

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

03 NOV 28 A 9: 06 November 23, 1983

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNIT 1 - REVISED RESPONSE TO VIOLATIONS
50-428/83-15-04, SWITCHGEAR FRAME WELDED ASSEMBLIES - 50-438/83-15-05,
BODY TO BONNET VALVE CONNECTION LOOSE DURING PERFORMANCE OF DHR FLUSH

This letter is in response to the TVA/NRC telecon of September 30, 1983 concerning activities at Bellefonte Nuclear Plant which appeared to have been in violation of NRC regulations as discussed in D. M. Verrelli's letter to H. G. Parris dated July 19, 1983.

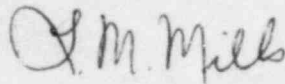
The NRC requested that TVA provide additional information to supplement our initial response as stated in my letter to you dated August 24, 1983. Enclosed is a revision to the initial response with supplemental changes and/or corrections.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
Institute of Nuclear Power Operations
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ENCLOSURE
BELLEFONTE NUCLEAR PLANT UNIT 1
RESPONSE TO SEVERITY LEVEL V VIOLATION
50-438/83-15-04
SWITCHGEAR FRAME WELDED ASSEMBLIES

Description of Deficiency

10 CFR 50, Appendix B, Criterion IX and VII and the accepted QA program (TVA-TR-75-1A, Rev. 5) Sections 17.1A.9 and 17.1A.7 respectively require that measures shall be established to assure that welding is controlled and accomplished in accordance with applicable codes and specifications. In addition, measures shall be established to assure that purchased services conform to the procurement documents.

Contrary to the above, on May 24, 1983, activities affecting quality were not accomplished in accordance with vendor's specifications in that numerous vendor made welds used to assemble the 6.9kV medium voltage switchgear were deficient. (Unit 1)

TVA Response

Admission or Denial of the Alleged Violation

TVA denies the alleged violation.

Reasons for Denial

Codes

At the time the contract was awarded, there was not an applicable welding code. The contract was awarded December 18, 1974. ANSI/AWS Standard D1.3 was first issued in 1978 as "Specification for Welding Sheet Steel in Structures."

Specifications

It is charged that welding as a special process must satisfy Criterion IX of 10 CFR 50, Appendix B, which requires that measures be established to assure that special processes are performed by qualified personnel using qualified procedures in accordance with applicable codes and specifications, and Criterion VII which requires that measures be established to assure that purchased equipment conform to the procurement documents.

It was not TVA's intention to define special processes or to prescribe manufacturing methods or processes for this type equipment which has seen many years of proven reliable service and in many cases thousands of operations, often in high vibration locations such as coal handling facilities in fossil generating stations. Rather, TVA specifies the required performance (including seismic qualification) and conformance to industry standards (requiring proof testing of functional performance and mechanical life as bases for rating) for this type equipment. To require

a vendor to deviate from his proven manufacturing methods would tend to introduce unknown effects in the quality of the equipment. Further, for equipment of this type, TVA requires as a basis of bid that a prospective vendor provide experience data relative to equipment of similar type, scope, and complexity in operation in similar applications, and places high value on this documentation (which is confirmed). The welding of the basic structure has not been considered by TVA to be a special process unless the vendor so identifies it on the basis of the criteria of Section 9, Control of Special Processes, of IEEE Standard 467-1980, Quality Assurance Program Requirements for the Design of Class 1E Instrumentation and Electric Equipment for Nuclear Power Generating Stations (NPGS).

Switchgear welding is defined on standard manufacturing drawings used exclusively in shop fabrication (i.e., they are not procurement drawings). The type of sales order (SO) drawings which are furnished to TVA normally do not show welding symbols. The majority of the switchgear welds (95 percent) are spotwelds. The ITE factory procedures require that spotweld "set ups" are checked by spotwelding two samples of the same gauge metal as in the switchgear and performing a tensile pull test to prove the acceptability of the actual switchgear production spotwelds. Records of these test inspections are maintained. Section 3.9.4.1 of the vendor's QA manual points out that since the welding machine and operator are qualified by a sample demonstration test at time of any change of shift or change of set up, neither criterion for identification as a special process is met because (1) quality is not then dependent on operator skill and (2) the end quality (of the weld) can be readily determined by inspection and by the pretest. The vendor's QA manual, furnished to and approved by TVA as a condition for contract award, discusses only spotwelding.

