

July 30, 2015

MEMORANDUM FOR: Jennifer Dixon-Herrity, Chief
Environmental Projects Branch
Division of New Reactor Licensing
Office of New Reactors

FROM: Joseph F. Williams, Senior Project Manager */RA/*
Advanced Reactor and Policy Branch
Division of Advanced Reactors and Rulemaking
Office of New Reactors

SUBJECT: SUMMARY OF MAY 5, 2015, PUBLIC MEETING WITH THE
TENNESSEE VALLEY AUTHORITY REGARDING THE PLANT
PARAMETER ENVELOPE FOR THE CLINCH RIVER EARLY
SITE PERMIT APPLICATION

On May 5, 2015, representatives of the Tennessee Valley Authority (TVA) met with staff from the U.S. Nuclear Regulatory Commission (NRC) in Rockville, Maryland to discuss the plant parameter envelope (PPE) for the planned Clinch River early site permit (ESP) application. Meeting attendees shown in the Enclosure. Copies of presentation materials used by TVA may be found in the Agencywide Documents Access and Management System, Accession No. ML15141A325.

The meeting described in this summary was a follow up to a September 11, 2014,¹ meeting where TVA described its approach for developing the PPE. TVA outlined their PPE methodology, stating that it is based upon a guidance document developed by the Nuclear Energy Institute (NEI). At the time of this meeting, TVA was on its second revision of the Clinch River PPE.

The PPE is being based upon four light water small modular reactor (SMR) designs from NuScale, mPower, Westinghouse, and Holtec. These designs are at varying levels of development, so TVA has exercised some judgement in determining values for some variables, including assignment of margin.

NRC staff asked if TVA had identified any difference in scope of the Clinch River PPE as compared to PPEs which were used in some earlier ESP applications. TVA representatives responded that they have found that SMRs have a somewhat smaller scope.

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¹ "Summary of September 11, 2014, Public Meeting to Discuss Plant Parameter Envelope Development for the Clinch River Early Site Permit," September 30, 2014, ADAMS Accession No. ML14272A009.

TVA representatives provided more detailed presentations on several topics affecting siting dose calculations, starting with a discussion of site meteorology.

TVA gathered meteorological data at the site from 2011 until 2013. The Clinch River site had previously been the location of a proposed liquid metal fast breeder reactor about 40 years ago. Meteorological data gathered to support that project has been examined by TVA for comparison to the data it gathered more recently. It is the more recent data set that will be used in the proposed ESP application.

TVA representatives said that the meteorological data was obtained consistent with the expectations given by Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants (Safety Guide 23)."² Data gathered from 2011 to 2013 included wind speed and direction, temperature, dew point at heights of 10 and 60 meters. Rainfall data were also collected, but were considered unreliable due to repeated instrumentation problems, so data from a monitoring station about 12 miles north-east of the site are being used as an alternative.

TVA representatives stated its analyses indicate that setting the exclusion area boundary at the site property line yields is acceptable for radiation doses. The exclusion area is defined by Title 10 *Code of Federal Regulations* (CFR) 100.3 as "...that area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area."

TVA representatives described preliminary atmospheric diffusion calculations for the exclusion area boundary and for the one mile radius low population zone identified around the site. TVA has concluded that the site boundary is suitable to be defined as the exclusion area boundary.

PPE accident source term data are based upon data received from the four design companies. Vendor data were normalized to a common basis for the exclusion area boundary and low population zone. TVA was asked if the vendor calculations used a mechanistic source term methodology. TVA representatives said that they had not received detailed calculations from the vendors, so they could not characterize the methodologies used in the vendors' analyses.

The PPE also includes information regarding severe accidents. The various designs are in different stages of completion, so vendors provided TVA with varying amounts of probabilistic risk assessment information. TVA has concluded that it is not practical to combine the data, so the PPE is being based upon information from a single vendor. TVA representatives said that data from other vendors can be examined by NRC staff. NRC staff asked if safety goal risk information will be provided. TVA representatives said yes.

After TVA concluded its presentation, there was an opportunity for members of the public to interact with the NRC staff.

