



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

June 21, 2019

Mr. Brian R. Sullivan
Site Vice President
Entergy Nuclear Operations, Inc.
Pilgrim Nuclear Power Station
600 Rocky Hill Road
Plymouth, MA 02360-5508

SUBJECT: PILGRIM NUCLEAR POWER 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-0169)

Dear Mr. Sullivan:

This letter documents the withdrawal of Order EA-12-049, “Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,” at Pilgrim Nuclear Power Station (Pilgrim), in accordance with the timing and technical considerations described below.

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 Entergy Nuclear Operations, Inc. (Entergy, the licensee). This order requires certain actions at Pilgrim 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 Entergy submit to the Commission for review an overall integrated plan by February 28, 2013, describing how Pilgrim will achieve compliance with the requirements of the Order. The licensee responded to the Order by letter dated February 28, 2013 (ADAMS Accession No. ML13063A063). By letter dated July 17, 2015 (ADAMS Accession No. ML15202A415), the licensee notified the NRC that full compliance with the Order had been achieved at Pilgrim. The NRC staff issued a safety evaluation describing its review of the Pilgrim order compliance plan on March 3, 2016 (ADAMS Accession No. ML16008B077), and documented a compliance inspection at the Pilgrim site by letter dated July 7, 2017 (ADAMS Accession No. ML16189A066).

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 November 10, 2015 (ADAMS Accession No. ML15328A053), Entergy submitted to the NRC a certification of permanent cessation of operations for Pilgrim in accordance with

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.82(a)(1)(i). In this letter, Entergy provided notification to the NRC of its intent to permanently cease operations at Pilgrim no later than June 1, 2019. By letter dated June 10, 2019 (ADAMS Accession No. ML19161A033), Entergy certified to the NRC that it had permanently ceased operations at Pilgrim on May 31, 2019. In this letter, the licensee also provided notification to the NRC under 10 CFR 50.82(a)(1)(ii) that, as of June 9, 2019, all fuel has been permanently removed from the Pilgrim reactor vessel and placed in the SFP. Further, Entergy confirmed its understanding that, under 10 CFR 50.82(a)(2), the Pilgrim 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 December 14, 2018 (ADAMS Accession No. ML18352A746), Entergy 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 December 14, 2018, Entergy also requested rescission of Order EA-12-049, effective at the end of a 10-month 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 December 14, 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 Entergy'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 Pilgrim 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 function requirements specified in Order EA-12-049 with respect to Pilgrim.

By letter dated December 14, 2018, the licensee also requested the rescission of Order EA-12-049, effective 10 months 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, Entergy provided the following information to demonstrate good cause for the requested rescission of Order EA-12-049:

- The fuel in the Pilgrim SFP will have had at least 10 months of radioactive decay when the requested rescission becomes effective.
- Since Pilgrim 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.

Based on the calculated decay heat level at 10 months 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 racks would be approximately 212 hours, or 8.83 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 10 months 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.

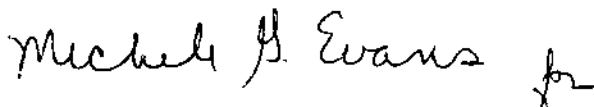
The NRC staff further concludes that the long time for boiling to reduce the SFP inventory to a point at which makeup would be necessary for radiation shielding purposes eliminates the need for the transition phase of the guidance and strategies for maintaining or restoring SFP cooling capabilities, which would otherwise be necessary for compliance with Order EA-12-049 through using onsite portable equipment.

Finally, the staff concludes that, as of 10 months 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 resources for SFP cooling, either via the equipment available for compliance with the requirements of 10 CFR 50.54(hh)(2) or, via offsite equipment deployed 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 Pilgrim 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 Pilgrim 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, considering the facts presented in the licensee's December 14, 2018, letter regarding decay heat level, as confirmed by an NRC evaluation, the NRC staff has concluded that the licensee has demonstrated good cause for the withdrawal of the Order requirements in their entirety, effective 10 months after the permanent cessation of operations, which corresponds to March 31, 2020. 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 Pilgrim, 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 March 31, 2020.

Sincerely,

A handwritten signature in black ink that reads "Michel B. Evans" followed by a small, stylized flourish or mark.

Ho K. Nieh, Director
Office of Nuclear Reactor Regulation

Docket No. 50-293

cc: Listserv

SUBJECT: PILGRIM NUCLEAR POWER 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: June 21, 2019

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ADAMS Accession No.: ML19094A632

***via email**

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DATE	3/29/2019	4/5/2019	4/26/2019
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DATE	4/29/2019	6/10/2019	6/14/2019
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NAME	RCarpenter	HNieh (MEvans for)	
DATE	6/14/2019	6/21/19	

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