



Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

December 10, 2009

10 CFR 50.55 (e)

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

In the Matter of )  
Tennessee Valley Authority )

Docket No. 50-438 and 50-439

TENNESSEE VALLEY AUTHORITY (TVA) - BELLEFONTE NUCLEAR PLANT (BLN)  
UNITS 1 (CPPR-122) AND 2 (CPPR-123) - CONTAINMENT VERTICAL TENDON  
COUPLING 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). This defect was initially reported to the NRC Operations Center on December 10, 2009 as Problem Evaluation Report 200119. The enclosure to this letter contains the first interim report for the subject matter. The attachment to the enclosure provides the list of commitments made in this submittal. TVA expects to submit the next report by March 31, 2010.

Sincerely,

Jack A. Bailey  
Vice President, Nuclear Generation Development  
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Enclosure

cc: See page 2

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

**Description of Deficiency**

Inspection of failed Unit 1 Reactor Building Containment Vertical Tendon V9 coupling indicates a potential for an unknown common mode failure mechanism for BLN Containment vertical tendon rock anchor couplings. Unit 1 Reactor Building Containment Vertical Tendon V9 experienced a failure of the rock anchor/ tendon anchor coupling on August 17, 2009 at approximately 1400 CDT. The time of failure was identified based on a loud noise being reported by several individuals. Initial investigation failed to reveal the source of the noise. The failed tendon was discovered on August 24, 2009 during a tour of the U1 Tendon Gallery, elevation 607. Unsafe conditions previously precluded an inspection of the failed coupling for proper installation or component specific damage. The failed tendon coupling was inspected on 11/23/2009 and showed no signs of component specific damage or improper installation creating the potential for an unknown common mode failure.

**Safety Significance**

Until the mechanism of failure is identified the extent of condition will not be known. If multiple containment tendons are found to be losing the capability to carry tendon design force, and this condition was left uncorrected, this could jeopardize the ability of the containment structure to perform its design function.

**Cause of Deficiency**

The cause of this deficiency is unknown at this time. Further analysis is in progress and when completed, an update to this report will be provided.

**Interim Progress**

Grease from the lower anchor head can has been analyzed for moisture content. These analysis results were within in vendor specifications. Additional samples have been sent for further analysis as described in Regulatory Guide 1.35 "Inservice Inspection of Ungrouted Tendons in Prestressed concrete Containments,"

After successful safe securing of the tendon load, the failed coupling was visually inspected. The visual inspection of the failed coupling did not indicate a component-specific failure mechanism or indication of a visually apparent common mode failure mechanism. Based on this inspection, visual inspection of additional tendon couplers is not warranted at this time.

The coupling has been removed from both the tendon anchorhead and the rock anchor tendon anchorhead and sent to the TVA Central Lab for metallurgical analysis.

Records have been reviewed to identify previous non-conformance reports and certificates of compliance for the coupler. An extent of condition and extent of cause investigation will apply to vertical tendons in both Unit 1 and Unit 2 Reactor Buildings. Although the dome tendons and horizontal tendons are similar in design, these tendons do not utilize an anchorhead coupler in the design. However, these tendons will be considered in the analysis.

**Future Updates**

TVA plans to provide an update to this report by March 31, 2010 following the completion of the metallurgical analysis.

Enclosure  
TVA Letter Dated December 10, 2009

**ATTACHMENT TO  
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 March 31, 2010.