

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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SEP 17 1986

WBRD-50-390/85-56
WBRD-50-391/85-53

U.S. Nuclear Regulatory Commission
Region II
Attention: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

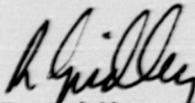
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - Q-LIST CONFORMANCE TO NQAM
REQUIREMENTS - WBRD-50-390/85-56, WBRD-50-391/85-32 - REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-Region II Inspector Al Ignatonis on October 24, 1985, in accordance with 10 CFR 50.55(e) as NCR W-269-P R1. Our final report was submitted on March 3, 1986. Enclosed is our revised final report.

If there are any questions, please get in touch with J. A. McDonald at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY


R. Gridley, Director
Nuclear Safety and Licensing

Enclosure

cc (Enclosure):

Mr. James Taylor, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
Q-LIST CONFORMANCE TO NQAM REQUIREMENTS
WBRD-50-390/85-56, WBRD-50-391/85-53
NCR W-269-P R1
10 CFR 50.55(e)
REVISED FINAL REPORT

Description of Deficiency

A number of programmatic and component/system-specific discrepancies have been identified in the Watts Bar Nuclear Plant (WBN) Quality Assurance List (Q-list) prepared by TVA's Division of Nuclear Engineering (DNE) and the Critical Structures, Systems, and Components (CSSC) Q-list (a special sort of the Q-list items) utilized by TVA's site operations for operations/ maintenance/ modification activities.

The description of deficiency for this condition has been separated into Part A, which addresses the programmatic portion of the nonconformance report (NCR), and Part B, which addresses the specific deficiencies identified in the NCR.

Part A

This portion of the report will address the following programmatic areas.

1. Nuclear Quality Assurance Manual (NQAM), Part V, section 2.7, requires the Q-list to differentiate between safety-related and special feature equipment. The Q-list does not do this.
2. Various 1E valves are listed in the Q-list in columns not considered safety-related; however, this is contradictory to the definition in NQAM, Part III, section 2.1, definition No. 6 for 1E.
3. The general notes to the WBN Q-list, part 2, are not consistent with ONP's approach to the 10 CFR 50 Appendix B program in that it has all safety-related items and special features in this program. Furthermore, it states "During plant design, three general safety functions have been identified which cause plant features to be safety related and require QA." If this were true, the special features which have safety functions should be considered safety-related.
4. No motors are listed on the CSSC Q-list; only the pumps are. There needs to be more explanation on how to determine CSSC status for motors.
5. The Q-list notes are too general. This is because the Q-list notes discuss the DNE quality assurance program implementation and not ONP's. (For example, in the area of conduit and cable trays, the notes say the item "is" or "is not" in the quality assurance program; but it does not indicate if the items are CSSC. Also, similar examples can be found in the "Civil Structures" section.)

The above deficiencies involve the overall Q-list program and require an assessment of the programmatic aspects of this condition. These deficiencies were identified by TVA personnel during the initial phases of CSSC Q-list use. Items 3, 4, and 5 resulted from inadequate input/review/coordination during the preparation/review of the Q-list. Items 1 and 2 are the result of the imposition of recently issued TVA requirements (i.e., the NQAM issued after the initial issuance of the Q-list).

This condition is not generic since WBN is currently the only TVA plant which has implemented a CSSC Q-list for operations/maintenance/modifications activities. TVA's SQN plant has a Q-list, but it currently is not used for operation/maintenance activities. BFN has a CSSC Q-list, but it is not based on a Q-list similar to that developed by DNE for WBN. BLN is not affected since the BLN Q-list clearly identifies equipment that is safety-related and no CSSC Q-list has been generated to date.

Part B

This portion of the report will address the following specific deficiencies.

1. System 70 - The CCS heat exchangers, surge tanks, and flex hose assemblies are safety-related, but they are not included on the CSSC Q-list.
2. System 63 - Class D piping is safety-related, but it was omitted from the Q-list and the CSSC Q-list.
3. System 82 - The diesel generators were inappropriately listed in system 18 (fuel oil).
4. Systems 30 and 31 - Equipment was mixed between the systems (i.e., system 30 items in system 31 and vice versa).
5. System 63 - Instrument PI-63-9 was erroneously listed as being IE on the Q-list. This is a local gauge.
6. System 70 - Class G piping is erroneously listed on the CSSC Q-list.
7. System 63 - FCV-63-187 and -188 were erroneously included on the CSSC list.
8. System 62 - FE-62-49 and FIT-62-29 were erroneously included on the CSSC Q-list. Also, XS-62-137 needs to be evaluated to determine whether it is safety-related.
9. There are unit 2 valves omitted from the CSSC Q-list for which their unit 1 counterpart was included and vice versa.
10. Items are included on the CSSC Q-list that appear not to be CSSC.
11. Systems 62 and 63 - Heat trace is not on the CSSC Q-list.
12. System 82 - Various valves are included on the CSSC Q-list which do not appear to be CSSC.

