

POLICY ISSUE
NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary

FROM: Commissioner Baran

SUBJECT: SECY-21-0006: Request by NextEra Energy Duane Arnold, LLC for Exemptions From Certain Emergency Planning Requirements for the Duane Arnold Energy Center)

Approved _____ Disapproved X Abstain _____ Not Participating _____

COMMENTS: Below _____ Attached X None _____

Entered in STARS

Yes X

No _____

SIGNATURE

2/9/21

DATE

**Commissioner Baran's Comments on SECY-21-0006,
"Request by NextEra Energy Duane Arnold, LLC for Exemptions from Certain Emergency
Planning Requirements for the Duane Arnold Energy Center"**

NextEra requested exemptions from a range of NRC emergency preparedness requirements at the Duane Arnold Energy Center, which permanently shut down on August 10, 2020. These exemptions would eliminate dedicated radiological offsite emergency planning, including emergency planning zones (EPZs), 10 months after the shutdown date (on June 10, 2021). The NRC staff recommends that the exemptions be granted largely based on (1) "the very low probability of beyond-design-basis events" that could initiate a zirconium fire in the spent fuel pool and (2) the staff's conclusion that, if such an event occurred, ten hours from the loss of spent fuel pool cooling "would be sufficient time to initiate appropriate [spent fuel pool] mitigating actions" and take any necessary offsite protective actions using an all-hazards emergency plan.¹

With the benefit of FEMA's authoritative views as well as insights from numerous stakeholders shared in public comments on the power reactor decommissioning rulemaking, I conclude that the requested emergency planning exemptions should not be granted at this time.

Although the events that could trigger a zirconium fire in a spent fuel pool of a shutdown reactor are fewer and less likely to occur than accident scenarios involving an operating nuclear power plant, radiological emergency planning has never been exclusively based on the likelihood of an accident occurring. The joint NRC-EPA task force that introduced the emergency planning zone (EPZ) concept in 1978 specifically stated: "Emergency planning is not based upon quantified probabilities of incidents or accidents."² Its foundational task force report, referred to as NUREG-0396, explained that "[r]adiological emergency planning is not based upon probabilities, but on public perceptions of the problem and what could be done to protect health and safety."³ NRC and EPA understood that beyond-design-basis accidents were unlikely, but they also knew that EPZs should be in place to provide defense-in-depth because "the probability of an accident involving a significant release of radioactive material, although small, is not zero."⁴

Forty years later, stakeholders are emphasizing these same points in the specific context of decommissioning. For example, the Committee on Emergency Response Planning of the Conference of Radiation Control Program Directors (CRCPD) notes that "[a]lthough the risk is greatly reduced for a reactor during decommissioning, it does not go to zero."⁵ CRCPD argues that probabilistic risk assessment and "new risk studies should not be the sole basis for emergency planning policy with respect to spent fuel accidents."⁶ Similarly, the State of Ohio focuses on the importance of being prepared for low-probability, high-consequence events,

¹ SECY-21-0006 at 3, Enclosure 2 at 13. In the absence of an EPZ and dedicated offsite radiological emergency planning, emergency responders would be left with more generalized, all-hazards planning.

² NUREG-0396, *Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants* (1978) at I-2.

³ *Id.*

⁴ *Id.* at II-1.

⁵ Comment of CRCPD Committee on Emergency Response Planning (June 13, 2017) at 1. CRCPD's membership includes many state and local radiation professionals.

⁶ *Id.* at 1-2.

stating: “How can you not have an offsite emergency response plan? Until you can say there is no evacuation potential, then the offsite response capability is still needed.”⁷ Massachusetts, Vermont, Connecticut, and New York agree that “even if NRC Staff is correct that the probability of such an incident is ‘low,’ the consequences are so significant that the NRC cannot permit licensees to eliminate these straightforward but important emergency preparedness activities.”⁸

