



## **POLICY ISSUE**

### **(Notation Vote)**

January 15, 2021

SECY-21-0006

FOR: The Commissioners

FROM: Margaret M. Doane  
Executive Director for Operations

SUBJECT: REQUEST BY NEXTERA ENERGY DUANE ARNOLD, LLC FOR EXEMPTIONS  
FROM CERTAIN EMERGENCY PLANNING REQUIREMENTS FOR THE  
DUANE ARNOLD ENERGY CENTER

#### PURPOSE:

The purpose of this paper is to request Commission approval of NextEra Energy Duane Arnold, LLC's (NEDA) request for exemptions from certain emergency preparedness and planning (EP) requirements of Part 50, "Domestic Licensing of Production and Utilization Facilities," to Title 10 "Energy," of the *Code of Federal Regulations* (10 CFR). NEDA's proposed exemptions would scale the EP requirements placed by the U.S. Nuclear Regulatory Commission (NRC) on the licensee commensurate with the permanent cessation of operations and permanent removal of spent fuel from the reactor vessel to the spent fuel pool (SFP) at the Duane Arnold Energy Center (DAEC) site. The proposed exemptions, if approved, would eliminate the requirement for the licensee to maintain formal offsite radiological EP plans, but would still require the licensee to maintain certain onsite capabilities to communicate and coordinate with offsite response authorities. This paper does not address any new NRC commitments or resource implications.

#### BACKGROUND:

The EP requirements of Section 50.47, "Emergency plans," and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50 continue to apply to a nuclear power reactor licensee after certification of permanent cessation of operations and removal of fuel from the reactor vessel under 10 CFR 50.82(a)(1).

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The regulations in 10 CFR 50.12(a)(2)(ii) provide that the NRC may, upon request by a licensee or on its own initiative, grant exemptions from the requirements of the regulations in 10 CFR Part 50 when application of the regulation would not serve, or is not necessary to achieve, the underlying purpose of the rule.

To establish a level of EP commensurate with the risk of a radiological emergency at a decommissioning power reactor site, licensees typically request exemptions from certain EP requirements early in the decommissioning process. The NRC reviews each request on a case-by-case basis and grants exemptions only after conducting a thorough analysis of each request. Historically, given the significant reduction in radiological risk as a licensee transitions from an operating reactor site to a decommissioning site, the NRC has approved exemptions from certain EP requirements based on site-specific evaluations and the objectives of the regulations.

In the staff requirements memorandum to SECY-08-0024, "Delegation of Commission Authority to Staff to Approve or Deny Emergency Plan Changes That Represent a Decrease in Effectiveness," dated May 19, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML081400510), the Commission directed that the NRC staff request Commission approval for any reduction in effectiveness of a licensee's emergency plan that requires an exemption from the requirements of paragraph 50.47(b) and Appendix E to 10 CFR Part 50. Although the exemptions that the NRC staff proposes to grant will maintain the same level of effectiveness for the decommissioning reactor site that NRC regulations provide for operating power reactors, the NRC staff seeks Commission approval of NEDA's requested exemptions because of their regulatory significance.

#### DISCUSSION:

By letter dated January 18, 2019 (ADAMS Accession No. ML19023A196), NEDA certified to the NRC that it planned to permanently cease power operations at DAEC in the fourth quarter of 2020, in accordance with 10 CFR 50.82(a)(1)(i). By letter dated March 2, 2020 (ADAMS Accession No. ML20062E489), NEDA updated its timeline and certified to the NRC that it planned to permanently cease power operations at DAEC on October 30, 2020. By letter dated August 27, 2020 (ADAMS Accession No. ML20240A067), NEDA certified, pursuant to 10 CFR 50.82(a)(1)(i), that DAEC permanently ceased power operations on August 10, 2020.

By letter dated April 2, 2020 (ADAMS Accession No. ML20101M779), as supplemented by letter dated October 7, 2020 (ADAMS Accession No. ML20282A595), NEDA requested exemptions from specific portions of Sections 50.47 and Appendix E to 10 CFR Part 50 for the DAEC site.

By letter dated October 12, 2020 (ADAMS Accession No. ML20286A317), NEDA certified, pursuant to 10 CFR 50.82(a)(1)(ii), that all nuclear fuel has been permanently removed from the DAEC reactor vessel and placed in the SFP.

#### *Evaluation of EP Exemptions*

In evaluating NEDA's proposed exemptions, the NRC staff reviewed recent similar EP exemptions granted for decommissioning nuclear power reactors, recent SFP studies, SFP mitigation strategies, and hostile action-based event considerations, which are discussed in Enclosure 1, "Historical Perspective and NRC Staff Evaluation Considerations." The NRC staff also performed a technical evaluation of NEDA's requested exemptions using the evaluation

criteria specified in Section 5, "Evaluation of Exemptions to EP Regulations," of an Office of Nuclear Security and Incident Response (NSIR), Division of Preparedness and Response (DPR) Interim Staff Guidance (ISG) document, NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants" dated May 11, 2015 (ADAMS Accession No. ML14106A057). The outcome of this evaluation, as well as the NRC staff's evaluation of NEDA's requested exemptions against the requirements in Section 50.47, Appendix E to 10 CFR Part 50, and 10 CFR 72.32, "Emergency Plan," are detailed in Enclosure 2, "Evaluation of Request by NextEra Energy Duane Arnold, LLC for Exemptions from Certain Emergency Planning Requirements for the Duane Arnold Energy Center."

