September 14, 2017

Jonathan Hoyes, Director
Technological Hazards Division
Federal Emergency Management Agency
(Area 8)
400 C Street, SW
Washington, DC 20024

SUBJECT: RESPONSE TO FEDERAL EMERGENCY MANAGEMENT AGENCY REVIEW OF AN EARLY SITE PERMIT APPLICATION FOR THE TENNESSEE VALLEY AUTHORITY CLINCH RIVER NUCLEAR SITE

Dear Mr. Hoyes:

The purpose of this letter is to address the offsite emergency preparedness issues identified in your letters dated June 12, 2017, and August 11, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML17164A206 and ML17228A177, respectively). Your June 12, 2017, letter, which was supplemented by your August 11, 2017, letter, provided the Federal Emergency Management Agency's (FEMA's) response to the Nuclear Regulatory Commission's (NRC) letter dated February 13, 2017 (ADAMS Accession No. ML17040A318), which requested FEMA's review of the Tennessee Valley Authority (TVA) Clinch River Nuclear (CRN) Early Site Permit Application (ESPA).

In our February 13, 2017, letter, we requested the following determinations associated with FEMA's review of the CRN ESPA, which specifically relate to the ESP requirements in Title 10 to the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants" (cited below):

(1) Whether there is a significant impediment to the development of offsite emergency plans for the 2-mile plume exposure pathway emergency planning zone (EPZ) for Emergency Plan 5B (see 10 CFR 52.17(b)(1) and 10 CFR 52.18); and

(2) Whether the proposed major features of the emergency plan, specifically related to the exact size and configuration of the 2-mile plume exposure pathway EPZ for Emergency Plan 5B, are acceptable (see 10 CFR 52.17(b)(2)(i) and 10 CFR 52.18).

In our review of your June 12, 2017, letter, we identified nine specific offsite emergency preparedness issues FEMA has raised. Some of these issues were further clarified in your August 11, 2017, letter. Enclosure 1, "Offsite Emergency Preparedness Issues," provides our assessment of each of these issues, including our proposed path forward for their resolution, consistent with the scope of FEMA's review of ESPAs, as defined in Section V.A.5 of the "Memorandum of Understanding Between the Department of Homeland Security/Federal Emergency Management Agency and Nuclear Regulatory Commission Regarding Radiological Emergency Response, Planning, and Preparedness" (ADAMS Accession No. ML15344A371).

In addition to the two FEMA determinations we requested in our February 13, 2017, letter (identified above), your June 12, 2017, letter identified a third determination concerning the sufficiency of TVA's description of contacts and arrangements made with Federal, State, and local government agencies. As a clarification, 10 CFR 52.17(b)(4) does not require a FEMA determination regarding the adequacy of such contacts and arrangements. The discussion of that issue in our letter was only intended to inform FEMA that TVA had identified three letters they received from offsite agencies. As addressed in Issue 7 of Enclosure 1, in TVA's letter dated June 15, 2017 (ADAMS Accession No. ML17166A455), a copy of these letters, including any additional letters or other documentation of arrangements from local/offsite support organizations, was provided to the NRC, and subsequently forwarded to FEMA in a June 21, 2017, email.

Our responses to your issues provide clarification and a sufficient basis for FEMA to revise (as appropriate) its initial determination regarding the size and configuration of the 2-mile plume exposure pathway EPZ for Emergency Plan 5B. We request that you provide this remaining determination by October 15, 2017.

Enclosure 1 also addresses NRC regulatory authorities, which were discussed at the January 10-11, 2017, leadership meeting between the NRC and FEMA. We are providing this information to eliminate any potential misunderstandings between our agencies. While we believe our authorities are clear, we value the views of FEMA on matters related to emergency planning. The NRC will consider FEMA's perspectives in our reviews of the CRN ESPA and accompanying TVA requests for emergency planning exemptions.

