Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

November 5, 2010

10 CFR Part 50

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

In the Matter of)
Tennessee Valley Authority)

TENNESSEE VALLEY AUTHORITY (TVA) - KEY ASSUMPTIONS LETTER FOR THE POSSIBLE LICENSING AND CONSTRUCTION OF SMALL MODULAR REACTOR MODULES AT THE CLINCH RIVER SITE

Reference: 1) TVA's letter to NRC dated October 8, 2010, "TVA Voluntary Response to RIS 2010-01"

TVA is evaluating the feasibility of small modular reactor (SMR) modules for certain generating purposes utilizing the Babcock &Wilcox (B&W) mPower design as the technology of choice. For this first-of-class SMR deployment, TVA is considering submitting an application for Construction Permits for up to six mPower 125 megawatt SMR modules at TVA's Clinch River site in Roane County, Tennessee.

In Reference 1, TVA informed the Nuclear Regulatory Commission (NRC) of its plans to develop and submit Key Licensing Assumptions and a detailed Regulatory Framework for one or more SMR modules. The purpose of this letter is to provide the NRC Staff with the Key Licensing Assumptions underlying the possible licensing and construction of SMR modules at TVA's Clinch River site. TVA believes that the NRC Staff's agreement with these key assumptions is fundamental to TVA's continued evaluation of this project.

Key Licensing Assumptions

The application for Construction Permits supporting the deployment of the mPower modules would be prepared in accordance with the content requirements of 10 CFR 50.33, 50.34 and 10 CFR 50.34a. The Part 50 process would allow for the effective and systematic development of project licensing, design finalization and construction. TVA believes that the use of the Part 50 process provides the flexibility necessary to support potential design modifications identified during construction as well as inform future deployments. Therefore, use of the Part 50 licensing process is TVA's **first key assumption**.

The **second key assumption** stems from the first. In accordance with the Part 50 licensing process, TVA would develop a Preliminary Safety Analysis Report (PSAR). The PSAR would be prepared utilizing the guidance of Regulatory Guide 1.70,

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Revision 3, and the organizational structure of the Standard Review Plan (SRP). The PSAR would include an evaluation of the facility against the SRP revision in effect six months prior to submittal of the application for the Construction Permits. The application would include an environmental report addressing the Environmental Standard Review Plan guidance contained in NUREG 1555.

Following the receipt of the NRC's draft Safety Evaluation Report for the PSAR, it is anticipated that a Design Certification Application (DCA) would be submitted to the NRC by Generation mPower, a B&W and Bechtel Corporation alliance. TVA proposes that through the NRC license review process, a "One Design - One Review" approach be adopted in anticipation of parallel Operating License submittals – TVA's Final Safety Analysis Report (OL-FSAR) as well as a Generation mPower DCA application. This is consistent with the concept of a design-centered review approach as described in Regulatory Issue Summary 2006-06, "New Reactor Standardization Needed To Support The Design-Centered Licensing Review Approach." To the extent that the scope and content of the FSAR's design overlap with a DCA submittal, TVA anticipates that the NRC Staff would perform a single review of the generic content common to both the FSAR and DCA, consistent with the design-centered review approach. Based on the likelihood of parallel submittals, the **third key assumption** is the utilization of a "One Design - One Review" approach.

In accordance with 10 CFR 50.31, Combining Applications, TVA would combine license applications for Part 30, 40, 50, and 70 licenses. This is consistent with the process currently being used for licensing new reactors and represents TVA's **fourth key assumption**.

As described previously, TVA is evaluating the mPower technology for use at its Clinch River site. The mPower design makes substantial use of modular construction technology which enables major portions of the plant to be fabricated in controlled manufacturing environments and shipped to the site via rail and trucks. TVA plans to use Generation mPower as its vendor responsible for the development of the mPower reactors. As a result of treating Generation mPower as a vendor, the fabrication of major plant components may begin before the issuance of the Construction Permits and may require NRC inspection resources in advance of the Construction Permits' issuance. This will necessitate close coordination and timely communication of manufacturing plans and schedules to facilitate NRC Inspection activities. TVA's **fifth key assumption is** that the NRC Staff would inspect Generation mPower as a vendor.

The SMR initial test program would be developed using the guidance of Regulatory Guide 1.68, Revision 3, to assure that all Systems, Structures, and Components (SSCs) important to safety are tested to demonstrate that the facility can be operated in accordance with design requirements and in a manner that will not endanger the health and safety of the public. The scope of the inspection and enforcement program along with the initial test program that encompasses site preparation inspections, construction inspections, manufacturing inspections, and system tests through hot functional testing will inform and demonstrate successful execution of future Inspections, Tests, Analysis and Acceptance Criteria (ITAAC) that may be specified in Design Certification or Combined Operating License applications. This represents TVA's **sixth key assumption**.

As mentioned previously, TVA believes that the NRC Staff's agreement with these key assumptions is fundamental to TVA's consideration of whether to continue the evaluation of potentially licensing and constructing SMR modules at its Clinch River site. These key assumptions will also serve as a basis for the development of a detailed Regulatory Framework for constructing and operating SMR modules as mentioned in Reference 1.

TVA will keep the NRC Staff informed of its ongoing activities related to these evaluations and looks forward to hearing the NRC Staff's views and feedback. Please contact Gordon Arent at (423)-751-2233 if you have questions.

Sincerely,

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