



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 14, 2018

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

SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION – WITHDRAWAL OF ORDER EA-12-049, “ORDER MODIFYING LICENSES WITH REGARD TO REQUIREMENTS FOR MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS” (EPID NO. L-2018-JLD-0007)

Dear Mr. Hanson:

By letter dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12054A735), the U.S. Nuclear Regulatory Commission (NRC, the Commission) issued Order EA-12-049 to Exelon Generation Company, LLC (Exelon, the licensee). This order requires certain actions at Oyster Creek Nuclear Generating Station (Oyster Creek) associated with the Fukushima Near-Term Task Force recommendations. Specifically, Order EA-12-049 directed all power reactor licensees, and holders of construction permits in active or deferred status, to develop and implement strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event (BDBEE).

Section IV of Order EA-12-049 (the Order) required that Exelon submit to the Commission for review an overall integrated plan by February 28, 2013, describing how Oyster Creek will achieve compliance with the requirements of the Order. The licensee responded to the Order by letter dated February 28, 2013 (ADAMS Accession No. ML13060A126). By letter dated December 6, 2016 (ADAMS Accession No. ML16342C392), the licensee notified the NRC that full compliance with the Order had been achieved at Oyster Creek. The NRC staff issued a safety evaluation describing its review of the Oyster Creek order compliance plan on April 19, 2017 (ADAMS Accession No. ML17086A492), and documented a compliance inspection at the Oyster Creek site by letter dated November 30, 2017 (ADAMS Accession No. ML17334A756).

Section IV of the Order also stipulates that the NRC’s Director of the Office of Nuclear Reactor Regulation may, in writing, relax or rescind any of the conditions of the Order upon demonstration by the licensee of good cause.

By letter dated January 7, 2011 (ADAMS Accession No. ML110070507), Exelon submitted to the NRC a certification of permanent cessation of operations for Oyster Creek in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.82(a)(1)(i). In this letter, Exelon provided notification to the NRC of its intent to permanently cease operations at Oyster Creek no later than December 31, 2019. By letter dated February 14, 2018 (ADAMS Accession No. ML18045A084), Exelon revised its estimate for permanent cessation of operations to no later than October 31, 2018. By letter dated September 25, 2018 (ADAMS Accession

No. ML18268A258), Exelon certified to the NRC that it had permanently ceased operations at Oyster Creek on September 17, 2018. In this letter, the licensee also provided notification to the NRC under 10 CFR 50.82(a)(1)(ii) that, as of September 25, 2018, all fuel has been permanently removed from the Oyster Creek reactor vessel and placed in the SFP. Exelon stated that spent fuel was being stored in the SFP and the independent spent fuel storage installation. Further, Exelon confirmed its understanding that, under 10 CFR 50.82(a)(2), the Oyster Creek 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel.

By letter dated May 30, 2018 (ADAMS Accession No. ML18150A249), Exelon requested relief from the provisions of Order EA-12-049 applicable to the core cooling and containment capability safety functions, to be effective upon the docketing of the 10 CFR 50.82(a)(1)(i) and (ii) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel. In its letter dated May 30, 2018, Exelon also requested rescission of Order EA-12-049, effective at the end of a 376-day period following the permanent cessation of operations, when the decay heat load in the SFP has sufficiently decreased to a point where the order requirements for maintaining the SFP cooling safety function after a BDBEE are not necessary.

According to the licensee's letter dated May 30, 2018, the lack of fuel in the reactor vessel and the resulting absence of challenges to the primary containment render the development, implementation, and maintenance of guidance and strategies to maintain or restore core cooling and primary containment capabilities unnecessary. The NRC staff concludes that Exelon's certifications provided under 10 CFR 50.82(a)(1), combined with the regulatory prohibition of 10 CFR 50.82(a)(2) and the licensee's acknowledgement that the Oyster Creek 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel, demonstrate good cause for the withdrawal of the core cooling and containment capability safety functions requirements specified in Order EA-12-049 with respect to Oyster Creek.

By letter dated May 30, 2018, the licensee also requested the rescission of Order EA-12-049, effective 376 days after the permanent cessation of operations. This portion of the licensee's request relates to the SFP cooling safety function requirements of Order EA-12-049. In its letter, Exelon provided the following information to demonstrate good cause for the requested rescission of Order EA-12-049:

- The fuel in the Oyster Creek SFP will have had at least 376 days of radioactive decay when the requested rescission becomes effective.
- Since Oyster Creek has become a permanently shutdown and defueled facility, the safety of the fuel in the SFP has become the primary safety function for site personnel. In the event of a challenge to the safety of fuel stored in the SFP, decision-makers would not have to prioritize actions, and the focus of the facility staff would be the SFP condition.
- Contracts are in place with local fire departments to provide makeup cooling water to the SFP, upon request.

