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Attached are the FEMA comments on the NRC Proposed Rule: Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning.

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FEMA

**FEMA Comments on
The NRC's Proposed Rule**

Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning

GENERAL COMMENTS: FEMA supports the proposed decommissioning levels and a risk informed, graded approach to emergency preparedness with vigorous engagement and input from the respective state and local jurisdictions.

As stated in our previous comments on the regulatory basis text in March 2017, FEMA believes radiological incidents present a unique challenge to local communities. Regardless of the nuclear power plant's operating status, public perception could pose response challenges that may contribute to serious public health and safety concerns. Under this proposed rule, the assumption is that local communities can sufficiently depend solely on their all-hazards plan to maintain reasonable assurance that those plans can be implemented to protect the health and safety of the public. This assumption presumes that the all-hazard plan already addresses radiological emergency preparedness, which may not be a valid assumption. FEMA believes that without formal dedicated offsite emergency preparedness, state and local jurisdictions will become less resilient. Preparedness plans for radiological emergency preparedness should be maintained and incorporated into the all-hazards plan.

Although FEMA recognizes the NRC's statutory authority to regulate licensees regarding the threat posed by nuclear power plants to public health and safety, state and local jurisdictions have the ultimate authority to determine the risks posed to their communities and to what level they need to prepare. The partnership built between communities during the operations of a nuclear power plant should carry forward into decommissioning to provide continued joint preparedness to maintain the health and safety of the surrounding communities.

FEMA endorses maintaining formal off-site radiological preparedness until all spent fuel is removed from the spent fuel pool (SPF) and moved into dry cask storage. FEMA stands ready to continue providing off-site evaluations and findings until the process of moving spent fuel into dry cask storage is complete.

COMMENTS:

SCOPE OF THE RULE/APPLICABILITY

The NRC proposes to add paragraph (f) to 10 C.F.R. 50.47: "(f) *The planning standards of paragraph (b) of this section do not apply to offsite radiological emergency response plans if the licensee's emergency plan is not required to meet these planning standards or if the plume exposure pathway EPZ does not exceed beyond the site boundary.*"¹ This addition appears to be beyond the scope of decommissioning and the wording seems to suggest an existing or future operating reactor may no longer be required to meet the emergency response planning standards if the licensee has an analysis that demonstrates the plume exposure pathway EPZ does not extend beyond the site boundary. We recommend deleting the addition or clarifying the scope/applicability of the paragraph.

¹ Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning, Federal Register, Federal Register / Vol. 87, No. 42 / Thursday, March 3, 2022 / Proposed Rule, page 70.

USE OF THE ENVIRONMENTAL PROTECTION AGENCY PROTECTIVE ACTION GUIDES

Throughout the proposed rule, the NRC characterizes the EPA PAGs as containing “limits” as part of the foundation and justification for why there is no need for formalized offsite radiological emergency planning and preparedness beyond 10 to 16 months at permanent defueled decommissioned sites.

FEMA believes reliance on the EPA PAG Manual in this manner is inconsistent with the stated purpose of the EPA PAGs:

“They [PAGs] are not meant to be applied as strict numeric criteria, but rather as guidelines to be considered in the context of incident specific factors. PAGs do not establish an acceptable level of risk for normal, non-emergency conditions, nor do they represent the boundary between safe and unsafe conditions”²

The U.S. Environmental Protection Agency (developed the PAG Manual to assist public officials in planning for emergency response to radiological incidents.”³ FEMA does not believe that the manual’s guidance negates the need for formal offsite radiological emergency planning and preparedness through the transition of spent fuel from the spent fuel pool into dry casks at decommissioned sites.

BEYOND DESIGN BASIS ACCIDENTS

The proposed rule states, “The only SFP [spent fuel pool] accident scenario that might lead to a release with offsite consequences exceeding the PAGs at a decommissioning reactor is a zirconium fire. The zirconium fire scenario is a postulated, but highly unlikely, beyond-design-basis accident scenario that involves a major loss of water inventory from the SFP, resulting in a significant heat up of the spent fuel, and culminating in substantial zirconium cladding oxidation, fire, and fuel damage.”⁴ However, even assuming a zirconium fire scenario is the only SFP accident that might lead to release offsite, such an accident still could easily exceed the EPA PAGs and extend far beyond the site boundary. Moreover, several NRC documents indicate that fuel in the SFP remains in the “hot” category for five years, meaning that the spent fuel has the potential to burn through the zirconium cladding containment.⁵ Such a zirconium fire in the SFP or other SFP accidents could have consequences similar those of a severe reactor accident.⁶

² EPA-400/R-17/001, PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents, January 2017, p.11.

