

TENNESSEE VALLEY AUTHORITY

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MAR 27 1989

U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - VENDOR WELD REVIEW

This letter provides the final response as committed in our December 28, 1988 letter on the WBN vendor weld evaluation program described in TVA's December 5, 1986 letter to NRC. TVA committed to an evaluation of specific vendor welding concerns of the Employee Concerns Program by the Quality Assurance/Quality Control Group. In conjunction with the review, TVA's Nuclear Quality Assurance (NQA) personnel would perform an evaluation of the remaining vendor welds.

The Quality Assurance Category Evaluation Group's (QACEG) investigation of the employee concerns found that the weld acceptance criteria for vendor welds differs from WBN acceptance criteria. The weld acceptance criteria contained in WBN inspection procedures is somewhat more stringent than the vendors. As an example, the ASME Code Section III acceptance criteria does not address weld spatter, arc strikes, or weave width. TVA acceptance procedures state that welds will be free of weld spatter, arc strikes, and set specific parameters for weave width. Nevertheless, welding by both the vendor and WBN is required to be in accordance with the minimum requirements of the code. Therefore, the allegation that vendor welding acceptance criteria results in poor quality vendor welds at WBN was to be investigated by site inspection personnel utilizing the acceptance criteria as identified in the various vendor procurement contracts.

It has been substantiated that unsatisfactory vendor welds existed at WBN as identified by nonconforming condition reports (NCRs) generated during construction. To determine which remaining vendor welds should be reinspected, a program plan was implemented by TVA which provided the steps necessary to evaluate vendor-welded components. The vendors considered for review were extracted from the total population of vendors to bound the vendor weld concern. As a first step, NQA determined the vendors of safety-related commodities which had previously been identified with a potential weld problem. This was done by performing an evaluation of quality indicators related to vendor weld concerns. All safety-related vendor welds were not part of this evaluation--only those that had been previously identified as an indicated problem area. This evaluation consisted of site-generated documents

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and indicators assembled by the TVA Welding Project (WP). These indicators also provided the bases for welding evaluations performed under the WP. Under the direction of the site quality manager these various indicators, described below, were reviewed to identify adverse trends by specific vendors. The following represents the data base from which the quality indicators were derived:

- ° Construction Appraisal Team Reports - This review did not reveal any problems with vendors supplying welded components to WBN.
- ° NRC Inspection Reports - Deficiencies identified through NRC inspection reports concerning vendor welds were tracked by TVA using NCRs.
- ° Department of Energy/Welding Evaluation Project (DOE/WEP) Concerns - Vendor welding was not included in their scope of activities.
- ° Corrective Action Reports - One audit identified deficiencies in the Radiation Monitoring System.
- ° Generic Employee Concerns - Vendors that could be identified from these concerns were evaluated, e.g., Yuba, Opeilaka Tank, Westinghouse (SIS Accumulators), Bergen-Paterson.
- ° NCRs - There were 66 NCRs reviewed for vendor weld issues.

From the total population of quality indicators developed by WP, 98 quality indicators were reviewed to determine if past corrective actions had addressed the generic implications for vendor quality, e.g., rework, repair, or use-as-is. Indicators were also reviewed for duplicate indicators by the same vendor. TVA has a high confidence level that by using the total population of quality indicators developed by WP for this review that the significant issues as related to vendor welding have been captured.

This review of quality indicators resulted in the identification of 16 vendors (enclosure 1) with potential welding problems. This list of vendors was submitted to Nuclear Engineering (NE) to determine if previous efforts had indeed been sufficient to resolve WBN vendor weld quality or to identify the scope of vendor welding still requiring corrective action. NE was also requested to provide specific weld acceptance criteria for the identified vendors requiring additional inspections. This assessment determined that 5 of 16 vendors identified in enclosure 1 required reinspection.

NQA then determined total population and generated sample population sizes in accordance with Nuclear Construction Issues Group (NCIG)-02.

- ° Dravo - By using a random computer generator number, a sample size of 64 was obtained from a total of 4,891 piping subassemblies supplied to WBN by Dravo. NQA then reexamined 64 welds by a rereview of radiographs or the required nondestructive examinations. The results of these reexamination are documented in enclosure 1.

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- ° York - By using a random computer generator number, a sample size of 64 was obtained from a total of 381 floor-mounted instrument panels supplied by York. These panels were visually inspected and the results given to NE for their evaluation. The results of these are documented in enclosure 1.
- ° Masoneilan - A total of eight 2-inch valves with 6-inch socket-welded nipples, 16 welds, was visually reinspected for weld size only. The results of this reinspection are documented in enclosure 1
- ° Pittsburgh Des Moines Steel - The results of a rereview of radiographs are documented in enclosure 1.
- ° Broadline - A 100-percent rereview of radiographs for both 175-ton polar cranes has been completed. The results of this review are documented in enclosure 1.

