

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

April 10, 1989

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

RECEIVED
APR 17 1989
COMPLIANCE & SERVICES
LICENSING

Gentlemen:

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

Docket Nos. 50-390
50-391

WATTS BAR NUCLEAR PLANT (WBN) - PHASE II WELD REPORT

In accordance with TVA's welding review program, enclosed for your review is the WBN Phase II Weld Report. Phase II was conducted by TVA to evaluate the implementation of the written welding program; verify that the weldments made by TVA in the field meet commitments and requirements; correct any problems; and implement any changes to prevent recurrence.

This evaluation included welding and inspection activities associated with field fabrication and installations performed by TVA at WBN. It is an assessment of the implementation of the TVA welding program by conducting a physical reinspection of the plant's welds, and evaluating the results. Also, included was a detailed evaluation of the welding-related employee concerns and analysis of certain nonconformances which were generic to larger populations of welded connections.

The Phase II Weld Report found the welds evaluated are in compliance with TVA licensing requirements or will be upon completion of the applicable corrective actions. As a result of this evaluation, TVA believes the unsampled portion of the welding population, with a high degree of confidence, meets licensing requirements. This report also provides recommendations for enhancing the existing program.

Enclosure 1 lists the commitments found in the WBN Phase II Weld Report.

TVA is available at your earliest convenience should you believe additional discussion on this report is necessary. Please refer any specific questions to G. R. Ashley at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



C. H. Fox, Jr., Vice President and
Nuclear Technical Director

Enclosures
cc: See page 2

8905240053 890410
PDR ADDCK 05000390
A PDC

0030
11

U.S. Nuclear Regulatory Commission

cc (Enclosures):

Ms. S. C. Black, Assistant Director
for Projects
TVA Projects Division
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Ms. L. J. Watson, Acting Assistant Director
for Inspection Programs
TVA Projects Division
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

U.S. Nuclear Regulatory Commission
Watts Bar Resident Inspector
P.O. Box 700
Spring City, Tennessee 37381

ENCLOSURE

LIST OF COMMITMENTS

1. At WBN, the modifications welders' qualification and continuity records have been integrated into the Nuclear Construction (NC)-automated program. Under this consolidation, the maintenance welders' records have been included under the NC program. The actions taken fully meet the intent of the Welding Project (WP) recommendations.
2. WP noted that the WBN site-implementing procedures do not clearly define the circumstances under which unique weld identification numbers are assigned for ANSI B31.1, "ANSI/ASME Power Piping Code," and AWS D1.1 welds, and the procedures do not define the responsibility for assignment of these numbers. WP recommended that the existing practices which are acceptable be clearly defined in the site procedures. The actions to implement this recommendation are in process.
3. WP will compare the conclusions of these nonconformance reports (NCRs) with DOE/WEP unit 1 conclusions, and will document the results of the comparison in the WP final report.
4. The WBN Final Safety Analysis Report (FSAR) will be revised to allow the use of ASME Code Case N-318 as endorsed by NRC Regulatory Guide 1.84.
5. The schedule for reinspection and rework, if required, will be developed based on the results of the reanalysis which is being accomplished as part of TVA's Hanger and Analysis Up-Date Program.
6. The improvements in welder and quality assurance (QA) inspector training concerning weld symbols, procedure changes, and adherence to drawing and specification requirements will assist in prevention of recurrence of this deficiency.
7. These include procedural requirements for foremen to verify fitup for all welds before beginning welding and random surveillance inspections by welding quality control (QC) inspectors for weld fitups.
8. To assure that documentation is provided for temporary weld attachment areas, procedural changes were necessary to identify requirements for temporary weld attachment removal, examination, and documentation.
9. Modifications to the welding program as a result of the WP Phase I and Phase II recommendations will be evaluated in the future by Nuclear Quality Assurance (NQA) to determine their effectivity.

The following are recommendations that will be evaluated by the line organization and implemented as appropriate. Implementation of these recommendations may occur differently than recommended; however, modifications to the welding program as a result of the WP Phase I and Phase II recommendations will be evaluated in the future by NQA to determine their effectivity.

10. Upgrade site-implementing procedures to provide clear definition of requirements and responsibilities.
11. Revise General Construction Specification G-29 (reference 10.33) (or properly organize successor documents) to specifically delineate applicability of the individual process specifications.
12. Indoctrinate and provide ongoing training/orientation to engineers, designers, technical supervisors, and engineering managers in the following areas:
 - a. Code applicability.
 - b. Requirements for constructability and inspectability of welded designs.
 - c. Contents and use of G-29 (reference 10.33) or successor documents.
 - d. Logical presentation of information in output documents.
 - e. Design requirements embodied in welding codes.
 - f. Responsibility of Nuclear Engineering (NE) to provide fabrication, erection, and examination requirements.
13. Provide more effective training to appropriate engineering, craft, and QA personnel in orientation programs which emphasizes:
 - a. Importance of maintaining welder qualification (i.e., limits of qualification and continuity).
 - b. Preparation of work instructions.
 - c. Use of welding procedures which comply with NE technical requirements.
 - d. Preparation of Notification of Indication (NOI) forms.
 - e. Necessity of accurate filler metal recordkeeping on weld data sheets, particularly when combination process welding procedures are used (i.e., record type, size, and traceability reference for all filler metal used).