Based on the calculated decay heat level at 376 days after the permanent cessation of operations, the time to reach boiling conditions and then reduce SFP water inventory to a level 10 feet above the top of the spent fuel rack would be approximately 168 hours, or 7 days. This time would thus be available to respond to any extended loss of power impacting the normal SFP cooling system, such as what could occur following a BDBEE, prior to water level reaching a point where it may no longer maintain substantial shielding for a person standing on the SFP operating deck.

The NRC staff reviewed the licensee's statements with regard to decay heat levels, and determined through a confirmatory evaluation that the licensee's predicted fuel decay heat levels and the SFP thermal-hydraulic estimate under loss of cooling conditions were reasonable.

The NRC staff concludes that, as of 376 days after the permanent cessation of operations, given the low decay heat levels and the slow heat up rate, the reliance on the SFP water inventory for passive cooling will provide a level of protection equivalent to that which would be provided by the initial phase of the guidance and strategies for maintaining or restoring SFP cooling capabilities, which would otherwise be necessary for compliance with Order EA-12-049.

The NRC staff further concludes that the long time for boiling to reduce the SFP inventory to a point at which makeup would be necessary for radiation shielding purposes eliminates the need for the transition phase of the guidance and strategies for maintaining or restoring SFP cooling capabilities, which would otherwise be necessary for compliance with Order EA-12-049 through using onsite portable equipment. In addition, the NRC staff notes that the licensee maintains equipment necessary for compliance with the requirements of 10 CFR 50.54(hh)(2) that could be available for deployment, if needed.

Finally, the staff concludes that, as of 376 days after the permanent cessation of operations, the low decay heat and the long boil-off period of the SFP provides sufficient time for the licensee to obtain off-site resources on an ad hoc basis to sustain the SFP cooling safety function indefinitely, eliminating the need for the final phase of the guidance and strategies for maintaining or restoring SFP cooling capabilities, which would otherwise be necessary for compliance with Order EA-12-049.

Because the licensee for Oyster Creek has docketed the 10 CFR 50.82(a)(1)(i) and (ii) certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel, and has acknowledged, consistent with 10 CFR 50.82(a)(2), that the Oyster Creek 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel, the NRC staff has determined that the licensee has demonstrated good cause for the withdrawal of the Order requirements regarding core cooling and containment capability safety functions, effective immediately. Further, in light of the facts presented in the licensee's May 30, 2018, letter regarding decay heat level, as confirmed by an NRC evaluation, and offsite resource availability, the NRC staff has concluded that the licensee has demonstrated good cause for the withdrawal of the Order requirements in their entirety, effective 376 days after the permanent cessation of operations, which corresponds to September 28, 2019. The NRC staff also considered that a sequence of events such as the Fukushima Dai-ichi accident is unlikely to occur in the United States based on the current regulatory requirements and existing plant capabilities.

Based on the above, the NRC staff concludes that the licensee has demonstrated good cause for the withdrawal of Order EA-12-049. Accordingly, with respect to Oyster Creek, the NRC is withdrawing the provisions of its March 12, 2012, Order EA-12-049 regarding core cooling and containment capability, effective immediately, and is withdrawing, in its entirety, its March 12, 2012, Order EA-12-049, effective September 28, 2019. All other regulatory requirements remain applicable and are not impacted by this withdrawal.

Sincerely,

A handwritten signature in black ink, appearing to be 'Ho K. Nieh', written in a cursive style.

Ho K. Nieh, Director
Office of Nuclear Reactor Regulation

Docket No. 50-219

cc: Listserv

SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION – RELAXATION AND WITHDRAWAL OF ORDER EA-12-049, “ORDER MODIFYING LICENSES WITH REGARD TO REQUIREMENTS FOR MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS” DATED December 14, 2018

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ADAMS Accession No.: ML18176A071

***via email**

OFFICE	NRR/DLP/PBMB/PM	NRR/DLP/PBMB/LA	NRR/DLP/PBMB/SA
NAME	PBamford	SLent	EBowman
DATE	6/22/2018	6/25/2018	6/28/2018
OFFICE	NRR/DLP/PBEB/BC(A)	NRR/DLP/PBMB/BC(A)	OE
NAME	BTitus	BTitus	ABoland
DATE	9/28/2018	9/28/2018	10/2/2018
OFFICE	OGC – NLO*	NRR/DLP/D	NRR/D
NAME	RCarpenter	LLund	HNieh
DATE	10/19/2018	11/16/2018	12/14/2018

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