These evaluations were used to either confirm that previous actions taken were sufficient or to identify the scope of vendor welds which still needed corrective action. Inspection samples were expanded when the inspection results dictated. The sample population evaluated provided a bias towards areas of known problems. This provided a comprehensive enough review that evaluation of other vendor-welded commodities was not required as referred to in attachment 1 to question 13 of the December 5, 1986 letter. TVA believes that these actions taken regarding vendor welding at WBN are appropriate and acceptable.

Enclosure 2 lists the commitments contained in this report.

If there are any questions, please telephone D. E. McCloud at (615) 365-8650.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Gridley, Manager
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Enclosures
cc: See page 4

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Enclosures

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ENCLOSURE 1

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2
VENDOR WELD REVIEW

Listed below are the vendors that have been reviewed in the WBN vendor weld evaluation program.

1. York Electro: A sample of 64 instrument panel welds was visually inspected and the results submitted for evaluation. The results of this evaluation are documented on Condition Adverse to Quality Report (CAQR) WBP 871191.
2. Pittsburgh Des Moines (PDM): Radiographs have been reviewed for the refueling water storage tanks for unit 1 and unit 2, and CAQRs WBP 880190 and WBP 880746 have been initiated for the identified deficiencies.
3. Bergen-Paterson: The weld identified on quality indicator (Nonconforming Condition Report [NCR] 5085) was actually a field weld. No reinspection is required.
4. Limitorque Valve Operators: No reinspection is required by Nuclear Quality Assurance (NQA) based on engineering evaluation of NCR 6454. This compensator collar weld, if it were to fail, would not prevent the valve from operating.
5. Radiation Monitoring System: Previous corrective action adequately addressed scope of vendor deficiencies.
6. Dravo: There were 64 welds reexamined through a rereview of the radiographs and the required nondestructive examinations. Three CAQRs, WBP 871226, WBP 880075, and WBP 880096, have been written for minor surface conditions. CAQR WBP 871226 also includes a counter bore condition (internal surface condition). No additional reexaminations are required.
7. Masoneilan: Reinspection complete. CAQRs WBP 880245 and WBP 880250 were generated for undersized welds. The CAQRs were closed with a use-as-is disposition. No additional inspections are required.
8. CBI: Previous corrective action adequately addressed vendor deficiencies.
9. Tube Turn: Previous corrective action adequately addressed vendor deficiencies.
10. WRD-NTD: Previous corrective action adequately addressed vendor deficiencies.
11. Stern Rogers: Previous corrective action adequately addressed vendor deficiencies.
12. Yuba: Previous corrective action adequately addressed vendor deficiencies.

13. Westinghouse: Previous corrective action adequately addressed vendor deficiencies.
14. Opeilaka: Previous corrective action adequately addressed vendor deficiencies.
15. Julius Mock: Previous corrective action adequately addressed vendor deficiencies.
16. Broadline: Radiographs for both 175-ton polar cranes have been reviewed. CAQRs WBP 880749 and WBP 880750 were generated identifying defects and technique problems.

Listed below are the CAQRs generated for vendor weld deficiencies identified as a result of the WBN vendor weld evaluation program.

<u>CAQR</u>	<u>VENDOR/COMPONENT</u>	<u>DESCRIPTION</u>
WBP 871191	York Electro/Instrument Panels	As a result of the dynamic analysis performed on a sample of the vendor panels, NE has determined that the vendor welds provided meet design specification requirements.
WBP 880749 WBP 880750	Broadline/Polar Cranes	100 percent of the vendor welds have been reexamined. Defects were found and technique deficiencies were detected. Radiographs are currently being reevaluated to the AWS building code criteria.
WBP 880746 WBP 880190	Pittsburgh Des Moines/ Refueling Water Storage Tanks (RWSTs)	Approximately 40 percent of the radiograph/weld sectors for the unit 1 and 2 RWSTs have been reviewed with an unacceptable rejection rate by TVA inspectors. This examination sample was expanded to include the primary makeup water storage tanks (2) also fabricated by PDM. Corrective action is being developed to address vendor welds determined to be unacceptable and to review the remaining radiographs. Unacceptable welds will be repaired to meet ASME requirements.

WBP 871226
WBP 880075
WBP 880096

Dravo/Piping
Subassemblies

Only minor surface conditions were identified during the visual weld reinspections of the vendor welds. The CAQRs will track corrective actions to completion.

WBP 880245
WBP 880250

Masoneilan/Valves

The undersized welds identified have been determined by NE calculation to be acceptable. The CAQRs were closed with a use-as-is disposition.

ENCLOSURE 2

LIST OF COMMITMENTS

1. Radiographs are currently being reevaluated to the AWS building code criteria for units 1 and 2.
2. Corrective action for Condition Adverse to Quality Reports (CAQRs) WBP 880190 (unit 1) and WBP 880746 (unit 2) are being developed to address vendor welds determined to be unacceptable and to review remaining radiographs. Unacceptable welds will be repaired to meet ASME requirements.
3. CAQR WBP 871226 will track corrective actions to closure.
4. CAQRs WBP 880075 (unit 1) and WBP 880096 (unit 2) will track corrective actions to closure.