A member of the public stated that site-specific rainfall data is important due to the karst (soluble rock) terrain and sinkholes at the site. TVA representatives volunteered a response, stating that, while there had been issues with data gathering at the site, they had obtained

² ADAMS Accession No. ML070350028.

sufficient data to conclude that site conditions compare favorably with National Weather Service data from a nearby location.

The member of the public asked about how the effects of climate change, including effects such as tornadoes would be addressed. NRC staff responded that the ESP application needs to address natural phenomena as required by NRC's regulations (see 10 CFR 50 Appendix A, General Design Criterion 2), and that NRC regulatory guidance describes acceptable means to address these phenomena.

Another member of the public asked if NRC will consider accidents resulting in a complete loss of coolant for SMRs. NRC staff responded that the regulations include requirements for consideration of major accidents resulting in core damage without breach of the reactor vessel. An example of those requirements can be found in the regulations describing the content of a design certification application in 10 CFR 52.47(a). Further, the staff noted that applicants are required to address severe accident risk using probabilistic risk analysis techniques.

Another member of the public asserted that the surrogate plants described by the PPE is an "elaborate mirage," and that the "public is cut out of the process." NRC staff responded that the ESP process includes an opportunity to request a hearing. The member of the public subsequently expressed a view that the ESP process curtails public participation in the environmental review process.

The member of the public asked about NRC's interaction with other Federal agencies such as the National Oceanic and Atmospheric Administration (NOAA), particularly with regard to future weather patterns. NRC staff responded that NRC has a good relationship with other agencies. The NRC staff expects to evaluate prospective plant characteristics to determine that the facility can remain within its design basis.

The member of the public also asked if the NRC confidence levels regarding severe weather events are on par with NOAA. NRC staff responded that NRC and NOAA use different processes to fulfill their distinct roles. NRC's processes are described in its regulatory guidance.

The member of the public noted that the prospective facility may have as many as 12 individual reactors, so a concern was expressed regarding multi-unit risk impact. An opinion was expressed that the ESP needs to be clear on the number of units and control room arrangements.

The member of the public inquired about the definition of the exclusion area boundary and the low population zone. NRC staff said that these terms are defined by the regulations.

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Enclosure:

Attendees

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DATE	07/30/2015

OFFICIAL RECORD COPY

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VALLEY AUTHORITY REGARDING THE PLANT PARAMETER ENVELOPE FOR
THE CLINCH RIVER EARLY SITE PERMIT APPLICATION

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THolden, TEMA
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PHastings, TVA
WJustice, TVA
WLee, TVA
JPerry, TVA
DStout, TVA
JThomas, TVA

Attendees
Clinch River Early Site Permit Pre-application
Plant Parameter Envelope
May 5, 2015

<u>Name</u>	<u>Affiliation</u>
Jana Bergman	Curtis Wright Sciencetech
Steve Kline	Bechtel
Garry Morgan	Blue Ridge Environmental Defense League Bellefonte Efficiency and Sustainability Team Mothers Against Tennessee River Radiation
Martha Shields	Department of Energy
David Daigle	Enercon
Mark Beaumont	Holtec
Paul Gunter	Nuclear Information Resource Service
Tamsen Dozier	Nuclear Regulatory Commission
John Frost	Nuclear Regulatory Commission
Michelle Hart	Nuclear Regulatory Commission
Donald Palmrose	Nuclear Regulatory Commission
Kevin Quinlan	Nuclear Regulatory Commission
Jason Schaperow	Nuclear Regulatory Commission
Joe Williams	Nuclear Regulatory Commission
Cyrus Afshar	NuScale
Tom Bergman	NuScale
Tom Clements	Savannah River Watch
Tim Holden	Tennessee Emergency Management Agency
Mark Burzynski	Tennessee Valley Authority
Peter Hastings	Tennessee Valley Authority
Walter Justice	Tennessee Valley Authority
Walter Lee	Tennessee Valley Authority
Jeff Perry	Tennessee Valley Authority
Dan Stout	Tennessee Valley Authority
John Thomas	Tennessee Valley Authority

Enclosure