



Tennessee Valley Authority, 1101 Market Street, Chattanooga, TN 37402

CNL-19-018

January 18, 2019

10 CFR 52, Subpart A

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Clinch River Nuclear Site
NRC Docket No. 52-047

**Subject: Resubmittal of Clinch River Nuclear Site Early Site Permit Application
Revision 2**

- References:
1. Letter from TVA to NRC, CNL-18-143, "Revision 2 of Application for Early Site Permit for Clinch River Nuclear Site," dated December 28, 2018
 2. Letter from TVA to NRC, CNL-18-126, "Response to Request for Additional Information RAI Env-1, eRAI-9602, Regarding EIS Postulated Accidents in Support of Early Site Permit Application for Clinch River Nuclear Site," dated October 5, 2018

By letter dated December 28, 2018 (Reference 1), Tennessee Valley Authority (TVA) submitted Revision 2 of the application for an early site permit (ESP) for Clinch River Nuclear (CRN) Site in Oak Ridge, TN. During the process for assessing the application files, the NRC identified inconsistencies within the "packing slip" that accompanied the ESP application electronic submittal. Subsequently, the NRC staff and TVA personnel discussed the nature of the packing slip inconsistencies. Based on this discussion, TVA is resubmitting CRN Site ESPA, Revision 2, with an updated packing slip. This submittal replaces the Reference 1 submittal in its entirety. A summary of the changes in Revision 2 is provided in Enclosure 1.

The CRN Site ESPA is composed of the following parts containing several documents:

- Part 1 - Administrative and Financial Information
- Part 2 - Site Safety Analysis Report (SSAR)
- Part 3 - Environmental Report
- Part 4 - Limited Work Authorization [not used]
- Part 5 - Emergency Planning
- Part 6 - Departures and Exemption Requests
- Part 7 - Withheld Information
- Part 8 - Enclosures

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The portions of the application that include changes from Revision 1 are identified as Revision 2. The portions of the application that did not change from Revision 1 will remain Revision 1 and are not included in this submittal. Revision 2 changes to the application are identified by a revision bar in the right margin of the affected pages.

The CRN Site ESPA, Revision 2, incorporates the changes to the application documents made as a result of TVA responses to NRC RAIs up through and including the response to NRC eRAI 9602, dated October 5, 2018 (Reference 2), as well as TVA-identified changes as indicated in Enclosure 1. Any changes to the application resulting from subsequent RAI responses will be incorporated in a future revision.

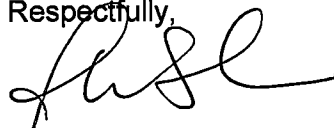
This application contains no restricted data or national defense information requiring separation in accordance with 10 CFR 50.33. Part 7 contains sensitive information not suitable for public disclosure and TVA requests it be withheld in accordance with 10 CFR 2.390. An affidavit supporting TVA's request for withholding is included as Enclosure 2 to this letter.

Enclosure 3 is a set of DVDs containing the proprietary version of the ESPA. Enclosure 4 is a set of DVDs containing the non-proprietary version of the ESPA. The disks include a packing slip describing the contents, pursuant to NRC instructions for electronic filing.

There are no new regulatory commitments associated with this submittal. If any additional information is needed, please contact Dan Stout at (423) 751-7642.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 18th day of January 2019.

Respectfully,



J.W. Shea
Vice President, Nuclear Regulatory Affairs and Support Services

Enclosures

cc: See Page 3

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Enclosures:

1. Summary of ESPA Revision 2 Changes
2. Affidavit Pursuant to 10 CFR 2.390
3. DVDs: CRN Site Early Site Permit Application, Revision 2 – Proprietary
4. DVDs: CRN Site Early Site Permit Application, Revision 2 – Non-Proprietary

cc (Enclosures):

A. Fetter, Project Manager, Division of New Reactor Licensing, USNRC (1 copy)

cc (without enclosures):

