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NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30323-0199

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Report Nos.: 50-390/94-27 and 50-391/94-27

Licensee: Tennessee Valley Authority
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1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 & CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Conducted: March 14-25, 1994

Team Leader: Ron Gibbs
R. D. Gibbs, Project Engineer

4/14/94
Date Signed

Inspector: K. W. Van Dyne, NRC Contractor

Approved by: P. E. Fredrickson
P. E. Fredrickson, Chief, Watts
Bar Construction Branch
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4/19/94
Date Signed

SUMMARY

Scope:

This special, announced inspection was conducted to review the corrective actions identified in the Q-List CAP at the 100% completion point.

Results:

In the areas inspected no violations or deviations were identified. Based on this inspection and the previous inspection conducted at the 75% completion point, the NRC has concluded that the Q-List Corrective Action Program has been adequately implemented as stated in the Watts Bar Nuclear Performance Plan, Volume IV. This Corrective Action Program is closed.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Baxter, Licensing Engineer
- *A. Capozzi, Lookback Project Manager
- *C. Davis, Licensing Project Manager
- *J. Hubbuck, QA Specialist
- *R. Johnson, Acting Engineering Manager
- *N. Kazanas, Vice President Completion Assurance
- *R. Lewis, CAQ Closure Manager
- *D. Malone, QE Manager
- *R. McIntosh, Senior Project Manager
- *D. Nunn, Vice President Nuclear Projects
- *P. Pace, Compliance Licensing Manager
- *G. Pannell, Licensing Manager
- *L. Peterson, QA Records Project Manager

Other licensee employees contacted included engineers and administrative personnel.

NRC Resident Inspectors

- *G. Walton, Senior Resident Inspector, Construction
- K. Van Doorn, Senior Resident Inspector, Operations
- J. Lara, Resident Inspector
- K. Ivey, Resident Inspector
- M. Glasman, Resident Inspector

NRC Contractors

- *J. Greene
- K. Van Dyne

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Background

Originally, WBN design and construction organizations determined component QA classifications based upon design drawings and Construction Specification N3G-881, Identification of Structures, Systems, and Components Covered by The WBNP QA Program, which was issued by Engineering. In April 1978, TVA's Nuclear Power group issued the Critical Structures, Systems, and Components (CSSC) List for use by plant personnel in implementing the operational QA program. In January

1984, the Office of Engineering issued the WBN 91QL Q-List in order to reduce interpretation requirements. This list, which reflected current plant design, contained both QA and non-QA components and was intended to be used by plant design, construction, and operations. Operations, however, continued to use the CSSC List concluding that it was better suited to their needs. In November 1984, the CSSC Q-List, a special sublisting of the 91QL Q-List, was issued through a coordinated effort between design and operations. In January 1985, AI-7.6, Using and Maintaining the WBN Q-List, was issued to provide for the use of the CSSC Q-List in lieu of the CSSC list. Discrepancies between the CSSC Q-List and the CSSC list became apparent and were documented in a QA audit (QE 85-09), by employee concerns, and in NCR W-269-P in August 1985. The NCR was subsequently upgraded to SCAR NCRW269PSCA and reported to the NRC in October 1985 in accordance with 10 CFR 50.55(e). In the resolution of these discrepancies the decision was made in January 1986, to delete the CSSC List from the NQAM, revise AI-7.6 to delete the CSSC Q-List, and to reconcile all deficiencies in the 91QL Q-List. As the result of a sample review of the 91QL Q-List committed to in the 10 CFR 50.55(e) report of March 1986, TVA identified an error rate which justified a more in-depth review. In September 1990, this resulted in the independent development of the 92QL (new) Q-List to supersede the 91QL (old) Q-List. Prior to issuance of the 92QL Q-List, in October 1988 TVA initiated the Q-List CAP to demonstrate licensability with respect to 10 CFR 50, Appendix B.

3. Introduction (TI 2512/29)

The purpose of this inspection was to determine whether TVA's implementation of the Q-List CAP was complete and adequate. The Q-List CAP is referenced in TVA's Nuclear Performance Plan, Volume 4. The NPP identified three major problems regarding the Q-List, as follows:

- The Q-List did not differentiate between features with full QA Program requirements and features with augmented (limited) QA Program requirements;
- Motors and other equipment were not uniquely identified on the Q-List; and
- The Q-List contained incorrect QA classifications.

The Q-List CAP is described in the Q-List CAP Plan, Revision 5. As stated in the Q-List CAP Plan, the objectives of the CAP were:

- To more clearly and consistently identify which structures, systems, and components are required to have QA or limited QA Program controls applied during the performance of design, construction, modification, operation, and maintenance; and
- To ensure that appropriate QA Program controls were applied to quality-related structures, systems, and components when they were constructed, maintained, and modified.

The above Q-List CAP objectives were to be accomplished via the following actions:

- Development of a new Q-List;
- Comparison of the new and old Q-Lists to identify upgraded components; and
- Evaluation of maintenance and modification activities of upgraded components to ensure application of the proper QA controls.

The NRC reviewed the implementation of the Q-List CAP in October 1993 and documented the results of the inspection in IR 390,391/93-68. The inspection was performed after TVA concluded that the Q-List CAP was greater than 75 percent complete. The results of the NRC inspection indicated that the above actions were sufficiently complete to meet the Q-List CAP objectives and ensure complete implementation of the Q-List CAP. Several CAQ documents were still open, however, pending completion of corrective action. A follow-up item was opened to track NRC review of CATDs 20901-1 and 20901-2 and PERs WBPER930124 and WBPER930211.

