



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

CNL-17- 004

January 6, 2017

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 - First Interim Report**

The purpose of this letter is to inform the NRC that the subject defect was determined to be reportable in accordance with 10 CFR 50.55(e). TVA reported the defect to the NRC Operations Center on January 6, 2017, and referenced Bellefonte Condition Report 1239343. The enclosure to this letter contains the first interim report for the subject tendon failure.

One regulatory commitment, to provide an updated report, is captured in Attachment 1 of this submittal. Please address any questions regarding this response to Gordon P. Arent at 423-365-2004.

Respectfully,

A handwritten signature in blue ink, appearing to read 'J. W. Shea'.

J. W. Shea  
Vice President, Nuclear Licensing

Enclosure: 10 CFR 50.55(e) Interim Report Bellefonte Nuclear Plant (BLN)  
Containment Vertical Tendon Coupling Failure

cc (Enclosure):

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

**10 CFR 50.55(e) INTERIM REPORT  
BELLEFONTE NUCLEAR PLANT (BLN)  
CONTAINMENT VERTICAL TENDON COUPLING FAILURE**

The following information regarding the BLN Containment Vertical Tendon Coupling failure is provided in accordance with 10 CFR 50.55(e)(6), Content of notification.

**(i) Name and address of the individual or individuals informing the Commission.**

James S. Chardos, BLN Site Manager  
2744 Bellefonte Road  
Hollywood, Alabama 35752

**(ii) Identification of the facility, the activity or the basic component supplied for the facility or the activity within the United States which contains a defect or fails to comply.**

Tennessee Valley Authority (TVA) holds Construction Permit CPPR 123 for Bellefonte Nuclear Plant Unit 2, NRC Docket Number 50-439

**(iii) Identification of the firm constructing or manufacturing facility or supplying the basic component which fails to comply or contains a defect.**

TVA holds Construction Permit CPPR 123 for Bellefonte Nuclear Plant Unit 2, NRC Docket Number 50-439

**(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by the defect or failure to comply.**

During a routine inspection on December 6, 2016, TVA found the Unit 2 Reactor Building Containment Vertical Tendon V281 rock anchor/tendon anchor coupling had failed. The anchor coupling appears to have sheared in the threaded portion allowing the anchor head for the vertical tendon and the anchor head for the rock anchor tendon to separate.

TVA had inspected the failed tendon coupling on October 19, 2016, and identified no signs of component specific damage or improper installation creating the potential for an unknown common mode failure.

This inspection of the failed Unit 2 Reactor Building Containment Vertical Tendon V281 coupling indicates a potential for an unknown common mode failure mechanism for BLN Containment vertical tendon rock anchor couplings.

Currently, the cause for the failure of the V281 rock anchor/tendon anchor coupling is unknown. As a result, the extent of condition can not be determined at this time. If multiple containment tendons had been found to be losing the capability to carry tendon design force, and this condition was left uncorrected, this could have reduced the capability of the containment structure to perform its design function. TVA had previously completed an analysis of containment structure integrity considering a single tendon coupler failure as a result of a similar failure of a Unit 1 Reactor Building Containment Vertical Tendon V9 in 2009 and determined that the containment structure is maintaining its design capability.

**(v) The date on which the information of a defect or failure to comply was obtained.**

The failure of the V281 rock anchor/tendon anchor coupling was found on December 6, 2016 during a routine inspection.

**(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of all basic components in use at the facility subject to the regulations in this part.**

Each of the Unit 1 and Unit 2 Reactor Building Containments at BLN contain 185 vertical tendons with rock anchor/tendon anchor couplings.

**(vii) In the case of a completed reactor manufactured under part 52 of this chapter, the entities to which the reactor was supplied.**

BLN is not a completed reactor manufactured under part 52.

**(viii) The corrective action that has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.**

Upon discovery on December 6, 2016, the following actions were taken by BLN personnel.

- Access to the Unit 2 tendon gallery was restricted.
- The area of the V281 tendon failure was subsequently cleaned.
- Grease samples were obtained and sent to TVA Central Labs for analysis.
- The couplings from both the rock anchor and tendon anchor locations were removed and sent to TVA Central Labs for metallurgical analysis.
- Grease samples were also collected from adjacent tendons (V272 through V290) to evaluate if conditions are similar to tendon V281 samples.
- The failure was entered into the BLN Corrective Action Program (Condition Report 1239343)

TVA plans to provide an update to this report by May 25, 2017 following the completion of the metallurgical and grease analysis.

**(ix) Any advice related to the defect or failure to comply about the facility, activity or basic component that has been, is being, or will be given to other entities.**

Based on the unknown failure mechanism, TVA does not plan on communicating with other entities.

**ATTACHMENT 1  
10 CFR 50.55(E) INTERIM REPORT  
BELLEFONTE NUCLEAR PLANT (BLN)  
CONTAINMENT VERTICAL TENDON COUPLING FAILURE**

**LIST OF COMMITMENTS**

1. TVA will submit an update to this interim report prior to May 25, 2017.