13. System 79 - This system is not included in the CSSC Q-list, but it has listings under "RTR SD" (reactor shutdown) on the Q-list that should have been picked up on the computer sort.
14. System 77 - This system has listings in the CSSC Q-list that are not clear and it is questionable if these listings should be in the CSSC Q-list.
15. There are 1E valves in the Q-list not designated as 1E in the "SP REQ" (Special Requirements) column (example: FCV-3-33A).
16. The electrical single lines and the CSSC Q-list do not always agree.
17. Class G piping for systems 3, 32, 63, and 67 was erroneously included on the CSSC Q-list.

The above items involve specific deficiencies identified by TVA personnel during the initial phases of CSSC Q-list use. These deficiencies are the result of Q-list errors, CSSC Q-list sort criteria, and/or differences in interpretation of Q-list information.

The nonconservative deficiencies (see "Safety Implications," Part B below) are not considered generic to other Q-list systems or to other TVA plants.

Safety Implications

Part A

The programmatic concerns of this deficiency could result in inadequate quality assurance controls during operation/maintenance/modification activities. This lack of adequate quality assurance control could result in degradation of safety systems. As such, the programmatic aspects of this deficiency could have jeopardized the safe operation of the plant had they remained uncorrected.

Part B

In order to adequately address the safety implications of the specific deficiencies, the items must first be categorized according to the characteristics of each deficiency. The categories utilized are (1) conservative, (2) nonconservative, and (3) nondeficiencies. Below is a tabulation using the item numbers in Part B of the "Description of Deficiency."

1. Conservative (items with no safety implications) - Items 5, 6, 7, 8, 10, 12, 14, and 17.
2. Nonconservative (items with safety implications) - Items 1, 2, 3, 4, 13, 15, and 16.
3. Nondeficiencies (items with no safety implications) - Items 9 and 11.

The nonconservative deficiencies could have resulted in inadequate quality assurance controls during operation/maintenance/modification activities. These inadequacies could result in a degradation of a safety system, thus jeopardizing the safe operation of the plant.

Corrective Action

Part A

The programmatic aspects of this deficiency resulted from inadequate input/review/coordination within TVA and the failure to incorporate recently issued TVA requirements (i.e., the NQAM issued after the initial issuance of the Q-list). These deficiencies are being resolved by the following corrective actions. All corrective actions related to revising the Q-list will be applicable to both units.

In order to ensure a consistent approach to safety-related activities (items 1, 3, and 5 under description of deficiency) the WBN Q-list General Notes (drawing No. 91QLO-series) and Administrative Instruction (AI) 7.6 have been revised to clearly indicate the safety classifications of each component function listed in the Q-list. This matrix also indicates which functions require the component to be treated as being under the 10 CFR 50 Appendix B Quality Assurance Program.

In order to ensure that motors are maintained to their intended quality assurance levels (item 4), TVA has, in the short term, prepared a calculation package to address all motors (except valve operators and dampers) in terms of class 1E requirements. This information provides the guidance necessary to determine if the motor requires 10 CFR 50 Appendix B Quality Assurance Criteria or limited quality assurance. This calculation was issued on May 31, 1986. TVA will, in the long term, revise the WBN Q-list to uniquely identify all motors (except valve operators) and their functional requirements. The long-term actions will be complete before fuel load of unit 1. Also, since this deficiency has the potential to result in inadequately maintained equipment, TVA will review maintenance and modification activities to ensure that motors have been adequately maintained. This review will be completed, results documented, and necessary corrections completed before fuel load of unit 1.

In order to ensure that class 1E valves are consistently identified/evaluated by TVA personnel (item 2), TVA has: (1) in the short term, added a clarifying note, (see item 4 of the general note revisions), and will (2) in the long term, revise the Q-list to consistently identify class 1E valves (i.e., enter a 4 under "SPEC REQ"). The long-term actions will be completed before fuel load of unit 1. Also, during TVA's review of item 2, it was determined that there existed a group of Q-level, non-CSSC equipment that was not included in the CSSC Q-list. In order to ensure the adequacy of maintenance/modification activities, a review of maintenance and modifications procedures versus requirements will be conducted for this equipment. This review and any necessary corrective action will be completed before fuel load of unit 1.