³ Id., p. 1.

⁴ Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning, Federal Register, Federal Register / Vol. 87, No. 42 / Thursday, March 3, 2022 / Proposed Rule, page 7.

⁵ NUREG/CR-6451 defines Configuration 1 and classifies it “hot fuel in the spent fuel pool”; and SECY-00-0145 throughout and specifically on page 4 where it states, “This standard cannot be met for a postulated zirconium fire scenario since offsite doses could exceed the EPA PAGs under certain conditions if spent fuel in the SFP has less than 5 years of decay time.”

⁶ NUREG-1738, page 3-28 states, “The analysis showed that the consequences of an SFP accident could be comparable to those for a severe reactor accident.”

Nevertheless, the regulatory analysis has determined that after 10 months, in the case of a boiling water reactor (BWR), or after 16 months, in the case of a pressurized water reactor (PWR), there are at least 10 hours available to mitigate leaking SFPs before the zirconium cladding reaches ignition temperature. Under the proposed rule, formalized offsite emergency preparedness is no longer required at 10 or 16 months and any offsite response beyond that will be limited to what exists in a community's all-hazard plan. FEMA is concerned about what happens should the SFP incident mitigation fail, resulting in a zirconium fire without any formal offsite emergency planning or preparedness to address this unique hazard.

Additionally as part of the justification for the 10-hour mitigation, the Low Power Rule is cited, specifically, “[i]n the Low Power Rule (47 FR 30232; July 13, 1982), findings and determination on the state of offsite EP were not needed to support issuance of a license for fuel loading and low-power testing because there was sufficient time (at least 10 hours) in which to take action to protect the public in even the worst case accident.”⁷ However, the Low Power Rule does not account for a SFP which may contain fuel in the “hot” category in which accidents with more serious consequences could occur.

Although it may take 10 hours before the fuel can reach ignition temperature, the licensee has up to one-hour to recognize there is a problem and then another hour to notify offsite response organizations (OROs). If nothing else delays the notification (such as onsite mitigation efforts, or a simultaneous incident response requirement), OROs may only have eight hours to respond to a serious zirconium fire. To provide a credible and effective response, FEMA believes that the OROs should be fully aware of the risk and play a significant role in assessing this risk and their capabilities to mitigate the impacts. If formal offsite preparedness has not been maintained and the all-hazard plan does not address the specific preparedness capabilities for this hazard, the community may not have appropriate resources to protect the public health and safety.

ALL HAZARDS PLAN

As noted in NUREG-0396, radiological accidents present a unique challenge to local communities. Emergency preparedness in communities near decommissioning nuclear power plants should consider 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 SPF zirconium fire if spent fuel remains in the spent fuel pool.

SECTION V: FEMA RESPONSES TO NRC'S REQUEST FOR SPECIFIC COMMENTS

As part of this rulemaking, should the NRC require approval of the PSDAR, a site-specific environmental review, and hearing opportunity before a licensee undertakes any decommissioning activity?

⁷ Regulatory Improvements for Production and Utilization Facilities Transitioning to Decommissioning, Federal Register, Federal Register / Vol. 87, No. 42 / Thursday, March 3, 2022 / Proposed Rule, page 13.

Approval of the Post Shutdown Decommissioning Activities Report (PSDAR), site-specific environmental review, and hearing opportunity would be prudent prior to undertaking any decommissioning activity. This promotes transparency and equity in the process which can be confusing and overwhelming to state, local, tribal and territorial (SLTT) jurisdictions.

Other than NRC review and approval of the PSDAR, are there other activities that could help to increase transparency and public trust in the NRC regulatory framework for decommissioning?

Assistance should be provided to SLTT jurisdictions to better understand the impact of the rule to their communities. The proposed rule, regulatory analysis, draft regulatory guides, and other references are numerous and are not written for the layperson's understanding. The volume of information is overwhelming to SLTT partners who do not have dedicated resources specifically available to review the volume of materials.

Should the rule provide a role for the states or local governments in the process? What should that role be? What are the advantages or disadvantages of various roles? Please provide an explanation for your response.

State, local, tribal, and territorial jurisdictions should be provided a role in the decommissioning process. At each level, the SLTT jurisdictions should review planning and preparedness capabilities and identify what capabilities are necessary to maintain protection of public health and safety prior to moving to the next level in the process. SLTT engagement and participation throughout the decommissioning process enhances transparency, equity, and social justice ensuring that all community impacts are thoroughly identified and the whole community remains committed to the decommissioning process. The partnership built between communities during the operation of the nuclear power plant should carry forward into decommissioning to provide continued joint preparedness to maintain the health and safety of the communities.

