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

April 22, 2008

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

10 CFR 2.201

In the Matter of)
Tennessee Valley Authority)

Docket No. 52-014
52-015

BELLEFONTE COMBINED LICENSE APPLICATION –NRC INSPECTION NO. 05200014/2008-001 AND 05200015/2008-001 – TVA RESPONSE TO SAFETY REVIEW ITEMS IDENTIFIED DURING THE INSPECTION

Reference Letter:

Letter from Patrick L. Hiland (NRC) to Ashok S. Bhatnagar (TVA), Bellefonte COL Application, Nuclear Regulatory Commission Inspection of the Implementation of the Quality Assurance Program Governing the Simulated Channel Hydraulics Model – Inspection Report Numbers 052-00014/2008-001 and 05200015/2008-001 and Notice of Violation, dated March 19, 2008.

This letter provides TVA's response to the issues included in the section of Enclosure 2 to the Referenced Letter Entitled "Safety Review Items Identified During the Inspection."

TVA has separately provided its response to the NRC Notice of Violation (NOV), addressing the three violations identified by the NRC in the Referenced Letter.

If you should have any questions, please contact me at 423-751-7119.

Sincerely,

Andrea L. Sterdis
Manager, New Nuclear Licensing and Industry Affairs
Nuclear Generation Development & Construction

Enclosure

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NRO

Enclosure
Information Addressing the Section of Enclosure 2 to NRC's March 19, 2008 Letter Entitled
"Safety Review Items Identified During the Inspection"

Item 1

The NRC stated:

The NRC inspection discussed several technical assumptions described in the Bellefonte FSAR that were associated with application of the SOCH model. Of note was the maximum probable maximum flood (PMF) flood elevation at the Bellefonte site, which was reported to be 622.1 feet mean sea level (MSL) (see FSAR Section 2.4.3.5; FSAR Figure 2.4.3-249; 1998 Flood Reassessment calculation package). As noted in the 1998 calculation package and the FSAR, this flood elevation value assumed dam safety modifications at the Chickamauga Dam had been implemented. These documents also reported that without the dam modifications the PMF height should be 0.4 ft higher at the Bellefonte site (elevation 622.5 ft MSL). TVA staff stated during the inspection that these dam safety modifications to the Chickamauga Dam had neither occurred nor were they planned in the near future. The NRC staff hydrologists questioned whether the FSAR text accurately described the status of these dam safety modifications and which PMF elevation value was used to compute the design basis flood height.

TVA Response:

TVA's reviews found that water level determinations are adequately reflected in section 2.4.3.5 of the COLA. In the text of the COLA, the statements accurately reflect the current configuration and acknowledge that the modifications at Chickamauga Dam have NOT been completed, and the resultant site PMF level is 0.4 feet higher at 622.5 feet MSL. For clarity, TVA is planning to revise the referenced figure, (FSAR Figure 2.4.3-249) in a future revision to annotate the two levels, i.e., a value that reflects the level with the modifications to the Chickamauga Dam (622.1 feet Mean Sea Level (MSL)) and a value that reflects level without the modifications to the Chickamauga Dam (622.5 feet Mean Sea Level (MSL)). Reference BLN FSAR Sections 2.4.2.2, 2.4.3.2, 2.4.3.5, 2.4.3.6 and 2.4.4.

Item 2

The NRC stated:

The NRC staff hydrologists also requested that TVA be prepared to discuss the new Chickamauga Lock (http://www.lrn.usace.army.mil/pao/chickamaugalock/) during the future site safety review. As reported on the United States Army Corps of Engineers web site, construction was initiated during the summer of 2007. NRC staff hydrologists requested that TVA be prepared to discuss how this construction project could potentially impact passage of the PMF at the Chickamauga Dam since several spillway bays appear to be impacted. The NRC staff hydrologists are also interested in understanding how this construction project was reflected in design basis flood calculations presented in FSAR Sections 2.4.3 and 2.4.4.

TVA response:

The current ongoing project at the Chickamauga Dam effectively replaces several spillways with a new lock. Prior analyses performed by TVA at the request of the USACE indicated minimal influence of Bellefonte (BLN) PMF flood heights as a result of several potential Chickamauga

Dam lock proposals. The impact to the Chickamauga Dam headwater rating curves from replacing four spillways is shown in Section 5.2 – Figure 42 of the whitepaper on hydrology entitled "Hydrologic Analysis Description, Revision 0," submitted to the NRC on April 17, 2008. While the figure shows minimal impact to overall capacity, TVA intends to run the updated SOCH models with the final Chickamauga Lock design information and update the PMF results for the BLN site as necessary to clearly reflect any impact to BLN flood levels as a result of the Chickamauga Lock Project. This will be done in connection with TVA's response to violation 05200014/2008-001-02 and 05200015/2008-001-02. The impact on the PMF during the time of the Chickamauga construction project was not evaluated due to the assumption that the project would be complete (projected 2013) well before commercial operation of BLN Units 3 and 4.

Item 3

The NRC stated:

The NRC staff hydrologist also requested that TVA be prepared to discuss any field measurements near the Bellefonte site (e.g., river discharges, stage heights, water velocities) during the 2003 flood event (http://www.srh.noaa.gov/mrx/hydro/may03/may03pictures.php). The NRC staff noted that the Tennessee River discharge at Whitesburg (FSAR Table 2.4.2-204 for data; FSAR Figure 2.4.11-201 for map) for the 2003 storm event was 292,000 cubic feet per second (cfs). During the 1963 event, which was used as a verification dataset for the SOCH model in the FSAR (Figure 2.4.3-246), the Tennessee River discharge at the same location was less (285,000 cfs). The NRC staff also noted that the 1991 maximum stream flow at the Bellefonte site was 304,000 cfs. In general, the NRC staff would like to see verification of SOCH model results against field data collected during the largest discharge events at the Bellefonte site, with preference to more recent events that capture potential urbanization of the watershed and the latest condition of the river/floodplain.

TVA Response:

The original SOCH model developed for the BLN and TVA's three other operating nuclear units was calibrated and verified, consistent with the requirements of Regulatory Guide 1.59, Appendix A, against the two largest post-regulation flood events of record (1963 and 1973). To better address current data concerns, TVA intends to calibrate and verify the updated SOCH models against the more recent observed flood data of 2003 and update the PMF results for the BLN site as necessary. This will be done in connection with TVA's response to violation 05200014/2008-001-02 and 05200015/2008-001-02.