Please direct any questions pertaining to this letter, or to the TVA CRN Site ESPA review, to either me at (301) 287-3779, or Joseph Anderson at (301) 287-9300.

Sincerely,

/RA/

Michael Scott, Director
Division of Preparedness and Response
Office of Nuclear Security and Incident Response

Enclosure:
Offsite Emergency Preparedness Issues

cc: Kathleen Fox, FEMA Acting Deputy Administrator
for Protection and National Preparedness
Katherine Fox, FEMA Acting Assistant Administrator
for National Preparedness
Timothy Greten, FEMA Deputy Director
for Technological Hazards Division
Vanessa Quinn, FEMA Radiological Emergency
Preparedness Program Branch Chief
Harry Sherwood, FEMA Professional Services Branch Chief

SUBJECT: Response to Federal Emergency Management Agency Review of an Early Site Permit Application for the Tennessee Valley Authority Clinch River Nuclear Site

DATED: 09/14/17

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ADAMS Accession No.: ML17192A105

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Offsite Emergency Preparedness Issues

General Issue: NRC Regulatory Authorities

Recent discussions between NRC and FEMA have indicated the potential for differing views on the NRC's regulatory authorities regarding some aspects of emergency planning. The discussion that follows is intended to support a common understanding of these authorities.

As an independent agency, the NRC's regulatory authority is established by certain enabling statutes. NRC authority to regulate the use of radioactive materials is set forth in the Atomic Energy Act of 1954, as amended, 42 U.S.C. §§ 2011-2297h (2012) (AEA) and Title II of the Energy Reorganization Act of 1974, as amended, 42 U.S.C. §§ 5801-5891 (2012) (ERA). Both the AEA and ERA confer broad regulatory powers to the Commission and specifically authorize it to promulgate regulations it deems necessary to fulfill its responsibilities under those statutes. Section 161b. of the AEA, 42 U.S.C. § 2201(b), authorizes the Commission to establish by rule, regulation, or order, such standards and instructions to govern the possession and use of special nuclear material, source material, and byproduct material as the Commission may deem necessary or desirable to promote the common defense and security or to protect health or to minimize danger to life or property. Under § 161i. of the AEA, which applies to nuclear power plant regulation, the Commission may "prescribe such regulations or orders as it may deem necessary... to protect health and to minimize danger to life or property..." 42 U.S.C. § 2201(i).[1]

Ultimately, the Commission has the singular authority under the AEA for making licensing decisions regarding the overall adequacy of emergency preparedness for a nuclear power plant site. Section 109 of the NRC Authorization Act for Fiscal Year 1980 (Pub.L. No. 96-295, 94 Stat. 780) stipulates that the NRC may issue an operating license for a utilization facility (e.g., a nuclear power plant) only if the Commission determines that there exists a State or local emergency preparedness plan that provides for responding to accidents at the facility and complies with the Commission's guidelines for such plans. The NRC typically makes its determination in consultation with FEMA. However, Congress has also granted the Commission the authority to issue an operating license even in the absence of a State or local emergency preparedness plan that has been approved by FEMA (NRC Authorization Act for Fiscal Years 1982 and 1983, Pub.L. No. 97-415, 96 Stat. 2067; NRC Authorization Act for Fiscal Years 1984 and 1985, Pub.L. No. 98-553, 98 Stat. 2825).[2]

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[1] Federal courts, including the United States Supreme Court, have recognized in a number of cases the NRC's authority for protecting the public health and safety. The Supreme Court has stated that the AEA "clearly contemplates that the Commission shall by regulation set forth what the public safety requires as a prerequisite to the issuance of any license or permit under the Act." *Power Reactor Development Co. v. International Union of Electrical Radio Machine Workers AFL-CIO*, 367 U.S. 396, 404 (1961). In particular, section § 161 of the AEA confers uniquely broad and flexible authority on the Commission. *Siegel v. AEC*, 400 F.2d 779, 783 (D.C. Cir. 1968). See also *Connecticut Light and Power Co. v. NRC*, 673 F.2d 525, 527, n.3 (D.C. Cir. 1982). The Supreme Court has also described the Federal and State regulation of nuclear power generation under the AEA: "[T]he federal government maintains complete control of the safety and 'nuclear' aspects of energy generation; the states exercise their traditional authority over the need for additional generating capacity, the type of generating facilities to be licensed, land use, ratemaking, and the like." *Pac. Gas & Elec. Co. v. State Energy Res. Conservation & Dev. Comm'n*, 461 U.S. 190, 212 (1983).