FEMA, states, and other key stakeholders also dispute the NRC staff’s premise that all-hazards planning alone would be adequate in responding to a spent fuel pool accident. According to FEMA, “Radiological [emergency planning] is not sufficiently addressed within the All Hazards framework – radiological [emergency planning] is unique. In a Worst-Case Scenario, our [offsite response organizations] could be challenged to effectively protect the health and safety of the public using an ad hoc [emergency planning] construct.”⁹ FEMA explains that “[a]dvanced planning – such as provided by an EPZ – reduces the complexity of the decision-making process during an incident.”¹⁰ And FEMA “stress[es] that the proven best way to ensure offsite readiness is to develop, exercise, and assess [offsite response organization] radiological capabilities, as is now done throughout the offsite EPZ.”¹¹ While a radiological emergency plan could be “scaled up” to address a more severe accident than what was planned for, FEMA notes that it is “unrealistic” to scale up “non-existent plans” and that the resulting “lack of necessary equipment, and shortage of trained emergency personnel could have unfortunate consequences.”¹² Similarly, Massachusetts, Vermont, Connecticut, and New York contend that “[b]ecause EPZs are what ensure that prompt and effective actions occur, the elimination of EPZs removes that assurance.”¹³ And CRCPD notes that “[t]here is no supporting evidence that an all-hazards plan would have the same effect” of reducing the risk of early fatalities as a dedicated radiological emergency plan would.¹⁴ In short, there is broad agreement among stakeholders responsible for offsite event response that all-hazards planning would not be as effective as dedicated radiological emergency planning in an actual radiological emergency.

An emergency response to a spent fuel pool accident based on an all-hazards plan would be even more challenging within the 10-hour timeframe assumed by the NRC staff. The staff did not consult with FEMA about whether 10 hours would be a sufficient amount of time for such an offsite response.¹⁵ According to FEMA, “NRC is believing that the ‘muscle memory’ of formal [radiological emergency planning] knowledge and skill will carry the day,” but

⁷ Comment of State of Ohio (June 13, 2017) at 1.

⁸ Comment of Vermont, Massachusetts, New York, and Connecticut (June 13, 2017) at 7.

⁹ Letter from Michael S. Casey, Director, Technological Hazards Division, FEMA to NRC (July 8, 2019).

¹⁰ *Id.*

¹¹ *Id.*

¹² Letter from Michael S. Casey, Director, Technological Hazards Division, FEMA to NRC (Aug. 24, 2019).

¹³ Comment of Vermont, Massachusetts, New York, and Connecticut (June 13, 2017) at 7.

¹⁴ Comment of CRCPD Committee on Emergency Response Planning (June 13, 2017) at 2, 4-5.

¹⁵ Letter from Jonathan M. Hoyes, Director, Technological Hazards Division, FEMA to NRC (June 13, 2017).

“[e]mergency preparedness should not be based on the efficacy of residual knowledge.”¹⁶ Several states share this concern.¹⁷

Based on these concerns, FEMA and many states recommend that NRC require dedicated radiological emergency planning, including a 10-mile EPZ, until all spent nuclear fuel at a site is removed from the spent fuel pool and placed in passive, dry cask storage.¹⁸ I support this approach, which would provide defense-in-depth to protect the public, while ensuring that FEMA will continue to play its vital role in assessing the adequacy of offsite emergency response plans at decommissioning nuclear power plants.

For these reasons, I disapprove issuance of the requested emergency planning exemptions until all spent fuel at the Duane Arnold site is transferred to dry cask storage.

¹⁶ *Id.*

¹⁷ For instance, the California Energy Commission argues that the “overly optimistic 10-hour timeline ignores the full impact of a disaster event. An event that triggers a nuclear incident has a high probability of introducing significant barriers to transportation and communication.” Comment on California Energy Commission (June 13, 2017) at 9.

¹⁸ See, e.g., Letter from Jonathan M. Hoyes, Director, Technological Hazards Division, FEMA to NRC (June 13, 2017) at 4 (“Emergency preparedness in communities near decommissioning nuclear power plants should be based on the unique nature of the radiological hazard and the capabilities required to successfully mitigate, respond to, and recover from the offsite consequences of a possible zirconium fire as long as spent fuel remains in the spent fuel pool”); Comment on New York State Energy Research and Development Authority (June 13, 2017) at 6 (“until all fuel has been removed from spent fuel pools, NRC should require licensees to maintain emergency planning and evacuation protocols”); Comment of Vermont, Massachusetts, New York, and Connecticut (June 13, 2017) at 6 (“reductions in emergency preparedness ... should await a licensee’s transition to Level 3, when spent fuel has been removed from the spent fuel pools”); California Energy Commission (June 13, 2017) at 9 (“a 10-mile EPZ must remain in place while fuel is stored in a spent fuel pool”); Comment of State of Ohio (June 13, 2017) at 1 (“Offsite radiological emergency response capabilities should not be relaxed until fuel is in dry cask storage”); Comment of Illinois Emergency Management Agency (June 13, 2017) at 2 (“adequate emergency planning is necessary as long as there is fuel stored in spent fuel pools”).