



FEMA

August 24, 2019

Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

RE: Tennessee Valley Authority, Clinch River Nuclear Site Early Site Permit Application  
Hearing, Docket No. 52-047-ESP, August 14, 2019.

Dear Office of the Secretary:

Thank you for the opportunity to provide supplemental information, as well as clarifications regarding testimony at the August 14, 2019 Clinch River Nuclear Site Early Site Permit Application hearing. Pursuant to the Commission's oral instructions, the purpose of this letter is to provide a supplemental response to our July 8, 2019 correspondence concerning the Clinch River Nuclear Site (CRNS) Early Site Permit (ESP) application. *Transcript of Clinch River Nuclear Site Early Site Permit Application (August 14, 2019)* ("Tr.") 7.

FEMA continues to be concerned that the exemption methodology used in the CRNS ESP application considers the EPA PAG Manual<sup>1</sup> as the principal threshold to determine if a formal offsite emergency preparedness program or an emergency preparedness zone (EPZ) is needed. During the hearing, NRC staff stated that "The 2017 update to the PAG manual states "the size of the EPZ is based on the maximum distance at which a PAG might be exceeded." This is exactly how the NRC proposes to use the PAGs to determine EPZ sizing in a risk-informed manner." *Tr.* 95.

However, according to the EPA PAG Manual, FEMA believes this is an incorrect application of the EPA PAG. A PAG is defined as the projected dose to an individual from a release of radioactive material at which a specific protective action to reduce or avoid that dose is recommended. (*January 2017 PAG Manual at 12*). PAGs are guides to help officials select protective actions under emergency conditions and are not guides to define the need for offsite preparedness. *Id.* It is FEMA's understanding that PAGs do not establish an acceptable level of risk for normal, non-emergency conditions nor do they represent the boundary between safe and

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<sup>1</sup> EPA PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents, EPA-400/R-17/001, January 2017. Available at [https://www.epa.gov/sites/production/files/2017-01/documents/epa\\_pag\\_manual\\_final\\_revisions\\_01-11-2017\\_cover\\_disclaimer\\_8.pdf](https://www.epa.gov/sites/production/files/2017-01/documents/epa_pag_manual_final_revisions_01-11-2017_cover_disclaimer_8.pdf).

unsafe conditions. *Id.* Advanced planning – such as provided by an EPZ which extends beyond the site boundary - reduces the complexity of the decision-making process during an incident. *Id.* at 58. “The nature of PAGs is such that they cannot be used to assure that a given level of exposure to individuals in the population is prevented.” *NUREG-0396/EPA 520/1-78-016 at 4.*

Based on the NRC staff hearing presentation, FEMA believes that the NRC staff conclusion that the proposed methodology for offsite emergency preparedness maintains the same level of protection as a ten-mile EPZ is unsupported. FEMA is aware of the few examples cited by NRC staff of commercial nuclear power reactors with less than a ten-mile EPZ (i.e., 5 mile EPZ). FEMA is, however, unaware of any commercial nuclear power reactor ESP or license with only a site-boundary EPZ. Much of the analysis and discussion at the hearing was limited to the “technical” criteria contained in NUREG-0396.<sup>2</sup> However, “Radiological emergency planning is not based upon probabilities, but on public perceptions of the problem and what could be done to protect health and safety. In essence, it is a matter of prudence rather than necessity.” *NUREG-0396 at I-2.* FEMA supports a methodology for EPZ sizing that takes into account such “non-technical” criteria and further believes that a methodology that allows for a site boundary EPZ which purports to offer the same level of protection as a ten-mile EPZ is unsupported.

During the hearing, Commissioner Baran asked NRC staff, “So to be clear, as we sit here today, FEMA does not support a site boundary EPZ or a two-mile EPZ for Clinch River, is that right?” *Tr. 124-25.* In response NRC staff stated, “Based on [FEMA’s] July 8, 2019 letter, I believe that’s correct.” *Tr. 125.* While not formally asked by NRC staff as part of the ESP application process or the associated exemption process, FEMA has consistently raised concerns about a methodology that allows for a site boundary EPZ for a commercial nuclear power plant. With respect to a two-mile EPZ as part of this ESP application, FEMA provided NRC staff with the necessary findings pursuant to NRC regulations at 10 C.F.R. 52.17(b)(1), 10 C.F.R. 52.17(b)(2)(i), and 10 C.F.R. 52.18. In our January 24, 2018 letter, FEMA stated, “This finding does not, however, endorse or determine the adequacy of a proposed 2-mile PEP EPZ for the CRN Site if proposed during the licensing process.” As part of our July 8, 2019 letter, FEMA stated that when determining an EPZ size, either a site boundary or 2-mile EPZ, FEMA supported the integration of the full spectrum of threats (Insider Threat, Cyber, Nation-State National Security Emergency, Electromagnetic Pulse, etc.) and their associated impacts into the Accident Analyses and the Probabilistic Risk Analysis (PRA).