[2] The courts have upheld this authority: "The substantive area in which an agency is deemed to be expert is determined by statute; here, under the relevant congressional enactments [citing the AEA, the 1980 Authorization Act, the 1982-83 Authorization Act, and the 1984-85 Authorization Act], the NRC is specifically authorized and directed to determine whether emergency plans adequately protect the public. *See Duke Power Co. v. United States Nuclear Regulatory Commission*, 770 F.2d 386, 390 (4th Cir.1985)." *Massachusetts v. United States*, 856 F.2d 378,

Through the authority conferred by the AEA, the NRC promulgates regulations on emergency preparedness and planning. These regulations are codified in Title 10, "Energy," of the *Code of Federal Regulations* (CFR), Part 50, "Domestic Licensing of Production and Utilization Facilities." Specifically, 10 CFR 50.47 contains the standards that the onsite and offsite emergency response plans for nuclear power reactors must meet. The regulations in 10 CFR 50.47 and 10 CFR 50.54 also prescribe how the NRC will make licensing decisions or take appropriate enforcement actions by utilizing findings of reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency to protect the health and safety of the public. The FEMA role in emergency planning for nuclear power plants is recognized in the NRC regulations cited above, FEMA regulations at 44 CFR Part 350, and a memorandum of understanding between the two agencies, first established in 1980 and last updated in 2015.

Issue 1 (FEMA Initial Concern No. 1) – Offsite-Related Emergency Preparedness Exemptions

FEMA Comment (June 12, 2017, letter): *Specific offsite-related emergency preparedness exemptions from 10 CFR Part 50 that will be, or are being, considered need to be identified.*

NRC Response: In Early Site Permit Application (ESPA) Part 6, "Exemptions and Departures," Tennessee Valley Authority (TVA) requested exemptions from various emergency planning requirements that apply to specific provisions of onsite and offsite emergency planning. Tables 1-1, 1-2, and 1-3 of Part 6 identify specific portions of 10 CFR 50.33(g), 10 CFR 50.47, and Appendix E to 10 CFR Part 50, from which TVA is requesting exemptions for each of the emergency plans (i.e., ESPA Part 5A (Emergency Plan 5A) and ESPA Part 5B (Emergency Plan 5B)), as appropriate. The selected plume exposure pathway (PEP) emergency planning zone (EPZ) size of either the site boundary or 2-mile (for Emergency Plan 5A or 5B, respectively) will be affected by the small modular reactor (SMR) technology selected by TVA at the combined license application (COLA) stage.

Pursuant to 10 CFR 52.7, "Specific Exemptions," which is governed by 10 CFR 50.12, "Specific Exemptions," TVA requested exemptions from the following for the Clinch River Nuclear (CRN) Site ESPA:

- Certain standards in 10 CFR 50.47(b) regarding onsite and offsite emergency response plans for nuclear power reactors;

- Certain requirements of 10 CFR 50.33(g) and 10 CFR 50.47(c)(2) to establish PEP and ingestion exposure pathway EPZs for nuclear power plants; and

- Certain requirements of 10 CFR Part 50, Appendix E, which establish the elements that make up the content of emergency plans.

