



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

CNL-18-022

February 23, 2018

10 CFR 50.55(e)

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Bellefonte Nuclear Plant, Unit 2
Construction Permit CPPR - 123
NRC Docket No. 50-439

Subject: **Bellefonte Nuclear Plant Unit 2 - Containment Vertical Tendon (V281)
Failure - Final Report**

- Reference(s)
1. U.S. Nuclear Regulatory Commission Operations Center Event Notification No. 52476, dated January 6, 2017
 2. Letter from TVA to NRC, CNL-17-004, "Bellefonte Nuclear Plant Unit 2 - Containment Vertical Tendon (V281) Failure - First Interim Report," dated January 6, 2017 (ML17006A212)
 3. Letter from TVA to NRC, CNL-17-076, "Bellefonte Nuclear Plant Unit 2 - Containment Vertical Tendon (V281) Failure - Second Interim Report," dated June 7, 2017 (ML17158B336)
 4. Letter from TVA to NRC, CNL-17-137, "Bellefonte Nuclear Plant Unit 2 - Containment Vertical Tendon (V281) Failure - Third Interim Report," dated October 30, 2017 (ML17303A875)
 5. Letter from TVA to NRC, "Bellefonte Nuclear Plant Units 1 and 2 - Containment Vertical Tendon Coupling Failure - Final Report," dated March 27, 2013 (ML13091A026)

The purpose of this letter is to provide the NRC with the final report on the Bellefonte Nuclear Plant (BLN) Unit 2 containment vertical tendon coupling failure, which TVA initially reported to the NRC Operations Center on January 6, 2017 (Reference 1). TVA has submitted three interim reports (References 2, 3, and 4) on this subject. TVA's third interim report described further actions being pursued within the TVA corrective action program under Condition Report (CR) 1239343. The effort to resolve CR 1239343 has produced information deemed sufficient to support a final determination of whether the subject failure is reportable pursuant to the requirements in 10 CFR 50.55(e).

The evaluations and supporting laboratory analyses of the BLN Unit 2 V281 containment vertical tendon coupling failure concluded that the failure mode was hydrogen-induced stress corrosion cracking (SCC). The root cause of the failure was determined to be water and sulfides in the grease surrounding a high stress area of the failed coupling.

An external review indicated that the failure was similar to the BLN Unit 1 tendon V9 failure that occurred in 2009 (Reference 5 and CR 200119). The analyses performed for the current coupling failure determined that the failure mechanism is the same for both failures.

After further review of third party reports, TVA decided that additional analysis of the Unit 2 V281 tendon failure was necessary. The additional analysis accounted for differences between the Unit 2 V281 and Unit 1 V9 failures, including variations in reactor building tendon location and building parameters. This analysis also accounted for the tensioning and detensioning plans for Unit 2 to evaluate unit-specific variances. No significant differences between the Unit 1 and Unit 2 failures were found.

As a result, the corrective actions specified in CR 200119 for Unit 1 and any additional requirements delineated in the final reports were captured in CR 1239343 for Unit 2. The reports that were completed for the Unit 1 V9 failure and were specific to Unit 1, were revised and now address both units.

TVA has concluded that the deviation does not represent a substantial safety hazard and is not reportable pursuant to the requirements in 10 CFR Section 50.55(e). Although TVA determined the deviation does not represent a substantial safety hazard and is not reportable, corrective actions for the subject containment vertical tendon coupling failure condition will continue to be completed under CR 1239343.

There are no new regulatory commitments made in this submittal.

Please address any questions regarding this response to Edward Schrull at (423) 751-3850.

Respectfully,

A handwritten signature in black ink, appearing to read "J. W. Shea", followed by the word "for" in a cursive script.

J. W. Shea
Vice President, Nuclear Regulatory Affairs and Support Services

cc (Enclosures):

NRC Regional Administrator - Region II
Deputy Regional Administrator for Construction
NRR Project Manager - Watts Bar Nuclear Plant