During the hearing, Commissioner Baran asked NRC staff, “Does the Staff believe that all hazards planning is just as effective in an actual radiological emergency as dedicated radiological emergency planning?” *Tr. 129.* In response, NRC staff stated in part, “If you look at FEMA’s guidance, which is called CPG 101, developing and maintaining emergency operations plans, they don’t call out radiological planning as separate. Indeed, part of this guidance addresses radiological hazards. What FEMA does in this particular guidance is suggest that if you are ever

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<sup>2</sup> NUREG 0396, Planning Basis for the Development of State and Local Government Radiological Emergency Response plans in Support of Light Water Nuclear Power Plants. Available at <https://www.nrc.gov/docs/ML0513/ML051390356.pdf>.

in a community where there's a radiological plan, you include this in your all hazards planning. So, to answer your question, I think this particular guidance would say, yes, they believe that it's all part of all hazards. And indeed, in FEMA's guidance, which is CPG 101 right here.” *Tr. 131.*

The stated NRC staff response is not an accurate representation of FEMA’s Comprehensive Preparedness Guide 101: *Developing and Maintaining Emergency Operations Plans* (CPG-101).<sup>3</sup> Left uncorrected, NRC staff’s reference to CPG-101 misrepresents how planners can and should factor for possible radiological incidents from a fixed-facility commercial nuclear power plant in their jurisdiction.

Pursuant to CPG-101, the traditional functional format of an Emergency Operations Plan (EOP) has three major sections: 1) the basic plan which provides an overview of the jurisdiction’s preparedness and response strategies; 2) the functional annexes which are individual chapters that focus on missions, and 3) the hazard-, threat-, or specific annexes which describes the policies, situation, CONOPS, and responsibilities for particular hazards, threats, or incidents. *CPG 101, p. 3-4, 3-5.* Regardless of the EOP template used, planners will likely discover that the template will need to be adjusted to meet their jurisdiction’s needs. *Id. at 3-9.* The resulting plan represents the jurisdiction’s unique hazard and threat situation. *Id. at 3-9.*

The hazard-specific procedures section of an EOP addresses the unique preparedness, response, and recovery strategies relevant to each department or agency for specific disaster types. *Id. at 3-8.* They explain the procedures that are unique to that annex for a hazard type. For example, the direction and control annex may discuss how a local law enforcement’s command post would coordinate its functions; this information would only be addressed in a hazard-, threat-, or incident-specific annex if it would be different for particular hazards, threats, or incidents. *Id. at 3-5.*

As described in CPG-101, hazard- or incident-specific annexes usually identify hazard-specific risk areas and evacuation routes, specify provisions and protocols for warning the public and disseminating emergency public information, and specify the types of protective equipment and detection devices for responders. The annexes have tabs that serve as work aids for items including maps, charts, tables, checklists, resource inventories, and summaries of critical information. *Id. at 3-18.*

More importantly, CPG-101 describes that the radiological incidents section of the annex should address the hazard-specific methods to prepare for and respond to releases that involve radiological materials that are at licensed facilities or in transport. *Id. at C-30.* The radiological incident specific annex describes/identifies the jurisdiction’s specific concerns, capabilities, training, agencies, and resources that will be used to mitigate against, prepare for, respond to,

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<sup>3</sup> Comprehensive Preparedness Guide (CPG) 101, *Developing and Maintaining Emergency Operations Plans*, Version 2.0, November 2010. Available at [https://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg\\_101\\_comprehensive\\_preparedness\\_guide\\_developing\\_and\\_maintaining\\_emergency\\_operations\\_plans\\_2010.pdf](https://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg_101_comprehensive_preparedness_guide_developing_and_maintaining_emergency_operations_plans_2010.pdf).

and recover from radiological hazards. The annex also includes a hazard analysis summary that discusses where/how radiological materials are likely to impact the jurisdiction, including incidents that occur at fixed facilities, along transportation routes, or as fallout from a nuclear weapon. *Id. at C-30*. If applicable, hazard- or incident-specific annexes address the requirements of FEMA/U.S. Nuclear Regulatory Commission NUREG-0654 and 44 C.F.R. Part 350 as it applies to the jurisdiction's planning for emergencies/disasters involving regulated nuclear power plants. *Id. at C-30*.

