January 18, 2008

Mr. Ashok S. Bhatnagar
Senior Vice President
Nuclear Generation Development and Construction
Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: ACCEPTANCE REVIEW FOR COMBINED LICENSE FOR BELLEFONTE UNITS 3 AND 4 APPLICATION

Dear Mr. Bhatnagar:

By letter dated October 30, 2007, as supplemented by letters dated November 2, 2007, January 8, 2008, and January 14, 2008, the Tennessee Valley Authority submitted its application to the U.S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advanced passive pressurized water reactors in accordance with the requirements contained in 10 CFR 52, "Licenses, Certifications and Approvals for Nuclear Power Plants." This letter informs you that the NRC staff has completed its acceptance review and has determined that your application is acceptable for docketing. These reactors will be identified as Bellefonte Units 3 and 4 and are to be located near the town of Scottsboro in Jackson County, Alabama. The Docket Numbers established for Units 3 and 4 are 52-014, and 52-015, respectively.

As stated in the November 20, 2007, letter acknowledging the receipt of the Bellefonte application, the staff intends to publish a schedule for review of the Bellefonte 3 and 4 combined license application (COLA) within 30 days of completion of the acceptance review. The staff expects to interact with you as this schedule is developed and has identified three areas that have introduced uncertainty into the review schedule. These areas are: 1) incomplete recirculation screen design in the referenced design, 2) the numerical model used to determine the design basis flood at the site; and 3) the seismic source characterization of the region. The first issue is discussed below; the latter two issues are discussed in Enclosure 1 to this letter. The staff expects to discuss these issues at a public meeting with you and Westinghouse.

The Bellefonte COLA incorporates by reference Appendix D to 10 CFR 52 and the AP1000 Design Control Document (DCD) submitted by Westinghouse as Revision 16. As allowed by 10 CFR 52.55(c), at your own risk, you have referenced a design certification application that has been docketed but not granted. By separate letter to Westinghouse dated January 18, 2008, the staff has accepted DCD Revision 16 for docketing. The January 18, 2008, letter to Westinghouse discusses a concern with an incomplete recirculation screen design that will ultimately affect the Bellefonte COL application.

Enclosure 2 is a notice of acceptance for docketing. This notice is being forwarded to the Office of the *Federal Register*, and a separate notice will be published in accordance with the provisions of 10 CFR 2.104, regarding the opportunity to file a petition for leave to intervene in the hearing required for this application.

Should you have any questions, please contact Joseph Sebrosky, the lead project manager for the Bellefonte COLA, at (301) 415-1132 or jms3@nrc.gov.

Sincerely,

/RA/

David B. Matthews, Director
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015

Enclosures:
1. Schedule Issues for the COL Review
2. Federal Register Notice

cc w/encl: See next page

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Office of New Reactors

Docket Nos. 52-014
52-015

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cc w/encl: See next page

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DATE	1/15/08	1/15/08	1/15/08	1/ 17 /08	1/ 18 /08

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COL Bellefonte Mailing List (Revised 1/3/08)

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SCHEDULE ISSUES FOR THE COMBINED LICENSE REVIEW

The Nuclear Regulatory Commission (NRC) staff has identified two areas that have introduced uncertainty into the staff's development of a review schedule. These areas are described in more detail below. The staff believes that a meeting is needed to discuss these issues in more detail so that a schedule can be developed.

1) The numerical model Simulated Open Channel Hydraulics (SOCH) used to estimate the design basis flood at the site is discussed in the Bellefonte Final Safety Analysis Report (FSAR) Section 2.4.3 and 2.4.4. In Section 2.4.3.6 of the Bellefonte FSAR the probable maximum flood (PMF) and coincident wind wave activity results in a flood elevation of 624.0 ft. mean sea level (msl). The application states that the safety-related structures are located at elevation 628.6 ft. msl. Therefore, flooding protection measures and emergency procedures to address flood protection are not required, as stated in FSAR Section 2.4.10.

   Based on the FSAR and subsequent conference calls with TVA staff, a complete model description and sufficient documentation (e.g., a users' guide) for the SOCH model were not cited in the application and may not exist. The NRC staff believes that a meeting is needed with TVA to discuss options for going forward to resolve this issue, including review of materials used to meet quality assurance criteria required under Appendix B to 10 CFR Part 50.

   Future options to resolve this issue and reduce uncertainty in the review schedule include, but are not limited to, the following:

   a) TVA staff indicated during one of the conference calls that they were in the process of adopting/applying the US Army Corps of Engineers' model HEC-RAS to several reservoirs in the system. This numerical model is publicly available and has a complete model description and documentation. TVA could continue this work and update the Bellefonte application to include results of applying this numerical model to compute the design basis flood.

   b) Bounding calculations could be used by TVA to determine the design basis flood for the Bellefonte site, which would most likely result in a computed flood elevation above the site elevation. If this were the case, TVA would need to include flood protection measures and describe emergency procedures in the FSAR .

   c) TVA staff could provide the NRC staff with a complete model description and documentation for the TVA developed SOCH model so that the NRC staff could independently review the model's theory, verification and application. The NRC staff would in parallel develop a numerical model of the watershed to independently confirm the design basis flood at the Bellefonte Site. This

parallel effort is necessary so that a fixed review schedule can be implemented. A detailed numerical model is necessary because a less-detailed bounding calculation would most likely result in a computed flood elevation above the site elevation (i.e., flood protection measures would be needed). The NRC staff believes that significant time and resources would be needed to develop this numerical model.

2) The Bellefonte COL site is near the Eastern Tennessee Seismic Zone, which is considered to be one of the most active seismic areas east of the Rocky Mountains. Recent studies have indicated that this seismic zone may have the potential to produce large magnitude earthquakes. The applicant has not updated the Eastern Tennessee Seismic Zone source models from the 1986 Electric Power Research Institute Seismicity Owners Group (EPRI/SOG) report, although new information on the seismic hazard for the area exists. The staff is concerned that the EPRI/SOG seismic source models for the region may not adequately characterize the potential for larger earthquakes. This is due to the low weights for larger earthquakes and low probabilities of activity for the seismic sources assigned by some of the EPRI/SOG expert teams in the mid-1980's.

In TVA's application, Section 2.5.2.4.1.3 discusses the adequacy of the EPRI-SOG source models based only on the maximum magnitude parameter. Figure 2.5-250 in the Bellefonte application clearly shows that more recent studies place a significantly higher probability on larger maximum magnitude earthquakes. In addition to maximum magnitude, there are several other variables, such as probability of activity, source location and recurrence that contribute to the overall seismic hazard for the site. The TVA application does not adequately address the effect of the other parameters from these newer studies on the Bellefonte probabilistic seismic hazard analysis (PSHA).

There are more recent seismic hazard studies, such as the Geomatrix TVA Dam safety study and the Lawrence Livermore National Laboratory Trial Implementation Project study, which provide new information on the seismic hazard of the area. Regulatory Guide 1.208, "A Performance-Based Approach to Define the Site-Specific Earthquake Ground Motion," provides guidance that new information should be considered when evaluating the applicability of the EPRI-SOG hazard curves for a site. If the effect on the hazard is significant, the Bellefonte PSHA should be updated to include these newer studies. The Bellefonte application does not currently include detailed numerical comparisons of the EPRI-SOG hazard and the newer studies.