

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

September 16, 1981

BLRD-50-438/81-36
BLRD-50-439/81-39

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303



Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - FAULTY WELDS ON MIRROR INSULATION
SUPPORT STEEL - BLRD-50-438/81-36, BLRD-50-439/81-39 - REVISED FINAL
REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on May 11, 1981 in accordance with 10 CFR 50.55(e) as NCR 1449. This was followed by our first interim report dated June 10, 1981 and our final report dated August 27, 1981. As discussed with R. V. Crlenjak by telephone on September 9, 1981, enclosed is our revised final report. The reason for the revision is that the completion date for part of the rework has been delayed. We consider 10 CFR Part 21 applicable to this deficiency.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Jr., Director (Enclosure)
Office of Inspection and Enforcement
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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
FAULTY WELDS ON MIRROR INSULATION SUPPORT STEEL
BLRD-50-438/81-36, BLRD-50-439/81-39
10 CFR 50.55(e)
REVISED FINAL REPORT

Description of Deficiency

The insulation surrounding the reactor vessel is supported by a steel framework, supplied by Mirror Insulation, Lancaster, Ohio. While installing the reactor vessel bottom head insulation support steel, it was discovered that practically all of the weld preparations for field welding and vendor-made welds on these structures were faulty. This condition was caused by the steel suppliers failure to fabricate the support structures in accordance with drawing requirements and the American Welding Society (AWS) code and by inadequate inspection by Babcock and Wilcox (B&W) and their insulator subcontractor (Mirror Insulation).

The weld preparations either were not prepared in accordance with the vendor's drawings or were omitted. The vendor welds do not meet the visual acceptance criteria of the AWS D1.1-77 structural steel code. The defects include spatter, arc strikes, undercut welds, craters, porosity, and undersize or incomplete welds.

These deficiencies should have been discovered before B&W released the structures for shipment from its subcontractor's (Mirror Insulation) plant.

B&W also failed to provide TVA's inspector the opportunity to perform source inspection as required by the contract.

Safety Implications

If the condition had remained uncorrected and there was a safe shutdown or design basis earthquake, the faulty vendor welds could fail. If these welds were to fail, the insulation support structure could collapse, which could break the incore monitoring piping coming from the bottom of the reactor vessel, which could adversely affect the safety of plant operations.

Corrective Action

All vertical welds on the unit 1 assembly that were not properly weld prepared and/or welded will have the structural steel joint welds ground and properly prepared before rewelding. Penetration welds will be properly made to assure structural adequacy. After final welding and cleaning, structural steel will be repainted in accordance with specification and drawing requirements, and then inspected to original requirements. As proposed in the previous report, TVA will complete these corrective actions by January 5, 1982.

TVA has discovered that rework of the unit 2 assembly to drawing requirements is not practical. Actual physical dimensions of this assembly preclude rework of welds to the specified drawing details. Also, some assembly parts had not been shipped by the vendor. Therefore, this assembly will be shipped to the vendor for necessary corrections. These corrections will be completed, and the unit 2 assembly will be returned to the Bellefonte site by September 17, 1982.

To prevent recurrence, Mirror Insulation has added inspections at their support steel supplier's plant, and B&W is increasing their inspections at Mirror Insulation before shipment.

An investigation has been made which has determined that there have been no similar deficiencies to date for insulation support steel fabricated for TVA plants preceding Bellefonte. Support steel for the balance of insulation at Bellefonte, and TVA plants later than Bellefonte has not yet been fabricated.