December 1, 2010

Mr. Jack A. Bailey, Vice President
Nuclear Generation Development
Nuclear Generation Development
and Construction
Tennessee Valley Authority
1101 Market Street, LP 5A
Chattanooga, TN 37402-2801

SUBJECT: NUCLEAR REGULATORY COMMISSION STAFF QUESTIONS RELATED TO THE TENNESSEE VALLEY AUTHORITY KEY ASSUMPTIONS LETTER, DATED NOVEMBER 5, 2010, FOR THE POSSIBLE LICENSING AND CONSTRUCTION OF SMALL MODULAR REACTOR MODULES AT THE CLINCH RIVER SITE

Dear Mr. Bailey,

In a letter dated November 5, 2010, Tennessee Valley Authority (TVA) described their key licensing assumptions to support 10 CFR Part 50 licensing and construction of mPower™ small modular reactor (SMR) modules at the Clinch River site in Roane County, Tennessee (Agencywide Document Access and Management System ML103120558). The Nuclear Regulatory Commission (NRC) staff has considered the six key assumptions and has developed the attached questions to understand this proposal in more detail. In general, our questions relate to timing, policy issues, operation and construction inspection, and siting.

We are not requesting a written response, but we believe that further dialogue in a public forum to discuss the attached questions, and the benefits and challenges associated with this proposal, will help to clarify the assumptions for the NRC staff, TVA staff, and other stakeholders. As we discussed, we have scheduled a meeting on December 14, 2010, from 1 p.m. to 4 p.m. at a location to be determined, and plan to invite representatives from Babcock & Wilcox (B&W) and Bechtel (members of Generation mPower) to understand the combined perspective from all stakeholders referenced in TVA's assumption letter. A meeting notice will be published consistent with the NRC's processes.

We look forward to further discussion on December 14, 2010. If you have any questions, please contact Joelle Starefos, the lead project manager for this topic, at (301) 415-6091, or Joelle.Starefos@nrc.gov.

Sincerely,

/RA/

Michael E. Mayfield, Director
Advanced Reactor Program
Office of New Reactors

Project Nos. PROJ0785 and PROJ0776

Enclosure:
As stated

cc: DC B&W mPower Mailing List

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ADAMS Accession No.: ML103340034 ***via e-mail** **NRO-002**

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DATE	12/1/2010	11/30/2010	12/1/2010
OFFICE	NRR/DORL*	OGC*	NRO/ARP
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NRC Staff Questions for Tennessee Valley Authority

The Nuclear Regulatory Commission (NRC) staff has considered the six key assumptions presented by Tennessee Valley Authority (TVA) in the letter (Agencywide Document Access and Management System (ADAMS) ML103120558) dated November 5, 2010, and has developed the following questions to understand this proposal in more detail and to facilitate future discussion. In general, our questions relate to timing, policy issues, operation and construction inspection, and siting. The questions are aligned with each of the six key assumptions in your letter for presentation purposes only because many of the discussions cross multiple assumptions.

The staff's understanding, based upon TVA's November 5, 2010, letter and other interactions with TVA, is that for this first-of-class small modular reactor (SMR) deployment, TVA will request a 10 CFR Part 50 construction permit (CP) for two modules by submitting a preliminary safety analysis report (PSAR) to the staff. Following TVA's receipt of the staff's draft safety evaluation report (DSER) and concurrent with the Clinch River operating license (OL) application, TVA expects Babcock & Wilcox (B&W) to submit a Part 52 design certification application for the mPower SMR. TVA also anticipates that subsequent modules at the TVA Clinch River site would be licensed based upon Part 52 combined license (COL) applications. The staff's initial questions regarding each of TVA's licensing assumptions are as follows:

TVA Assumption 1: *Use of the 10 CFR Part 50 licensing process.*

a) The staff has responded to lessons learned from operating reactors and additional insights from advanced analyses by adding a number of specific requirements in 10 CFR Part 52 will need to be addressed during licensing of a new plant under the Part 50 CP-OL process. One example of such requirements is the severe accident considerations as required in Part 52.47. How does TVA plan to identify these applicable requirements and address them during the Part 50 application?

b) Assuming Part 50 and Part 52 licensed modules at the same plant site, what is TVA's plan for maintaining standardization of all modules?

c) When evaluating the change processes associated with a CP, has TVA considered the Part 52 change control process outlined in the proposed Appendix C of NEI 96-07, "Guideline for Implementation of Change Control Processes for New Nuclear Power Plants Licensed Under 10 CFR Part 52" (ADAMS ML102980302)?