TVA stated that the requested exemptions allow for the development and implementation of emergency plans that are commensurate with the significantly reduced risk associated with SMR technology. Specifically, it may be that some of the current requirements in Part 50 are not necessary to protect the health and safety of the public in the vicinity of an SMR facility due to

382 (1st Cir. 1988). *See also Massachusetts v. NRC*, 878 F.2d 1516, 1524 (1st Cir. 1989); *State of Ohio ex rel. Celebrezze v. NRC*, 868 F.2d 810, 815-16 (6th Cir. 1989); *Rockland County v. NRC*, 709 F.2d 766, 770 (2nd Cir. 1983).

the decreased potential consequences associated with such a facility. The requested exemptions would require the SMR design selected for a future COLA to meet the established criteria at the selected EPZ boundary. The criteria are consistent with, and based upon, the U.S. Environmental Protection Agency (EPA) Protective Action Guide (PAG) dose criteria for early phase protective actions in the unlikely event of a severe radiological accident.

Issuance of an ESP approving reduced EPZs would also require Commission approval of exemptions. Please see Issue 6 for a further discussion on the evaluation of an exemption to the 10-mile and 50-mile EPZs, as defined in 44 CFR 350.7(b) and 10 CFR 50.47(c)(2).

Issue 2 (FEMA Initial Concern No. 2) – Alert and Notification System

FEMA Comment (June 12, 2017, letter): *Emergency Plan 5B does not identify or describe the Alert and Notification System (ANS) in sufficient detail to identify a possible impediment.*

NRC Response: Pursuant to 10 CFR 52.17(b)(2)(i), the ESPA proposes *major features of the emergency plans*[3] for Emergency Plan 5B, which includes a 2-mile PEP EPZ. In 2007, the NRC amended 10 CFR Parts 50 and 52 (see 72 FR 49517, August 28, 2007), to redefine major features of the emergency plans, which were previously defined in NUREG-0654, Supplement 2, "Criteria for Emergency Planning in an Early Site Permit Application – Draft Report for Comment," published in April 1996. Specifically, Section V, "Planning Standards and Evaluation Criteria for Major Features of the Emergency Plan," of Supplement 2 defined major features of the emergency plans as a reduced and revised version of the NUREG-0654 planning standards and evaluation criteria. These planning standards and evaluation criteria were expanded in the 2007 Rule to allow flexibility for an ESP applicant to describe various features of the emergency plans that are less than the full requirements associated with a complete and integrated emergency plan, including the associated NUREG-0654 planning standards and evaluation criteria. As such, the absence of a description of the ANS in the ESPA is permissible, and would need to be addressed by TVA in a future COLA (pursuant to 10 CFR 52.79(a)(21)) if the chosen reactor technology for the CRN Site required the adoption of Emergency Plan 5B.

Finally, the absence of a description of the ANS at the ESPA stage is not relevant to the requirement in 10 CFR 52.17(b)(1) for TVA to identify physical characteristics of the proposed CRN Site that could pose a significant impediment to the development of emergency plans. The significant impediment determination is associated with the current physical characteristics of the CRN Site, and does not apply to a future description of the ANS that might reflect technologies that are available at the COLA stage. The description of the ANS at the COLA stage can be addressed through the inclusion of a COL action item in the ESP, if needed.

Issue 3 (FEMA Initial Concern No. 3) – Oak Ridge National Lab & Y-12

FEMA Comment (June 12, 2017, letter): *Emergency Plan 5B does not identify the possible impediment of simultaneous evacuation of Oak Ridge National Laboratory (ORNL) or Y-12 National Security Complex (Y-12) to the south in the direction of CRN, as required in 10 CFR 52.17(b)(1).*

[3] As defined in 10 CFR 52.1, the phrase "major feature of the emergency plans" means an aspect of those plans necessary to (i) address in whole or part one or more of the 16 standards in 10 CFR 50.47(b); or (ii) describe the emergency planning zones as required in 10 CFR 50.33(g).