C. Haney, Regional Administrator, Region II, USNRC
J. Rankin, Branch Chief, Division of New Reactor Licensing, USNRC
R. Taylor, Director, Division of New Reactor Licensing, USNRC
M. Sutton, Project Manager, Division of New Reactor Licensing, USNRC
T. Dozier, Project Manager, Division of New Reactor Licensing, USNRC
M. M. McIntosh, Regulatory Specialist, Eastern Regulatory Field Office,
Nashville District, USACE

~~PROPRIETARY INFORMATION WITHHOLD UNDER 10 CFR 2.390~~

This letter is decontrolled when separated from Enclosure 3

U.S. Nuclear Regulatory Commission

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bcc (without enclosures):

G. A. Boerschig
S. M. Bono
C. C. Chandler
T. M. Conner
D. M. Czufin
R. E. Detwiler
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J. M. Holcomb
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T. S. Rausch
R. J. Schiele
J. W. Shea
D. P. Stout
Clinch River Project
ECM

~~PROPRIETARY INFORMATION WITHHOLD UNDER 10 CFR 2.390~~

This letter is decontrolled when separated from Enclosure 3

ENCLOSURE 1
Summary of ESPA Revision 2 Changes
by ESPA Part and Section

This Enclosure contains a summary table of the changes that are included in Revision 2 of the Clinch River Nuclear Site Early Site Permit Application (ESPA). The summary table lists the changes by ESPA Part and Section. For each change listed, the following information is provided.

ESPACR # - Tennessee Valley Authority (TVA) tracking number for the change package number corresponding to the Early Site Permit Application Change Request (ESPACR) that effected the changes to the ESPA. The ESPACR # can be a useful cross-referencing tool in identifying the location of conforming changes between different ESPA Parts and Sections. (Note that some ESPACR Numbers were not used and do not appear in the table.)

NRC Request/TVA-identified - Indicates whether the need for the change was NRC-identified (verbal discussion, request for additional information (RAI), NRC Audit Information Need, etc.) or if the need for the change was identified by TVA.

Description - Provides a high-level summary description of the changes associated with a particular ESPACR. For more details of the changes made to the ESPA associated with an ESPACR, refer to the TVA Submittal Letter in the last column of the table.

Affected ESPA Sections - Lists the ESPA Parts/Sections that contain changes associated with a particular ESPACR. There is an entry in the summary table for each ESPA Part/Section listed.

TVA Submittal Letter - Lists the associated TVA Letter Number that contains the ESPA changes that have been submitted to the NRC. Additional details associated with an ESPA change can be found in the listed TVA Submittal Letter. Entries annotated as "NA" have not been previously submitted to the NRC.

ENCLOSURE 1
 Summary of ESPA Revision 2 Changes
by ESPA Part and Section

ESPACR #	NRC Request/ TVA-identified	Description	Affected ESPA Sections	TVA Submittal Letter
Part 2 - Site Safety Analysis Report (SSAR)				
17-056	NRC Request	Corrected the reference to "HMR 47," in Part 2, Site Safety Analysis Report (SSAR) Section 2.4.3, with a reference to "HMR-51." Replaced SSAR Figure 2.4.3-17, "Unit Hydrographs, Sub-basins 26, 27, 34 & 35," sheet 3 of 8, that inadvertently included Sub-basin 14 and 15 (Cherokee Local Unit Hydrograph) with a corrected figure that included Sub-basin 27 (Melton Hill Local Unit Hydrograph).	[SSAR] Section 2.4.3	CNL-17-147
18-001	NRC Request	Changed SSAR and Part 6, "Emergency Plan," in response to NRC eRAI 9227, as it relates to the Emergency Planning exemption requests in Part 6.	[SSAR] Tables 1.9-1 and 1.9-2 [Part 6] Tables 1-1, 1-2, and 1-3	CNL-18-009, CNL-18-019, CNL-18-071
18-002	TVA-identified	Corrected typographical and administrative errors in SSAR and Part 3, Environmental Report (ER). Replaced reference to "Tennessee Route 29" with reference to "Tennessee Route 95" in SSAR Section 2.5.1.	[SSAR] Table 1.1-1, Sections 2.2.3.1.2, 2.4.3, 2.5.1, 2.5.2, Figure 2.5.3-8, and Section 13.3. [ER] Table 3.1-2, Table 5.4-20, Section 5.11, Table 7.4-2.	Not applicable (NA)
18-003	TVA-identified	Updated statement regarding the combination of the Rome Formation and Pumpkin Valley Shale for the site response analysis, consistent with changes made to the Hatcher Report.	[SSAR] Section 2.5.1	NA
18-005	NRC Request	Revised SSAR Figure 2.5.1-34, "Site Area Geologic Map," to correct the color of the shaded area located between the Knox Group and Chickamauga Group in the lower left quadrant of the figure.	[SSAR] Section 2.5.1	CNL-18-015

