective action history
- Control logic
- Equipment/environmental controls and qualification
- Design calculations
- Surveillance testing and recent test results
- Protection coordination
- Range, accuracy, and setpoint of installed instrumentation
- Contactor and fuse ratings; Component adequacy for minimum voltage
- Preventative maintenance and calibration tests
- System and component level performance monitoring
- Adequacy of electrical power supply for motor and controls
- Thermal overload protection settings
- (3) Time Sensitive Operator Action Align Unit 1 Residual Heat Removal Service Water (RHRSW) Train B to Low Pressure Coolant Injection (LPCI) Loop B for Augmented Reactor Pressure Vessel Level Control
 - Normal, abnormal, and emergency operating procedures
 - Consistency among design and licensing bases and other documents/procedures
 - System health report, maintenance effectiveness and records, and corrective action history
 - Operator actions
 - Surveillance testing and recent test results
- (4) Unit 2 Reactor Core Isolation Cooling System Logic
 - Material condition and installed configuration (e.g., visual inspection/walkdown)
 - Normal, abnormal, and emergency operating procedures
 - Consistency among design and licensing bases and other documents/procedures
 - System health report, maintenance effectiveness and records, and corrective action history
 - Equipment/environmental controls and qualification
 - Design calculations
 - Surveillance testing and recent test results
 - Equipment protection from fire, flood, and water intrusion or spray

Design Review - Large Early Release Frequency (LERFs) (IP Section 02.02) (1 Sample)

- (1) Unit 1 RHRSW to LPCI Loop B Crosstie Valve (MOV 51-1F073)
 - Material condition and installed configuration (e.g., visual inspection/walkdown)
 - Normal, abnormal, emergency and FLEX procedures
 - Consistency among design and licensing bases documents and procedures (Suppression and SFP make up and RPV injection)
 - System health report, maintenance effectiveness and records, and corrective action history
 - Design calculations
 - Surveillance testing and recent test results

- Preventative maintenance and calibration tests
- System and component level performance monitoring

Modification Review - Permanent Mods (IP Section 02.03) (5 Samples)

- (1) EC-626676, Evaluate Load Change for Replacement Motor for 10-P219-DR, RCIC Barometric Condenser Vacuum Pump
- (2) EC-622350, HV-055-1F002, High Pressure Coolant Injection (HPCI) Main Steam Supply Inboard MOV, Motor Replacement
- (3) EC-630198, Evaluate Overload Heater Size and Breaker Setting for HV-051-2F-068-OP, Residual Heat Removal (RHR) HX SW Outlet Valve
- (4) EC-625114, 125 VDC Load Change for EDG Replacement Relays
- (5) EC-623326, Reactor Core Isolation Cooling (RCIC) Pump Room Temperatures for Extended Loss AC Power - Post Fukushima Scenario

Review of Operating Experience Issues (IP Section 02.06) (3 Samples)

- (1) Information Notice 2015-13: Main Steam Isolation Valve Failure Events
- (2) Information Notice 2018-07: Pump/Turbine Bearing Oil Sight Glass Problems
- (3) Information Notice 2019-02: Emergency Diesel Generator Excitation System Diode Failures

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

• On February 12, 2021, the inspectors presented the design basis assurance inspection (teams) inspection results to Frank Sturniolo, Site Vice President and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Туре	Designation	Description or Title	Revision or Date
71111.21M	Calculations	6300E.18	Perform a Load Study for the Station Aux Power System	Revision 28
		6300E.20	Voltage Regulation Study	Revision 16
		LE-0069	Class 1E 125V DC System Voltage Analysis	Revision 18C
		LE-0104	DC MCC Manual Control Circuit Calculation	Revision 1
		M-51-14	RHR and RHRSW Intertie	1/31/1994
	Corrective Action	4398585		
	Documents	4398590		
	Resulting from	4398597		
	Inspection	4398602		
		4398643		
		4398956		
		4399647		
		4401028		
		4401230		
		4401518		
	Drawings	M-49 Sh. 2	Reactor Core Isolation Cooling (Unit 2)	Revision 48
		M-51 Sh. 4	Residual Heat Removal (Unit 1)	Revision 67
	Procedures	CC-MA-308-1002	Protective Device Sizing	Revision 1
		T-243	Alternate Injection by RHRSW to RHR Loop B	Revision 17
		T-322	SFP Makeup and Spray from Spray Pond	Revision 3
		T-343	Suppression Pool Makeup from Spray Pond	Revision 4
	Work Orders	00214769		
		4268602		
		4840113		