NRC Response: The Evacuation Time Estimate (ETE) Report is included as part of the emergency plan in ESPA Part 5B (i.e., Emergency Plan 5B), and provides evacuation time estimates for evacuation of an approximately 2-mile PEP EPZ surrounding the CRN Site. The 2-mile PEP EPZ is consistent with the exemptions requested by TVA in ESPA Part 6 ("Exemptions and Departures"), and the ETE analyses were conducted by TVA in accordance with the applicable NRC guidance provided in NUREG/CR-7002.[4] The staff determined that the ORNL (located at 1 Bethel Valley Road, Oak Ridge, TN) and Y-12 (located at 602 Scarboro Road, Oak Ridge, TN) are both located greater than two miles from the CRN Site and, therefore, are outside the scope of the ESPA ETE. As such, the consideration of a simultaneous evacuation of ORNL and Y-12, including a determination as to whether such an evacuation would pose a significant impediment to the development of an emergency plan for the 2-mile PEP EPZ, is not relevant to the ESPA review.

Further, consistent with NRC guidance in NUREG/CR-7002, the applicant considered the occurrence of a shadow evacuation[5] in areas outside of the 2-mile EPZ for all cases extending to 15 miles from the CRN Site (see ETE Report Section 2.5.2, "Shadow Evacuation," and Figure 2.4, "Population Estimates for the Shadow Evacuation Area"). Consistent with this NRC guidance, shadow evacuations are associated with the permanent resident population within the affected area, rather than facilities such as ORNL and Y-12. The NRC staff is currently evaluating the entire ETE Report, and the results of that review will be included in the NRC's safety evaluation report associated with the ESPA.

Issue 4 (FEMA Initial Concern No. 4) – Ingestion Pathway Zone (EPZ)

FEMA Comment (June 12, 2017, letter): *Emergency Plan 5B does not identify the ingestion pathway zone (see 10 CFR 50.47), as required in 10 CFR 52.17(b)(2)(I). A vital component of FEMA's Radiological Emergency Preparedness (REP) Program mission to ensure that state and local capabilities exist to adequately protect agricultural, livestock and environmental resources within the Ingestion Pathway Zone (IPZ). In order for the REP Program to adequately support the communities surrounding the CRN Site utilizing the National Preparedness System (NPS) doctrine and the Threat Hazard Identification and Risk Assessment process, FEMA needs to initially understand what areas will encompass the CRN IPZ.*

NRC Response: ESPA Site Safety Analysis Report (SSAR) (ESPA Part 2) states in Section 13.3.3.2, "Ingestion Exposure Pathway," that the ingestion exposure pathway EPZ for the CRN Site will be described in a future COLA. As addressed above in Issue 2, proposed major features of the emergency plans (under 10 CFR 52.17(b)(2)(i)) may include a limited description of the applicant-selected elements of the emergency plans, in order to get early pre-approval and finality of those elements at the ESPA stage. The NRC would then review the elements of a complete and integrated emergency plan that are not addressed in the ESPA – including a description of the ingestion pathway EPZ for the CRN Site – as part of the COLA (pursuant to 10 CFR 52.79(a)(21)) if required, based on factors such as the chosen reactor technology and whether the applicant's requests have been approved.

[4] NUREG/CR-7002 (SAND2010-0016P), "Criteria for Development of Evacuation Time Estimate Studies," November 2011 (ADAMS Accession No. ML113010515).

[5] A "shadow evacuation" occurs when people outside of any officially declared evacuation zone evacuate without having been instructed to do so (see NUREG/CR-7002, Section 2.5.2).

Issue 5 (FEMA Initial Concern No. 5) – Contacts and Agreements

FEMA Comment (June 12, 2017, letter): *As written, FEMA questions whether there is sufficient detail in Emergency Plan 5B to determine the contacts and agreements made with Federal, State, and local government agencies, as required in 10 CFR 52.17(4).*

NRC Response: See Issue 7 below.