What are the advantages and disadvantages of requiring dedicated radiological emergency planning, including a 10-mile Emergency Planning Zone until all spent nuclear fuel at a site is removed from the spent fuel pool and placed in dry cask storage?

The radiological emergency plan should be a part of the all-hazards plan, which addresses specific hazards and necessary response and recovery capabilities for each hazard and risk impacting that community. It may not be necessary to maintain planning and preparedness for a full 10-mile EPZ until spent fuel is moved from the spent fuel pool to dry cask storage, but some planning standards and capabilities of the radiological emergency preparedness plan should be maintained. Some examples of capabilities that may need to be maintained include the ability to conduct independent dose assessment, medical transportation and treatment of contaminated individuals, fire services, the ability to alert and notify the public. The level of capabilities maintained should be negotiated between the SLTT jurisdictions and the licensee.

Is there additional information the NRC should consider in evaluating whether all-hazards planning would be as effective as dedicated radiological emergency planning?

Plan effectiveness is by product of a jurisdiction's ability to implement the plan and achieve the desired outcome – the protection of the health and safety of the public. As a commercial nuclear plant enters the decommissioning process, the NRC should consider each all-hazard emergency operations plan and validate the plan against the planning standards and criteria identified in NUREG 0654 FEMA REP 1 Rev1/Rev 2 and the planning principles outlined in Comprehensive Guide, 101, Developing and Maintaining Emergency Operations Plans, September 2023 version 3. Comprehensive dedicated offsite radiological emergency preparedness is a continuous process of planning, organizing, equipping, training and taking corrective action.⁸

All-hazards planning and dedicated radiological emergency planning are not mutually incompatible. All-hazard planning does not obviate the need for an incident specific annex to address the uniqueness of a radiological hazard. Each all-hazard plan is built to address the specific threats and hazards that exist in the community. As a commercial nuclear power plant enters decommissioning, it will be necessary to address capabilities no longer managed under a dedicated radiological emergency plan in an incident specific annex to the all-hazard plan. An all-hazard plan with a radiological incident annex provides state, local, tribal, and territorial jurisdictions with the most effective radiological emergency preparedness. It is important to ensure that the SLTT jurisdictions have support in development of this annex and in maintaining the capabilities it identifies for the continuous process of planning, organizing, equipping, training and taking corrective action.

A radiological incident annex identifies and describes methods to prepare for and respond to releases that involve radiological materials that are at licensed facilities or in transport. Additionally, this annex identifies and describes the jurisdiction's specific concerns, capabilities, training, agencies, and resources to mitigate against, prepare for, respond to, and recover from radiological hazards.⁹

The NRC has determined that 10 hours would be a sufficient amount of time for an emergency response to a spent fuel pool accident based on an all-hazards plan. Is there additional information the NRC should consider in evaluating this issue?

According to the proposed rule, the licensee has 60 minutes following the declaration of an emergency to notify the offsite response organization (ORO). This will reduce the ORO's emergency response time to mitigate the impact of spent fuel pool accident. We recommend the NRC seek and consider a jurisdiction's assessment of its ability to adequately plan, prepare, and respond to a spent fuel pool accident. As each decommissioning site is different, a jurisdiction's identification of risk, vulnerability, and ability to mitigate the impact should be factored into 10 hour spent fuel pool incident analysis. Moreover, the NRC should also consider the likelihood and impact of a simultaneous incident (human made, natural or technological hazards/incidents) requiring the jurisdiction's emergency response capabilities during a spent fuel accident. It is important for the NRC to clarify that jurisdictions may not have the full 10 hours to respond to a spent fuel pool accident.

⁸ Developing and Maintaining Comprehensive Emergency Operations Plans, Comprehensive Preparedness Guide (CPG) 101, September 2021, Version 3.0, page 17, Planning is a Key Component of the National Preparedness System

⁹ Id., page 115.

FEMA contends the full spectrum of threats or initiating conditions, including, but not limited to, extreme earthquakes, aircraft crashes, nation-state threats, cyberattacks, and insider threats should inform appropriate mitigation strategies and associated response timelines. Beyond design basis accidents (BDBA) that challenge the 10-hour mitigation strategy provide a more comprehensive assessment of the ORO mitigation requirements and capabilities to protect to health and safety of the public.