TVA Assumption 2: *TVA would develop a preliminary PSAR using Regulatory Guide 1.70, Revision 3, issued November 1978, and would include an evaluation of the facility against the Standard Review Plan (SRP) revision in effect six months prior to making application for the Construction Permits. The application would include an environmental report addressing the Environmental SRP guidance in NUREG 1555.*

a) As the staff understands, TVA plans to prepare an environmental impact statement (EIS) to meet its own National Environmental Policy Act (NEPA) obligation with respect to the Clinch River project. Does TVA intend to prepare a specific environmental report to support its application with the NRC, or does TVA intend to ask the NRC to rely, in whole

or in part, on the TVA-prepared EIS? Please describe the content of the EIS, and TVA's bases for its view that such an approach would be consistent with NRC's obligations under NEPA.

b) TVA's letter indicated that the preliminary safety analysis report would use the guidance associated with Regulatory Guide 1.70, Revision 3, but would be organized consistent with the SRP. Regulatory Guide 1.70 (1978) is different from current Part 50 regulations. How will TVA identify and address those changes for this Part 50 application?

c) Considering the timing described in assumption 3 of this letter, which anticipates submittal of the Part 52 design certification following the staff's issuance of the draft SER for the PSAR, it appears that a significant amount of design information will be available early in the Part 50 licensing process. Does TVA expect to submit design details in the PSAR as required by 10 CFR 50.34 and that could provide a basis for the Part 52 design certification application?

d) How does TVA envision the implementation of the staff requirements enumerated in COMGBJ-10-0004/COMGEA-10-0001, "Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor Reviews," dated August 31, 2010, with the submission of the Part 50 construction permit application?

TVA Assumption 3: *The utilization of a "One Design – One Review" NRC license review process.*

a) In the context of this proposal, how will the Part 52 design control document and the Part 50 final safety analysis report (FSAR) be maintained consistent with each other throughout the licensing process?

b) Clarify TVA's licensing plan using a timeline or schedule including milestones that reflect the submittal plans, review timing, and expectations for concurrent reviews.

c) Does TVA plan to seek a final design approval in the path to issuance of a CP or OL, but prior to any design certification rule (DCR)?

d) Assuming two applications, such as an OL- FSAR and a DCR, are being reviewed concurrently, how would TVA and Generation mPower propose to address environmental siting issues, particularly concerning areas where site-specific information is required or bounding parameters and characteristics are required?

e) When discussing the coordination of design and licensing reviews, have the parties formed a design-centered working group and reached alignment on the strategy and timing of submittals for the CP, OL, design certification (DC), reference combined license (R-COL), and subsequent combined licenses (S-COLs)? What review schedules are assumed and is each party accepting of the possible schedule impacts from the other parties (e.g., the possible delay of the DC review until after completion of the preliminary SER for the CP)?

f) Has TVA considered if and/or how the units licensed under Part 50 would be brought under the standardization processes incorporated into Part 52 (e.g., a license condition to adopt the requirements of 10 CFR 52.63(a)(3), which requires that any changes to a DCR will be applied to all plants referencing the certified design)?

g) To facilitate the one review concept, does TVA anticipate developing formatting conventions similar to that used for design certification documents, R-COLs, and S-COLs?

TVA Assumption 4: *10 CFR Part 30, 40, 50, and 70 license applications would be combined.*

a) The staff would need to evaluate this request after understanding TVA's expectation and timeline for issuance of the Part 30, 40, and 70 licenses. The basis for Part 52 combined licenses incorporating Part 30, 40, and 70 licenses does not necessarily apply to the Part 50 CP. If TVA were to request issuance of the Part 30, 40, and 70 licenses concurrent with the issuance of the OL, the timeline for startup may be impacted depending upon activities that are still incomplete and/or awaiting the Part 30, or 40, or 70 license completion. At what point in the Part 50 licensing process does TVA anticipate issuance of the Parts 30, 40, and 70 licenses?

TVA Assumption 5: *The NRC would inspect Generation mPower as a vendor (major portions of the plant to be fabricated in controlled manufacturing environments).*

a) The NRC's current fee structure may need to be revisited since fees for NRC audits and inspections of vendors are not currently charged back to applicants, licensees, or vendors.

b) The staff will need to understand TVA's concept for inspection at a manufacturer's facility, as well as, integration of those components into the facility, and TVA's plan for quality assurance oversight, including fitness for duty and physical protection considerations. Please explain what you envision in these areas.

c) Clarify how the organizational relationship between TVA and Generation mPower will be addressed for administrative responsibilities such as fee billing, response to technical questions, and licensing decision-making for common issues.

d) How will TVA identify and control the items being performed at the site as opposed to those performed at the vendor facility? Given the fairly unique nature of TVA's proposed approach, additional NRC effort will be required to design the appropriate approach to conducting inspections as this effort moves forward.

TVA Assumption 6: *The scope of the inspection and enforcement program along with the initial test program will inform and demonstrate successful execution of future inspection, test, analysis, and acceptance criterion/criteria (ITAAC) that may be specified in the DC or COL applications.*

The staff understands TVA's assumption as follows. TVA expects to prepare the ITAAC to support the mPower DCR based upon: (i) internal TVA and B&W lessons learned in the design, construction, and testing of the initial mPower module under the Part 50 CP/OL process, as well

as (ii) TVA and B&W consideration of the results of the NRC licensing, inspection and auditing activities found under the CP/OL process. TVA also expects the NRC to use its lessons learned to inform (and focus) the NRC's: (i) consideration of ITAAC adequacy during its review of the proposed DCR and COL, and issuance; and (ii) finding that the acceptance criteria are met under 10 CFR 52.103(g).

a) Is the staff's understanding correct? If not, please provide a statement containing the information necessary to correct the staff's understanding.

b) The staff would like further dialogue and clarification of the statements made with respect to this assumption, including discussion centered around how NRC inspections of vendors would be incorporated into the initial test program. Please describe how you envision NRC inspections of vendors being incorporated into the initial test program.

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