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ESPACR #	NRC Request/ TVA-identified	Description	Affected ESPA Sections	TVA Submittal Letter
18-007	TVA-identified	Changes made to reflect updates to Karst Evaluation Report and Geologic Field Reconnaissance Report. Updates include clarification that a small shallow landslide occurred on the site, replacement of various figures and plates to correct the misalignment of the Copper Creek fault, corrected values for depression density and area ratio, and corrected various typographical and editorial errors.	[SSAR] Sections 2.0, 2.4.6, 2.4.12, 2.5.1, 2.5.3, 2.5.4 [Part 8] Plates 2a through 2d	NA
18-008	NRC Request	Clarified references to the 3382, 2912, and 469 square mile probable maximum precipitation storms.	[SSAR] Section 2.4.3	CNL-18-043
18-011	NRC Request	Revised SSAR Sections 2.3.1.3.6.2, 2.3.1.4 and SSAR Tables 2.0-1, 2.3.4-2 through 2.3.4-8 and 2.3.4-11 for consistency with ISG DC/COL-ISG-007, "Assessment of Normal and Extreme Winter Precipitation Loads on the Roofs of Seismic Category I Structures."	[SSAR] Sections 2.0, 2.3.1, 2.3.4	CNL-18-045
18-012	TVA-identified	Updated SSAR to reflect the revised TVA Nuclear Quality Assurance Program (NQAP) and the results of the gap analysis performed between the TVA NQAP and the requirements of ASME NQA-1.	[SSAR] Sections 1.9, 17.5	NA
18-013	NRC Request	Revised SSAR Subsection 2.4.3.5 to clarify the reference to a postulated dam failure, clarified SSAR Subsection 2.4.3 regarding the probable maximum flood (PMF) simulation with a postulated dam failure, and clarified the reference between the bounding design PMF and the calculated PMF elevations in SSAR Figure 2.4.3-3 and Section 2.4.2.	[SSAR] Sections 2.4.2, 2.4.3	CNL-18-059
18-014	TVA-identified	Clarified SSAR Table 15-1 regarding the 0 to 2 hour doses at the exclusion area boundary. Revised SSAR Section 2.4.12 and ER Section 2.3.1 to address the Clinch River Breeder Reactor Project (CRBRP) abandoned wells.	[SSAR] Sections 2.4.3, 2.4.12, Chapter 15 [ER] Section 2.3.1	NA

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Summary of ESPA Revision 2 Changes
by ESPA Part and Section