The DAEC analysis concluded, and the NRC staff confirmed, that after the spent fuel has decayed for 10 months, for beyond-design-basis events where the SFP is drained and air cooling is not possible, at least 10 hours would be available from the time spent fuel cooling is lost until the hottest fuel assembly reaches a temperature of 900°C. This 10-hour minimum threshold provides sufficient time for DAEC to take mitigative actions, or if governmental officials deem warranted, for offsite protective actions to be initiated using a comprehensive approach to emergency planning.

Per the cited analysis, NEDA requests that the approved exemptions become effective 10 months following the permanent cessation of power operations at DAEC. In the letter dated October 7, 2020, NEDA stated that given the permanent shutdown date of August 10, 2020, and the proposed fuel decay time of 10 months, the period in which the spent fuel could heat up to clad ignition temperature within 10 hours under adiabatic conditions would end on June 10, 2021.

Based on its evaluation, the NRC staff concluded that granting the requested exemptions to NEDA would provide reasonable assurance that: (1) an offsite radiological release will not exceed the limits of the U.S. Environmental Protection Agency's early phase protective action guide of one roentgen equivalent man at the site's exclusion area boundary for the remaining applicable design basis accidents (DBAs); and (2) in the highly unlikely event of a beyond-DBA resulting in a loss of all SFP cooling, there would be sufficient time to initiate appropriate SFP mitigating actions. Although not the basis for the NRC staff's proposal to approve the exemptions, if State or local governmental officials determine that offsite protective actions are warranted, then sufficient time and capability would also be available for offsite response organizations to implement these measures using a comprehensive emergency management plan or "all-hazards" approach.<sup>1</sup>

#### *Federal Emergency Management Agency Consultation*

Consistent with the December 7, 2015, "Memorandum of Understanding Between the Department of Homeland Security/Federal Emergency Management Agency and Nuclear Regulatory Commission Regarding Radiological Response, Planning and Preparedness" (ADAMS Accession No. ML15344A371), the NRC staff transmitted to FEMA, by electronic mail, a draft of this SECY paper to provide FEMA the opportunity to ask questions, obtain clarification, and comment on the paper before the Commission received it for review. The NRC staff also

<sup>1</sup> A comprehensive emergency management plan or "all-hazards" approach in this context, also referred to as an emergency operations plan, is addressed in the Federal Emergency Management Agency's (FEMA) Comprehensive Preparedness Guide 101, "Developing and Maintaining Emergency Operations Plans," Version 2.0, dated November 2010, <https://www.fema.gov/sites/default/files/2020-07/developing-maintaining-emergency-operations-plans.pdf>.

sent FEMA a letter dated October 14, 2020 (ADAMS Accession No. ML20218A355), documenting the transmittal of the draft SECY paper to FEMA via electronic mail.

In a letter dated November 5, 2020 (ADAMS Accession No. ML20311A029), FEMA provided comments on offsite radiological EP considerations, which are provided in Enclosure 1. The NRC staff considered FEMA's comments in its review of the exemption. FEMA did not object to granting the exemption and stated they will continue to support OROs as they adjust their plans, sustain capabilities, and manage resources to the changing radiological hazard.

#### CONCLUSION:

The NRC staff concludes that granting the exemption request, as justified in Enclosure 2, would provide: (1) an adequate basis for an acceptable state of EP; and (2) reasonable assurance that adequate protective measures can and will be taken in the highly unlikely event of a radiological emergency at the DAEC site.

The NRC staff has determined that pursuant to 10 CFR 50.12, "Specific exemptions," the exemptions described in Enclosure 2 are authorized by law, will not present an undue risk to the public health and safety, and will be consistent with the common defense and security, and that special circumstances are present.

#### RECOMMENDATION:

The NRC staff recommends that the Commission approve NEDA's requested exemptions from certain EP requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50.

#### COORDINATION:

The Office of the General Counsel reviewed this paper and has no legal objection. The Office of the Chief Financial Officer reviewed this paper and determined that it has no financial impact.



Signed by Doane, Margaret  
on 01/15/21

Margaret M. Doane  
Executive Director  
for Operations

#### Enclosures:

1. Historical Perspective & NRC Staff  
Evaluation Considerations
2. Evaluation of Request by NextEra Duane  
Arnold, LLC for Exemptions from Certain  
Emergency Planning Requirements for  
the Duane Arnold Energy Center

**SUBJECT:** REQUEST BY NEXTERA ENERGY DUANE ARNOLD, LLC FOR EXEMPTIONS FROM CERTAIN EMERGENCY PLANNING REQUIREMENTS FOR THE DUANE ARNOLD ENERGY CENTER DATED: January 15, 2021

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**ADAMS Accession Nos: ML20218A875 (Package); ML20218A881 (SECY Paper); ML20219A436 (Enclosure 1); ML20219A457 (Enclosure 2) \*via e-mail**

OFFICE	NSIR/DPR/RLB:BC*	NSIR/DPCP*	NRR*	REGION III*
NAME	JAnderson	SHelton	MGavrilas	REdwards
DATE	10/14/2020	11/2/2020	11/10/2020	11/3/2020
OFFICE	NMSS*	RES*	OCFO*	QTE*
NAME	PHolahan	MCase	JJohnson	CRaynor
DATE	10/15/2020	10/21/2020	12/3/2020	11/25/2020
OFFICE	OGC (NLO)*	NSIR/DPR:D*	NSIR:D*	OEDO*
NAME	HBenowitz	KBrock	MGavrilas	MDoane
DATE	12/23/2020	12/28/2020	12/30/2020	01/15/21

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