The revision to the General Notes was accomplished under ECN 6090 and included the following major items:

1. A general review/rewrite of the existing notes.
2. Addition of a "Safety Classification Matrix."
3. Definitions of the matrix terms not previously defined (i.e., primary safety function, CSSC, secondary safety function, etc.).
4. Addition of a discussion on how to determine requirements for class 1E valves and operators.

In order to prevent further deficiencies when evaluating class 1E components, the detailed discussion of class 1E powered components (refer to part 2 of the General Notes) has been revised to provide the user with additional guidance for determining the applicability of 10 CFR 50 Appendix B criteria. This was included as part of the general review/rewrite discussed above.

In the interim, TVA prepared a matrix which documented the source documents for all "Limited QA" programs utilized at WBN. However, as a long-term solution, TVA is revising the NQAM to specifically define all limited QA programs.

The actions outlined above will preclude future deficiencies of the programmatic type identified in part A of the "Description of the Deficiency."

Part B

Categories 1 and 3 defined in the "Safety Implications" have been evaluated and determined not to have any adverse safety implications. The deficiencies identified in category 2 do have adverse safety implications and are discussed in the following paragraphs.

Below is an item-by-item discussion of each nonconservative, specific deficiency.

- Item 1 - The Q-list, system 70, has been revised to indicate all the appropriate functional requirements (i.e., seismic category 1, etc.) This change is complete and is documented in ECN 5810.
- Item 2 - The Q-list, system 63, has been revised to include class D piping. This change is complete and is documented in ECN 5810.
- Item 3 - The diesel generators have been deleted from system 18 and added to system 82. This change is complete and is documented in ECN 5810.
- Item 4 - The Q-list has been revised to include the ventilation/air-conditioning coolers in the appropriate system. This change is complete and is documented in ECN 5810.

Item 13 - During the review of this item it was determined that the CSSC sort of system 79 had been established, thus resulting in this item being a nondeficiency. However, in order to ensure that equipment has been adequately maintained, the maintenance and modification activities related to system 79 will be reviewed. TVA anticipates completing this review and all necessary corrective actions before to unit 1 fuel load.

Item 15 - TVA has reviewed a sample population (100 FCVs) and determined that the FCVs have not been consistently designated as class 1E. However, the FCVs had been designated as either class 1E or "required to operate." In addition, the unique identifiers did, in all cases, appropriately have a "train of power" designator (required for all class 1E powered devices) as required by TVA Construction Specification N3G 881. The consistent identification of trained power, identification of class 1E or required to operate requirements, and the TVA training of maintenance personnel provides adequate assurance that all FCVs have been maintained to class 1E requirements. However, TVA will review a representative sample of FCVs to ensure that class 1E requirements have been properly maintained. This review and performance of necessary corrective actions will be completed before unit 1 fuel load.

Item 16 - The CSSC Q-list was deleted and TVA has implemented the WBN Q-list for all organizations. Additionally, any discrepancies on the electrical single lines will be documented, evaluated, and resolved via NCR W-303-P.

The generic implications of these item specific problems to other Q-list systems are being evaluated in accordance with the information discussed below.

In order to ensure that deficiencies 1, 3, and 4 are not indicative of programmatic problems, TVA committed to a completeness review which was to consist of a three-phase approach of (1) review by systems for completeness, if the error rate was greater than one percent, then (2) review six additional systems, if the error rate was still greater than one percent, (3) do a complete review of the Q-list.

The initial six-systems review resulted in an error rate of 3.91 percent. Based on this error rate, it was decided that the second six-systems review would not be beneficial and a complete review would be initiated. TVA has initiated this review and anticipates completing the review by fuel load of unit 1. During this review, changes will be made to the Q-list to increase the usability and to reduce the interpretation required to determine the functional and quality assurance requirements of components.

For item 2, TVA has identified systems containing class D piping and reviewed the Q-list for accuracy. Based on this review, it was determined that the class D piping had been adequately identified in the WBN Q-list.

Items 1, 2, 3, 4, 13, 15, and 16 have been identified as having the potential to result in equipment being inadequately maintained. For items 1, 2, 3, 4, 13, and 15, TVA will review maintenance and modification activities for the period from January 8, 1985 to February 15, 1986 to ensure that all equipment has been adequately maintained. This review will be complete, the results documented, and necessary corrections made before fuel load. For item 16, the potential of incorrect electrical single-line drawings has been documented and is being evaluated and resolved on NCR W-303-P.

The corrective actions discussed above and the TVA decision to implement the entire Q-list for all WBN organizations (i.e., delete the WBN CSSC Q-list) will prevent recurrence of the deficiencies above. In addition, the reviews discussed immediately following the item specific discussion, will provide the necessary assurances that the corrective actions are adequate.