ESPACR #	NRC Request/ TVA-identified	Description	Affected ESPA Sections	TVA Submittal Letter
18-015	TVA-identified	Revised SSAR to include additional details of the atmospheric dispersion and ground deposition factors for the CRN Site. Revised SSAR to specify that the wind direction was based on vector data. Updated ER to reflect the correct Tornado Region for the CRN Site.	[SSAR] Sections 2.3.2, 2.3.4, 2.3.5, Chapter 11 [ER] Section 2.7.3	NA
18-018	NRC Request	Revised ESPA to implement the redaction of Critical Energy/Electric Infrastructure Information (CEII) identified by the NRC.	[SSAR] Sections 2.0, 2.4.2, 2.4.3 [Part 7]	NA
Part 3 - Environmental Report (ER)				
18-002	TVA-identified	Corrected typographical and administrative errors in SSAR and ER. Replaced reference to "Tennessee Route 29" with reference to "Tennessee Route 95" in SSAR Section 2.5.1.	[SSAR] Sections 1.1, 2.2, 2.4.3, 2.5.1, 2.5.2, 2.5.3, 13.3 [ER] Sections 3.1, 5.4, 5.11, 7.4	NA
18-004	TVA-identified	Correction to ER Figure 3.1-2 regarding the location of the proposed transmission lines.	[ER] Section 3.1	NA
18-009	TVA-identified	Revises ER by adding Figure 4.7-1 and update Figure 9.3-15 to correspond to existing ER Tables 4.7-1 and 9.3-6, regarding cumulative projects. Additionally, revised titles of ER Tables 4.7-1 and 9.3-6 to be location-specific. Callouts to the tables and figures were added to ER Sections 4.7 and 9.3.	[ER] Sections 4.7, 9.3	NA
18-014	TVA-identified	Clarified SSAR Table 15-1 regarding the 0 to 2 hour doses at the exclusion area boundary. Revised SSAR Section 2.4.12 and ER Section 2.3.1 to address the CRBRP abandoned wells.	[SSAR] Sections 2.4.3, 2.4.12, Chapter 15 [ER] Section 2.3.1	NA
18-015	TVA-identified	Revised SSAR to include additional details of the atmospheric dispersion and ground deposition factors for the CRN Site. Revised SSAR to specify that the wind direction was based on vector data. Updated ER to reflect the correct Tornado Region for the CRN Site.	[SSAR] Sections 2.3.2, 2.3.4, 2.3.5, Chapter 11 [ER] Section 2.7.3	NA

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Summary of ESPA Revision 2 Changes
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ESPACR #	NRC Request/ TVA-identified	Description	Affected ESPA Sections	TVA Submittal Letter
18-016	TVA-identified	Revises ER Figure 2.2-7 to correct line color/activity type for transmission line segment L5205.	[ER] Section 2.2	NA
18-017	NRC Request	Revised ER consistent with the response to NRC eRAI 9602, related to the storage capacity of the spent fuel pool in years and number of assemblies and the anticipated need for an independent spent fuel storage installation.	[ER] Section 3.1, 5.7	CNL-18-126
Part 6 - Exemptions and Departures				
18-001	NRC Request	Changed text and tables in response to NRC eRAI 9227, as it related to the Emergency Planning exemption requests in Part 6.	[SSAR] Tables 1.9-1 and 1.9-2 [Part 6] Tables 1-1, 1-2, and 1-3	CNL-18-009, CNL-18-019, CNL-18-071
Part 7 - Withheld Information				
18-018	NRC Request	Revised ESPA to implement the redaction of Critical Energy/Electric Infrastructure Information (CEII) identified by the NRC.	[SSAR] Sections 2.0, 2.4.2, 2.4.3 [Part 7]	NA
Part 8 - Enclosures				
18-007	TVA-identified	Changes made to reflect updates to Karst Evaluation Report and Geologic Field Reconnaissance Report. Updates include clarification that a small shallow landslide occurred on the site, replacement of various figures and plates to correct the misalignment of the Copper Creek fault, corrected values for depression density and area ratio, and corrected various typographical and editorial errors.	[SSAR] Sections 2.0, 2.4.6, 2.4.12, 2.5.1, 2.5.3, 2.5.4 [Part 8] Plates 2a through 2d	NA
18-019	TVA-identified	Updated copy of latest revision of NQAP in Part 8.	[Part 8]	NA

