



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

July 26, 2019

Mr. Bryan C. Hanson
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – TEMPORARY
INSTRUCTION 2515/191 INSPECTION REPORT 05000352/2019010 AND
05000353/2019010

Dear Mr. Hanson:

On June 13, 2019, 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 Mr. Matthew Bonanno, Director Site Operations and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any finding or violation of more than minor significance.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Matthew R. Young, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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

Enclosure:
As stated

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SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 – TEMPORARY
 INSTRUCTION 2515/191 INSPECTION REPORT 05000352/2019010 AND
 05000353/2019010 DATED JULY 26, 2019

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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: 05000352/2019010 and 05000353/2019010

Enterprise Identifier: I-2019-010-0020

Licensee: Exelon Generation Company, LLC

Facility: Limerick Generating Station, Units 1 and 2

Location: Sanatoga, PA

Inspection Dates: June 10, 2019 to June 14, 2019

Inspectors: C. Cahill, Senior Reactor Analyst
S. Haney, Senior Project Engineer
C. Lally, Operations Engineer
G. Stock, Resident Inspector

Approved By: Matthew R. Young, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Temporary Instruction (TI) 2515/191 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/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 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.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

2515/191 - Inspection of Licensee's Responses to Order EA-12-049, EA-12-051 & Emergency Preparedness (EP) Info Request March 12, 2012 (1 Sample)

- (1) The inspectors verified plans for complying with NRC Orders EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12056A045) and EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," (ADAMS Accession No. ML12054A679) are in place and are being implemented by the licensee. Additionally, the inspection verified implementation of staffing and communications information provided in response to the March 12, 2012, request for information letter (ADAMS Accession No. ML12053A340) and multi-unit dose assessment information provided per COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned," dated March 27, 2013 (ADAMS Accession No. ML12339A262).
 1. Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the Diverse and Flexible Coping Strategies (FLEX) as described in the plant specific submittals and the associated safety evaluation (ADAMS Accession No. ML18113A334) and determined that the licensee is in compliance with NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events." The inspectors verified the licensee satisfactorily:
 - a. Developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events
 - b. Integrated their FSGs into their existing plant procedures such that entry into and departure from the FSGs were clear when using existing plant procedures
 - c. Protected FLEX equipment from site-specific hazards
 - d. Developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability
 - e. Trained their staff to assure personnel proficiency in the mitigation of beyond-design basis events
 - f. Developed the means to ensure the necessary off-site FLEX equipment would be available from off-site locations

2. Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals and the associated safety evaluation (ADAMS Accession No. ML18113A334) and determined that the licensee is in compliance with NRC Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation." (ADAMS Accession No. ML12054A679). The inspectors verified the licensee satisfactorily:
 - a. Installed the spent fuel pool (SFP) instrumentation sensors, cabling, and power supplies to provide physical and electrical separation as described in the plant specific submittals and safety evaluation
 - b. Installed the SFP instrumentation display in the location, environmental conditions, and accessibility as described in the plant specific submittals
 - c. Trained their staff to ensure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation
 - d. Developed and issued procedures for maintenance, testing, and use of the reliable SFP instrumentation

3. The inspectors reviewed information provided in the licensee's multi-unit dose submittal and in response to the NRC's March 12, 2012, request for information letter (ADAMS Accession No. ML12053A340), and verified that the licensee satisfactorily implemented enhancements pertaining to Near-Term Task Force Recommendation 9.3 response to a large scale natural emergency event that results in an extended loss of all AC power to all site units and impedes access to the site. The inspectors verified the following:
 - a. The licensee satisfactorily implemented required staffing changes to support a multi-unit extended loss of AC power (ELAP) scenario
 - b. EP communications equipment and facilities are sufficient for dealing with a multi-unit ELAP scenario
 - c. The licensee implemented multi-unit dose assessment capabilities (including releases from SFPs) using the licensee's site-specific dose assessment software and approach

The inspectors verified that non-compliances with requirements and standards identified during the inspection were entered into the licensee's corrective action program as appropriate.

This TI is considered closed.

INSPECTION RESULTS

No findings were identified.