Issue 6 – Small Modular Reactor (SMR) accident analysis vs. EPA PAG

FEMA Comment (June 12, 2017, letter): *Without the NRC's complete accident analysis and the resulting projected radiological releases offsite, compared against the current Environmental Protection Agency Protective Action Guides, it is premature for FEMA to determine the adequacy of a 2-mile EPZ. Therefore, FEMA cannot make a determination whether the proposed major features of Emergency Plan 5B, specifically related to the exact size and configuration of the 2-mile plume EPZ, is acceptable. With the currently provided information, FEMA will not support an exemption to the 10 and 50 mile EPZs as defined in 44 C.F.R. §350.7(b) and 10 C.F.R. §50.47(c)(2).*

FEMA Comment (August 11, 2017): *FEMA cannot support any determination that a 2-mile EPZ is adequate for the Clinch River Nuclear Site at this time. Without the NRC's complete accident analysis and the resulting projected radiological releases offsite, compared against the current Environmental Protection Agency Protective Action Guides, it is premature for FEMA to determine the adequacy of a 2-mile EPZ. Therefore, FEMA cannot determine whether the proposed major features of the emergency plan (Emergency Plan 5B), specifically related to the exact size and configuration of the 2-mile plume exposure pathway emergency planning zone, is acceptable.*

NRC Response: The NRC has licensed light water reactors (LWRs) with relatively low power (e.g., Big Rock Point and La Crosse) and a high-temperature gas-cooled reactor (i.e., Fort St. Vrain), each with a plume exposure pathway EPZ size that was smaller than those for large LWRs. The plume exposure pathway EPZs for Fort St. Vrain, Big Rock Point, and La Crosse were each established at 5 miles (8 km). The NRC staff will utilize a similar approach where the acceptability of the PEP EPZ would be based on the NRC's review of the analyses submitted by TVA, and the Commission's decisions on exemption requests (as discussed in Issue 1 above) that reflect the U.S. EPA PAG dose criteria for early phase protective actions. The NRC has not requested FEMA's approval of the 2-mile radius for the PEP EPZ. Rather, NRC requests FEMA's determination that the exact size and configuration of the 2-mile PEP EPZ for Emergency Plan 5B was established relative to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries, in accordance with Section I.3 of Appendix E to 10 CFR Part 50. Therefore, NRC seeks a FEMA determination whether the boundary established for the proposed 2-mile PEP EPZ, as described in Emergency Plan 5B and the ETE Report, adequately addresses these criteria. This is a companion determination to the determination that FEMA has already made regarding "significant impediments" associated with the proposed 2-mile EPZ, as discussed below in Issue 8.

TVA must provide to the NRC a well-justified basis for any proposed EPZ sizes that differ from the 10-mile and 50-mile EPZs, consistent with the potential offsite consequence profile of the facility. At the ESPA stage, an applicant is not required to specify a specific design, but rather may use a plant parameter envelope (PPE), which is intended to bound an actual design

chosen at the COLA stage. When the NRC has completed its assessment of TVA's accident analyses for the PPE supporting the ESPA, we will provide our findings to FEMA for awareness, including those associated with the adequacy of the site boundary PEP EPZ and 2-mile PEP EPZ to support an SMR design within the bounding parameters that TVA has identified in the ESPA. (The ingestion exposure pathway EPZ is addressed above in Issue 4). Issuance of an ESP approving reduced EPZs would also require Commission approval of exemptions as discussed in Issue 1 above.

At the COLA stage, when the applicant has chosen a specific reactor technology (i.e., SMR) for the CRN Site – associated with either the site boundary PEP EPZ or 2-mile PEP EPZ – the NRC will review TVA's accident analyses for the design chosen, and will confirm that the resulting projected radiological releases offsite fall within the applicable EPA PAG accident consequence criteria. As addressed in 10 CFR 52.39, "Finality of early site permit determinations," the major features found acceptable by the NRC at the ESPA stage will, if referenced in the COLA, be considered resolved if the plant design selected is within the PPE analyzed at the ESP stage. At this stage NRC seeks FEMA's determination that the boundaries and configuration of the EPZ were established relative to specific local demography, topography, land characteristics, access routes, and jurisdictional boundaries, as discussed above.