ENCLOSURE 2

United States Nuclear Regulatory Commission
Washington, District of Columbia

In the Matter of)
Tennessee Valley Authority)
Clinch River Nuclear Project)
Early Site Permit Application)
)

AFFIDAVIT

STATE OF TENNESSEE)
)
COUNTY OF HAMILTON)

Joseph W. Shea, after first being duly sworn, deposes and says:

1. I am employed as the Vice President, Nuclear Regulatory Affairs and Support Services for the Tennessee Valley Authority (TVA), an agency and instrumentality of the United States Government. I am familiar with the Early Site Permit Application for TVA's Clinch River Nuclear (CRN) Project and have personal knowledge of the matters stated herein.
2. I am submitting this affidavit in accordance with 10 CFR §2.390(a)(3) and 10 CFR §9.17, and because certain information contained in Part 7 to this Application has been determined by TVA to be of the type customarily held in strict confidence by the agency and is exempted from disclosure by statute under U.S. Code Title 16, Conservation, Section 470hh; the National Historic Preservation Act of 1966, Section 106, as amended; the Native American Graves Protection and Repatriation Act of November 16, 1990; and Tennessee Code Annotated 10-7-504(a)(21)(A)(i).
3. The information that should not be released to the public has been collected and organized into Part 7 of this Application.
4. The Early Site Permit Application Part 7 includes information exempted from disclosure by statute per 10 CFR §2.390(a)(3).
 - a. The application includes information related to historical artifacts and a Native American burial site. The U.S. Code Title 16, Conservation, Section 470hh, Confidentiality of Information concerning nature and location of archeological resources, and the National Historic Preservation Act of 1966, Section 106, as amended 2000, and the Native American Graves Protection and Repatriation Act of November 16, 1990 require the non-disclosure of these historically significant locations.

Enclosure 2

- b. The application also contains information related to the location of municipal water intakes. Tennessee Code Annotated 10-7-504(a)(21)(A)(i) requires the withholding of records that would allow a person to identify areas of structural or operational vulnerability of a utility service provider (including water storage or processing system, water distribution system, or any similar services) or that would permit unlawful disruption to, or interference with, the services provided by a utility service provider. The location of municipal water intakes are encompassed within the information that must be withheld from public disclosure under the statute.
 - c. The application also contains information that may be non-public Critical Energy/Electric Infrastructure Information (CEII) as defined by the Federal Energy Regulatory Commission (FERC) in 18 C.F.R. section 388.13. Non-disclosure of CEII is required by 16 U.S.C. § 8240-1 Y and 18 C.F.R. § 388.13. In accord with NRC Yellow Announcement YA-18-0051 and the NRC Policy for Handling, Marking, and Protecting Sensitive Unclassified Information Non-Safeguards Information, information that may be CEII has been redacted and designated as such.
5. The information sought to be withheld ("the information") is being submitted to the NRC in confidence.
 6. The information is the sort of information regularly and customarily held in confidence by TVA based on the statutes requiring the withholding of such information; and is, in fact, so held.
 7. The information has consistently been held in confidence by TVA, except for the information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application.
 8. No public disclosure of the information has been made by TVA, except for the information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application.
 9. The information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application, should now be protected because it has subsequently been determined that it may be CEII, in accord with NRC Yellow Announcement YA-18-0051.

Enclosure 2

9. All disclosures of the information to third parties by TVA, including any transmittals to the NRC, have been made pursuant to regulatory provisions or proprietary agreements which provide that the information is to be maintained in confidence.