14. Communication among supervisors, engineers, inspectors, and craftsmen, as individuals and as groups, is essential. An open and comfortable atmosphere must prevail where individuals believe they can ask responsible questions. When procedure revisions or other changes create departures from past practices, the affected employees must be made aware of the reason and intent, as well as the letter of the changes.
15. Perform a corporate review of ANSI N45.2 series standards and the construction-implementing documents to determine the level of TVA fulfillment of the standards. Based upon this review, revise the FSAR as appropriate to document the degree to which the standard was implemented.
16. Implement an effective trending program with emphasis on preventive action.
17. Extend the site director's initiative to eliminate separate programs to accomplish like work activities. Specifically, the separate inspector certification programs for each of the units should be eliminated, and control of maintenance welding should be integrated into the program which controls initial installation and modifications.
18. Welding qualifications/continuity and weld data sheets should be computerized to provide quicker and more complete access to data. The need to retrofit past data into these systems should be evaluated and determined by the implementing organizations.
19. WP recommends that WBN engineering establish procedures to assure that these deviations do not result in as-built components which exceed allowables stresses and that new fabrication complies with the design.
20. WP recommends that TVA organizations involved with welding (construction, modifications, maintenance, QA, and engineering) jointly review and concur with each other's programmatic and implementing procedures for items and issues which may impact the other organization's programs.
21. WP recommends that Materials Technology (MT) of NE develop an engineering procedure which specifies the methodology of depicting welding information on design drawings.
22. A need existed for site-specific communication links to provide user feedback on NE output documents. The WBN design project organization, which includes all required engineering disciplines, has subsequently been stationed onsite and provides a vehicle to fulfill this need. The effectiveness of this and other applicable communication programs will be evaluated by the WPCT.
23. Recommend that WBN determine the inspection criteria actually used; that NE determine the criteria required; and that the implementing procedure and/or the specification be revised as applicable.

24. Recommend addition of this requirement to Quality Control Procedure (QCP)-4.13-FU&VC, attachment A.
25. Recommend that WBN-QCP-4.10-18 be revised to add the requirements for drying and cleaning with liquid penetrant cleaner to section 6.2.1.3.
26. Recommend that N3G-881 be revised to require that the record of acceptance be documentation for all structural welds, and specify the required extent of documentation for Quality Levels I and II welds.
27. Recommend that WBN-QCP-413-FU8VC be revised to include the documentation requirements for weld acceptance in the body of the procedure rather than in the attachments.
28. Recommend that P.S. O.C.1.1 and P.S. 3.C.5.4 be revised to incorporate the change to N3G-881.
29. Recommend that WBN-QCP-4.23-4 be revised to correct the reference section and to correctly identify the Welding Operation Sheet displayed in WBN Construction Engineering Procedure (CEP)-4.03.
30. Recommend a general revision to N3G-101 to reflect organizational changes; specific welding process specifications applicable to the plant features; and correct identification of the site-implementing procedures for each of these features.
31. Recommend that NC and NE specifically define the offices within their organizations having responsibility for maintaining the currency of the construction requirements of N3G-101; and that this definition be included in the specification.
32. Recommend that WBN-QCP-4.13-SW be revised to reference and define the requirements of P.S. 1.E.2.1, or to state that capacitor discharge stud welding is not used at WBN.
33. Recommend that the details of how to determine minimum required section thickness be added to a G-29 process specification; and that reference be made to this specification in other affected specifications and in the affected site procedures.
34. Recommend that WBN-QCP-4.10-18 be revised to include the specification requirement for grinding in increments of 0.010 inch; to delete the list of standards in 6.1.1.1; to require at 6.1.1 that the acceptance criteria for minimum remaining section thickness be in accordance with the CEP-4.03, attachment B; and to define whether the acceptance or rejection is to be based on the manufacturer's or the design thickness shown on attachment B.
35. Recommend that WBN-CEP-4.03 be revised to assign engineering responsibility for entering the section thickness requirements on attachment B; and that instruction be provided on how to determine these requirements, either directly or by reference to these requirements, either directly or by reference to these details in a process specification.

36. Recommend that General Construction Specification G-63 be added to WBN-QCP-1.47, section 3.1.
37. Recommend that QMI-802.6 be revised to clearly define one uniform method for documentation of welding inspector certification, and that this unified method clearly include all of the requirements described by SNT-TC-1A-1980.
38. Recommend that QMP-198 be revised to comply with PMP-0202.14.
39. Recommend that the welder performance cadweld operator and coatings applicator qualification records shown in QMP-199 be moved to the procedures which describe these activities, and that QMP-199 be rescinded.