EXIT MEETINGS AND DEBRIEFS

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

- On June 13, 2019, the inspectors presented the TI 2515/191 inspection results to Mr. Matthew Bonanno, Director Site Operations and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
2515/191	Calculations	LM-0710	Refueling Floor Air Space Transient Temperature Profile following ELAP	0
	Corrective Action Documents		03990423, 03995403, 04111121, 04144866, 04178941, 04217474, 04224354, 04229319, 04233213	
	Corrective Action Documents Resulting from Inspection		04256267, 04256357, 04256547	
	Drawings	SK-C-378	Site Plan Flooding Control Areas	5
	Engineering Changes	#13-00414	Westinghouse Spent Fuel Pool Instrumentation System (SFPIS) Documents	2
	Engineering Evaluations	617968	Determine Time to Boil for High Heat Load/Low Volume Periods	0
	Miscellaneous	LLOW1901FLEX	Limerick Licensed Operator Requalification	0
		PES-P-006	Diesel Fuel Oil	11
		Purchase Order 10564072	Diesel Fuel Oil	0
		TI0191	BDBEE Mitigating Strategies (FLEX) Spent Fuel Pool Level Instrument Staffing and EP Communications	June 10, 2019
	Procedures	ARC-MCR-112 I5	Fuel Pool Storage Hi/Lo Level,	5
		ARC-MCR-212 I5	Fuel Pool Storage Hi/Lo Level	3
		CC-LG-118	Site Implementation of Diverse and Flexible Coping Strategies (FLEX), Spent Fuel Pool Instrumentation and Hardened Containment Vent (HCVS) Program	7
		CC-LG-118-1002	Congested Area Flight Plan for Limerick Generating Station	2
		CC-LG-118-1003	Limerick Generating Station Units 1 and 2 Final Integrated Plan Document	0
		E-1	Loss of all AC Power (Station Blackout)	55
		E-10/20	Loss of Offsite Power	57
EP-AA-110-201		On-Shift Dose Assessment	6	
EP-AA-112-400-F-10	Security Coordinator (EOF) Checklist	H		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		EP-AA-124-F-03	FLEX Communications Equipment Testing and Inventorying of the Site and Site-Specific EOF Fixed and Portable Satellite Systems	C
		IC-11-00339	Calibration and Testing of Guided Wave Radar Spent Fuel Pool Level Instruments	1
		M-097-009	Limerick Generating Station Cask Pit Gate Removal, Installation, Maintenance and Movement of Fuel Pool Gates Between Storage/Repair Locations	24
		MA-LG-716-026-1001	Additional Guidance for In-Plant/Yard Storage and Housekeeping at Limerick	22
		NF-LG-310-2000	Spent Nuclear Material and Core Component Movement	17
		ON-125	Loss of Fuel Pool Cooling	16
		OP-LG-102-102-1001	Augmented Operator Field Rounds	10
		OP-LG-115-1004	Transfer of Fuel To/From the FLEX Building Storage Tank (00-T527)	1
		OU-LG-104	Shutdown Safety Management Program	16
		PSTG-T-103-SCC	Exelon Nuclear Limerick Generating Station Plant Specific Technical Guideline Secondary Containment Control	20
		S15.3A	Inflation of Reactor Well, Fuel Pool Gate, Fuel Pool Stop Log #15, Cask Handling Pit Gate and Steam Dryer and Separator Stop Log Seals	31
		S20.10.B	Ordering and Accepting Delivery of Fuel Oil	31
		S53.0A	Normal Makeup/Response to Low Level in Fuel Storage Pool or Reactor Well	28
		T-300 Appendix 1	Godwin HL 130M Flex Pump Operation Hard Card	2
		T-301 U1	RPV Injection from Spray Pond	5
		T-301 U2	RPV Injection from Spray Pond	6
		T-322 U1	SFP Makeup and Spray from Spray Pond	3
		T-322 U2	SFP Makeup and Spray from Spray Pond	5
		T-346	Refuel Floor Alignment for SFP Makeup Spray and Ventilation	3
		T-364	Communication Systems Alternate Power	1
		T-365	SFP Level Instrumentation Backup Power	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		T-370 U1	Primary and Alternate Instrumentation During ELAP	2
		T-370 U2	Primary and Alternate Instrumentation During ELAP	3
		TSG-1.3	FLEX Event Resource Management Guidelines	1
	Work Orders	04840087	FLEX Generator Fuel Oil Tank Heater Not Controlling Properly	0
		04920434	Perform Maintenance on Portable Diesel Pump	0