In summary, the NRC will make a decision on the proposed EPZ consistent with the existing regulatory construct. For this ESPA, this determination will require a Commission decision on the applicant's proposed exemptions. As the NRC's review of the ESPA and proposed exemptions proceeds, the NRC values and seeks the views of FEMA on the subject.

Issue 7 – Contacts and Arrangements with Offsite Agencies

FEMA Comment (June 12, 2017, letter): *[I]n Part 2 of the early site permit application Section 13.3, "Emergency Preparedness," TVA identified three letters from the Tennessee Emergency Management Agency, Anderson County, and Roane County. FEMA has not been provided with these letters, therefore, FEMA cannot sufficiently determine if there are the required contacts and agreements being made with Federal, state, and local government agencies.*

FEMA Comment (August 11, 2017, letter): *However, based on recent discussions with TEMA, FEMA also notes many of these letters identified were submitted in 2015, and may not necessarily reflect ORO concerns with the current Clinch River Nuclear Site ESPA proposal.*

NRC Response: Pursuant to 10 CFR 52.17(b)(4), TVA is required to include in the ESPA a description of contacts and arrangements made with Federal, State, and local governmental agencies with emergency planning responsibilities, including any certifications that have been obtained. In past new reactor licensing reviews (i.e., ESPAs and COLAs), we have required such descriptions of contacts and arrangements that address affected offsite agencies and local organizations that have established (or will establish in the future) arrangements to provide emergency support to the proposed new reactor(s). Such support can be shown in certifications, letters of agreement, correspondence, or by identification of legal authority associated with an organization's obligation to respond to emergencies within its jurisdiction. Section V.B.1 of the FEMA-NRC Memorandum of Understanding (MOU) states that the NRC has the following responsibility:

> To assess licensee emergency plans for adequacy. This review will include organizations with which licensees have written agreements to provide onsite support services under emergency conditions.

In the CRN Site ESPA, TVA addressed its interfaces with State, county, and local agencies and emergency response organizations in SSAR Section 13.3.5, "Contacts and Agreements." TVA stated that it will maintain arrangements with various offsite support organizations, and that required certification letters and letters of agreement will be obtained by TVA in the future, and included in the COLA. In addition, in SSAR Section 13.3.6, "References," TVA identified letters from Tennessee Emergency Management Agency (TEMA), Anderson County, and Roane County, but did not include those letters in its application. Finally, TVA described several contacts with State and local authorities in Section 5.3, "State and Local Review," of the ETE Report, which are included as part of Emergency Plan 5B.

In an email dated May 25, 2017, the NRC provided TVA with RAI-1-8761 (ADAMS Accession No. ML17145A584), which requested the three letters referenced in SSAR Section 13.3.6 (identified above), and the existing agreement with the Department of Energy (DOE) Radiation Emergency Assistance Center/Training Site (REAC/TS) in Oak Ridge, TN (referenced in SSAR Section 13.3.5). In addition, for each of the local/offsite support organizations referred to in SSAR Section 13.3.5, the NRC requested a letter of agreement, certification, or other documentation of arrangements that describes their acknowledgement of their expanded support for the CRN Site.

In its June 15, 2017, response to RAI-1-8761 (ADAMS Accession No. ML17166A455), TVA provided copies of letters from TEMA, Anderson County, Roane County, and the City of Oak Ridge. In addition, TVA provided a copy of the existing letter of agreement with the DOE REAC/TS in Oak Ridge, TN. With regard to contacts and arrangements made with local, State, and Federal agencies with emergency planning responsibilities, TVA further stated the following, in part:

> TVA has held several productive discussions with these organizations and has received broad support from them, as indicated in the letters of support… Additionally, the letters express the organization's plans to actively participate in all emergency planning and radiological emergency preparedness exercises and evaluations.
>
> The nature and extent of emergency planning support required from organizations referenced in SSAR Section 13.3.5 is not finalized because the ESPA proposes two distinct emergency plans requiring significantly different levels of emergency planning support. Therefore, TVA plans to obtain and provide the certification letters and letters of agreements from local/offsite support organizations at the COLA stage.