J. W. Shea
Vice President
Nuclear Regulatory Affairs and Support Services

Subscribed and sworn to before me,

Notary Public, this _____ day of January 2019:

My Commission expires: _____

ENCLOSURE 2

United States Nuclear Regulatory Commission
Washington, District of Columbia

)
In the Matter of)
Tennessee Valley Authority)
Clinch River Nuclear Project)
Early Site Permit Application)
)

AFFIDAVIT

STATE OF TENNESSEE)
)
COUNTY OF HAMILTON)

Joseph W. Shea, after first being duly sworn, deposes and says:

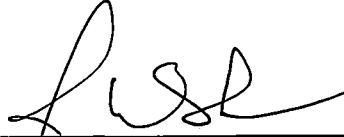
1. I am employed as the Vice President, Nuclear Regulatory Affairs and Support Services for the Tennessee Valley Authority (TVA), an agency and instrumentality of the United States Government. I am familiar with the Early Site Permit Application for TVA's Clinch River Nuclear (CRN) Project and have personal knowledge of the matters stated herein.
2. I am submitting this affidavit in accordance with 10 CFR §2.390(a)(3) and 10 CFR §9.17, and because certain information contained in Part 7 to this Application has been determined by TVA to be of the type customarily held in strict confidence by the agency and is exempted from disclosure by statute under U.S. Code Title 16, Conservation, Section 470hh; the National Historic Preservation Act of 1966, Section 106, as amended; the Native American Graves Protection and Repatriation Act of November 16, 1990; and Tennessee Code Annotated 10-7-504(a)(21)(A)(i).
3. The information that should not be released to the public has been collected and organized into Part 7 of this Application.
4. The Early Site Permit Application Part 7 includes information exempted from disclosure by statute per 10 CFR §2.390(a)(3).
 - a. The application includes information related to historical artifacts and a Native American burial site. The U.S. Code Title 16, Conservation, Section 470hh, Confidentiality of Information concerning nature and location of archeological resources, and the National Historic Preservation Act of 1966, Section 106, as amended 2000, and the Native American Graves Protection and Repatriation Act of November 16, 1990 require the non-disclosure of these historically significant locations.

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- b. The application also contains information related to the location of municipal water intakes. Tennessee Code Annotated 10-7-504(a)(21)(A)(i) requires the withholding of records that would allow a person to identify areas of structural or operational vulnerability of a utility service provider (including water storage or processing system, water distribution system, or any similar services) or that would permit unlawful disruption to, or interference with, the services provided by a utility service provider. The location of municipal water intakes are encompassed within the information that must be withheld from public disclosure under the statute.
 - c. The application also contains information that may be non-public Critical Energy/Electric Infrastructure Information (CEII) as defined by the Federal Energy Regulatory Commission (FERC) in 18 C.F.R. section 388.13. Non-disclosure of CEII is required by 16 U.S.C. § 8240-1 Y and 18 C.F.R. § 388.13. In accord with NRC Yellow Announcement YA-18-0051 and the NRC Policy for Handling, Marking, and Protecting Sensitive Unclassified Information Non-Safeguards Information, information that may be CEII has been redacted and designated as such.
5. The information sought to be withheld ("the information") is being submitted to the NRC in confidence.
 6. The information is the sort of information regularly and customarily held in confidence by TVA based on the statutes requiring the withholding of such information; and is, in fact, so held.
 7. The information has consistently been held in confidence by TVA, except for the information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application.
 8. No public disclosure of the information has been made by TVA, except for the information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application.
 9. The information now designated as CEII, which was previously submitted to the NRC in an earlier revision to the Early Site Permit Application, should now be protected because it has subsequently been determined that it may be CEII, in accord with NRC Yellow Announcement YA-18-0051.

Enclosure 2

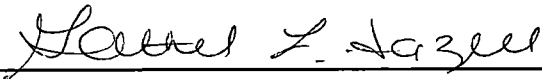
9. All disclosures of the information to third parties by TVA, including any transmittals to the NRC, have been made pursuant to regulatory provisions or proprietary agreements which provide that the information is to be maintained in confidence.



J. W. Shea
Vice President
Nuclear Regulatory Affairs and Support Services

Subscribed and sworn to before me,

Notary Public, this 18 day of January 2019:



My Commission expires: March 9, 2019