It is important to note, however, that the welding of concern to the NRC inspector is the arc welds appearing in the 8-inch extension added to the front of the switchgear to permit use of a full-height door. The 8-inch extension consists of two side plates, a top plate, and an assembled floor. The complete extension is assembled and then secured structurally to the main frame by bolting at the rear flanges of the side pieces. The top has a lip at the sides which is arc welded only to the sides and serves only to maintain the proper dimensional relationship. The floor is preassembled by spotwelding from three pieces so as to match the floor thickness and the breaker guide rails of the main frame floor. The floor is arc welded to the sides by lap welds and is butt welded to the main frame floor to assure a plane surface for rolling the drawout breakers and to establish dimensional relationships. The structural strength of the extension to the basic frame is established by the above-mentioned bolting, not arc welding. The floor sill to which the entire assembly (main frame plus extension) is anchored is beneath the main frame, not beneath the extension. The 8-inch extension was a part of the seismic test specimen.

Structural strength of this class switchgear is achieved with structure configuration using spotwelded attachments in the basic frame. Arc welds are typically used only for special device mounting or for added features such as the extra-depth front enclosure. There are no arc welds placed in the basic frame configuration due to inaccessibility of the spotwelding machine. Additionally, at the Brown Boveri Electric plant in Chalfont, Pennsylvania, where this ITE switchgear was manufactured, there is no requirement for arc welds (tacking) to hold pieces in place until spotwelded.

Although the valve in question did have a loose connection, the deficient condition had not progressed to the point where valve integrity had been lost. Further, had this condition remained unidentified by the inspector, TVA would have been able to identify and correct the deficiency during system hydrostatic testing in the event valve integrity was lost. Any gasket leakage detected during the system test would have been promptly corrected by retorquing in accordance with procedures. Any unacceptable leakage discovered after system transfer to TVA's Division of Nuclear Power is corrected by the maintenance group based on requests by power operations.

BELLEFONTE NUCLEAR PLANT UNIT 1
RESPONSE TO SEVERITY LEVEL V VIOLATION
50-438/83-15-05
BODY TO BONNET VALVE CONNECTION LOOSE DURING PERFORMANCE OF DHR FLUSH

Description of Deficiency

10 CFR 50, Appendix B, Criterion V and the accepted QA program (TVA-TN75-1A, Rev. 5) Section 17.1A.5 requires that activities affecting quality be accomplished in accordance with procedures.

ANSI N45.2.8, paragraph 3.1 states that the following: Prior to the actual installation of mechanical items, there are certain preliminary inspection, checks and similar activities that shall be completed to verify that the item and the installation area conform to specified requirements and the necessary resources are available to assure that the quality of the mechanical item will be maintained as the installation proceeds.

Contrary to the above, activities affecting quality were found not to be in accordance with procedures and drawings in that a Decay Heat Removal valve had a loose body to bonnet joint. This became a generic problem in that approximately 464 valves were involved.

TVA Response

Admission or Denial of the Alleged Violation

TVA denies the alleged violation.

Reasons for Denial

TVA denies the violation as stated based upon the position that a program deficiency does not exist. TVA maintains that its program which ensures proper mechanical joint integrity adequately addresses this concern. The criteria established by ANSI N45.2.8 referenced in report 50-438/83-15, 50-439/83-15 addresses only five conditions for pre-installation verification, one of them being section 3.1 "General," referenced in the report. These requirements covering preinstallation have been implemented through site-generated Quality Control Procedure 1.1 "Receiving Inspection." The remaining paragraph referenced in the inspection report from ANSI is 4.4, "Inspection" which identifies controls that are to be established during installation processes. These activities are implemented through Quality Control Procedure 6.9, "Valves," and Construction Test Procedure 7.6, "Hydrostatic Testing." Based on the requirements established by these documents, no violation of criteria in ANSI N45.2.8 was found.

TVA agrees that a technical problem did exist, as identified by NCR 1686, and investigation revealed that the manufacturer had in part used inadequate torque values for assembly of body to bonnet valve connections. New values were established by the manufacturer, and TVA committed to increasing torque values of these connections for all affected valves. This completed corrective actions necessary and any concern associated with the manufacturer's requirement to ensure the mechanical joint integrity.

In summary, there are no hidden structural arc welds in the switchgear, and the arc welds inspected at the site by the NRC inspector do not serve a structural function but rather to maintain dimensional relationships.

At the time the switchgear for this contract was manufactured the spotwelding procedures and welding personnel were qualified. Similar equipment constructed by the same production facilities has been subjected to seismic testing at levels substantially higher than that of the Bellefonte Plant without any weld failures. Both the vendor and TVA continue to maintain that this equipment is acceptable for Class 1E use as is and is fully qualified for the life of the plant.