The NRC staff's misunderstanding of the all-hazard emergency management process involves not only concepts described in CPG-101, but also concepts described in Comprehensive Preparedness Guide 201: *Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) Guide* (CPG-201).<sup>4</sup> CPG 201 discusses the need for communities to determine what threats, both man-made and natural, pose risks to their communities. Planning for those specific risks make up an important part of building a community's all-hazard plan. The misunderstanding of this important piece of community emergency planning makes NRC staff responses for scaling emergency preparedness to a site boundary EPZ (with no specialized radiological emergency planning) unrealistic. Emergency response scaling from non-existent plans, lack of necessary equipment, and shortage of trained emergency personnel could have unfortunate consequences. Such an *ad hoc* approach does not assure that the full range of necessary actions will be taken, and it makes it much more likely that any response will be not coordinated as well as if there were REPP preparedness activities.

Related to this topic of all hazard planning, during the hearing when NRC staff was asked if the "element of defense-in-depth" with a site boundary EPZ disappears, NRC staff response was that "for site boundary EPZ case, if an offsite emergency response was needed, it would be in the context of all hazards planning." *Tr. 122*. The level of emergency response capabilities that a defense-in-depth approach provides to protect the surrounding populations may not be as robust if a State or local EOP does not take into account a jurisdiction's specific concerns, capabilities, training, agencies, and resources that will be used to mitigate against, prepare for, respond to, and recover from radiological hazards. Accordingly, FEMA supports hazard-specific procedures section of an EOP that addresses the unique preparedness, response, and recovery strategies relevant to a radiological incident.

Finally, FEMA welcomes the opportunity to be part of any lessons learned review of this and any future ESP process. NRC and FEMA staff have a long history of working collaboratively on ESPs. For example, as part of NUREG-0654/FEMA-REP-1 there is guidance for the development, review, and approval of radiological emergency information and plans submitted with an early site permit application under Subpart A of 10 C.F.R. Part 52. If there is a need to

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<sup>4</sup> Comprehensive Preparedness Guide (CPG) 201, Threat and Hazard Identification and Risk Assessment (THIRA) and Stakeholder Preparedness Review (SPR) Guide, Version 3.0, May 2018. Available at [https://www.fema.gov/media-library-data/1527613746699-fa31d9ade55988da1293192f1b18f4e3/CPG201Final20180525\\_508c.pdf](https://www.fema.gov/media-library-data/1527613746699-fa31d9ade55988da1293192f1b18f4e3/CPG201Final20180525_508c.pdf).

update or clarify any of these processes, including for advanced reactors, FEMA looks forward to engaging with NRC staff on this effort.

If you have any questions about this response, please contact Bruce C. Foreman, Policy and Doctrine Branch Chief, at 202-646-3567 or [Bruce.Foreman@fema.dhs.gov](mailto:Bruce.Foreman@fema.dhs.gov).

Sincerely,

Michael S. Casey, Ph.D.  
Director  
Technological Hazards Division

**From:** [Foreman, Bruce](#)  
**To:** [Docket, Hearing](#)  
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**Subject:** [External\_Sender] FEMA Supplemental and Clarification Letter Pursuant to the Tennessee Valley Authority, Clinch River Nuclear Site Early Site Permit Application Hearing, Docket No. 52-047-ESP, August 14, 2019.  
**Date:** Monday, August 26, 2019 11:47:13 AM  
**Attachments:** [Final NRC Commission Hearing Rebuttal Letter\\_Final\\_MSC\\_Signed.pdf](#)

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Good Afternoon,

- Thank you for the opportunity to provide supplemental information, as well as clarifications regarding testimony at the August 14, 2019 Clinch River Nuclear Site Early Site Permit Application hearing. Pursuant to the Commission's oral instructions, the purpose of the attached letter is to provide a supplemental response to our July 8, 2019 correspondence concerning the Clinch River Nuclear Site (CRNS) Early Site Permit (ESP) application.
- Request acknowledgement of receipt.

Respectfully,

Bruce

Bruce C. Foreman

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Resilience: ***"The ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruption."***

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