Such ESPA commitments to address various aspects of emergency planning at the COLA stage are typically identified by the NRC in the associated safety evaluation report, and included as "COL action items" in the early site permit (ESP), if issued. At the COLA stage, the NRC's review will confirm that the applicant has adequately addressed all COL action items.

While a number of the letters of agreement provided by OROs are dated in calendar year 2015, these letters are considered timely, based on TVA's submission of the ESPA to the NRC on May 12, 2016. Pursuant to 10 CFR 52.79(a)(22)(i), at the COLA stage, along with complete and

integrated emergency plans, TVA must make a good faith effort to obtain from the same governmental agencies, certifications that: (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations, and (3) that these agencies are committed to executing their responsibilities under the plans in the event of an emergency.

Finally, while the NRC has the primary responsibility to determine the adequacy of offsite support and agreements with offsite organizations that provide onsite support services under emergency conditions pursuant to 10 CFR 52.17(b)(4), and in accordance with the FEMA-NRC MOU, described above, NRC will consider any comments or concerns FEMA may identify regarding such support agreements.

Issue 8 – Evacuation Time Estimate (ETE) Report

FEMA's June 12, 2017, letter stated that "*[B]ased on our thorough review of the CRN Site ESP Application Part 5B, Evacuation Time Estimate Report, Revision 0, September 2015, and the assumptions made therein, FEMA identified significant impediments to the development of offsite emergency response plans."* However, in subsequent discussions with FEMA, NRC staff was able to clarify that, in accordance with 10 CFR 52.17(b)(1), the identification of significant impediments to the development of emergency plans is based on physical characteristics of the proposed site, such as egress limitations from the area surrounding the site. If physical characteristics are identified that could pose a significant impediment to the development of emergency plans, the application must identify measures that would, when implemented, mitigate or eliminate the significant impediment.

As a result of these discussions, FEMA's August 11, 2017 letter provided the following updated conclusion:

> *Your February 13, 2017 letter requested to know if FEMA identified any significant impediments to the development of offsite emergency response plans for the Clinch River Nuclear Site, presuming a 2-mile plume exposure pathway EPZ (for Emergency Plan 5B). FEMA, working with TEMA, has not identified physical characteristics for the proposed site that could pose a significant impediment to the development of emergency plans, including evacuation if needed for the 2-mile EPZ.*

Therefore, the NRC will conclude that there are no significant impediments to the development of offsite emergency plans, based on the physical characteristics of the proposed site, for the 2-mile PEP EPZ (i.e., Emergency Plan 5B), pursuant to the FEMA-NRC MOU. FEMA's determination of the acceptability of the proposed major features of the emergency plan – specifically related to the exact size and configuration of the 2-mile plume exposure pathway EPZ – is addressed above under Issues 1 and 6.

Issue 9 – ESP Application Part 5A – Site Boundary EPZ

FEMA Comment (June 12, 2017, letter): *FEMA notes the TVA application also contained a scenario and set of assumptions involving a 0-mile (site boundary) EPZ. FEMA did not review or analyze the feasibility of this portion of the application at this time. If requested by the NRC in the future, FEMA would review the 0-mile portions of the application and provide comments and recommendations.*

NRC Response: As discussed above in Issue 6, TVA must provide a well-justified basis for proposed EPZ sizes that differ from the 10-mile and 50-mile EPZs, consistent with the potential offsite consequence profile of the facility. When NRC has completed its assessment of TVA's accident analyses for the PPE supporting the ESPA and its review of associated proposed exemptions, we will provide our findings to FEMA for information.

The NRC values and would appreciate FEMA's views on this proposed Site Boundary PEP EPZ as our review proceeds.