Subsequently, TVA letter dated January 8, 1994, notified the NRC that the Q-List CAP, as defined in Revision 5 of the Q-List CAP Plan, was complete and that the objectives of the Q-List CAP had been accomplished. TVA developed a Q-List closure report and provided a copy to the NRC prior to this inspection. The approach taken for this inspection of the Q-List CAP involved two overall considerations. One was the review of the remaining implementation of the CAP objectives. The other consideration was the review of TVA's basis for concluding that the Q-List CAP implementation was complete. Additionally, this inspection specifically included the review of the follow-up item identified above, CAQs not previously reviewed, and the TVA closure report.

4. Q-List CAP Objectives (TI 2512/29)

As stated above, the NRC previously reviewed the implementation of this CAP in October 1993. IR 390,391/93-68 documents the specific reviews performed to verify, in part, implementation of the CAP objectives. For clarity and completeness, these reviews are summarized in this section. As part of the Q-List CAP Record Plan review, the inspectors verified 1) the Q-List CAP objectives were consistent with the Q-List CAP, 2) corrective action was consistent with stated objective, and 3) the records produced were consistent with the implementation of the corrective action.

- a. Q-List CAP Objective 1 - To more clearly and consistently identify which structures, systems, and components are required to have QA or limited QA Program controls applied during the performance of design, construction, modification, operation, and maintenance

This objective was accomplished by the development of a new Q-List (92QL Q-List). As documented in IR 390,391/93-68, the NRC conducted a review of the 92QL Q-List to determine the useability, training effectiveness, and change process adequacy. This review included mock usage exercises, review of training records, review of training materials, interviews with Q-List users (maintenance and modification workplan writers), and a review of the change process. Within these areas the NRC concluded that the 92QL Q-List was user friendly, that training and training records (for maintenance and modification workplan writers) were adequate, and that the change process was adequate. Additionally, IR 390,391/93-68 documents the NRC review of work orders and workplans in order to provide assurance that the 92QL Q-List was being used to properly classify components.

- b. Q-List CAP Objective 2 - To ensure that appropriate QA Program controls were applied to quality-related structures, systems, and components when they were constructed, maintained, and modified

This objective was accomplished by 1) a comparison of the new and old Q-Lists to identify upgraded components and 2) the evaluation of upgraded components to ensure application of the proper QA controls. As documented in IR 390,391/93-68, the NRC conducted a sample review of historical modification workplans and historical maintenance work orders. Based on this inspection the NRC concluded that there was no impact on maintenance or modifications performed while the old Q-List was in effect.

5. Review of Corrective Action Documents (TI 2512/29)

The adequacy of TVA's corrective action was evaluated through the verification of their implementation as related to the Q-List CAP. Review of corrective action documents indicated that the identified problems fell into one of two categories, 1) those that precipitated the Q-List CAP (source CAQs) and 2) those that resulted from implementation of CAP corrective action (CAP-related CAQs). The following corrective action documents were reviewed by the inspectors during this inspection:

CAP-related CAQs

WBP870751SCA
WBNNEB8678PER
WBFIR920121
WBFIR930004
WBP920129
WBP930108
WBP930061
WBFIR930069
WBP930124
WBP930211
WBP930344
WBP930522
WBP930525

Source CAQs

WBP880095PER

WBPER940017
WBSCA920106
WBSCA930229
WBSCA930509
WBSCA930518

For corrective action documents that were closed, the inspectors verified that the identified problems were adequately addressed and properly implemented in the specific corrective action document. For corrective action documents that were open, the inspectors verified that all actions required for implementation of Q-List CAP were complete. Additionally, for CAP-related CAQs the inspectors verified that incomplete actions that were not required for implementation of the Q-List CAP were properly identified for resolution tracking. In addition, this inspection in conjunction with the 75% inspection (IR 50-390,391/93-68) verified implementation of the corrective actions required to meet the CAP objectives for all source CAQs.

6. Quality Assurance Audits (TI 2512/29)

TVA's NPP, Volume 4, describes the CAP and SP Independent Verification Plan, which was established to provide assurance that the quality activities which are part of the CAPs and SPs are properly implemented. The IVP provides a coordinated method of reviews, monitoring, audits, and inspections.

As part of the inspection documented in IR 390,391/93-68, the NRC reviewed QA Assessment Report Number NA-WB-93-0065. This assessment was performed to assess the adequacy of the Q-List and resolution of Q-List CAP issues at the 75 percent completion point. A number of follow-up items, including Q-List training reviews and incomplete corrective actions specified in several CAQs, were identified as requiring closure for complete CAP implementation. Subsequently, in January 1994, TVA completed the 100 percent CAP assessment, as documented in Assessment Report Number NA-WB-93-0122. This assessment addressed the TVA follow-up items discussed above, adverse condition reports related to the Q-List CAP, and commitments related to the Q-List CAP. Additionally, QA performed personnel interviews to assess the adequacy of training performed since the 75 percent completion point.

Overall results of the TVA QA interviews indicated improvement in Q-List usage and classification. However, TVA identified that certain elements of the training program required additional emphasis. The engineering organization, in general, was not familiar with the use and maintenance of the Q-List as defined in SSP-3.03. This was determined by TVA not to be significant since engineering typically performs the original classification of components directly from design output documents and the process described in SSP-3.03 occurs after the original classification. Additionally, personnel were generally unaware that 8 of the 12 limited QA Programs were not listed on the Q-List screen. Another observation was that while most users check for change paper against design drawings, many do not check for change paper against the

Q-List. TVA concluded, based on the following, that the overall results of the 100 percent assessment were adequate for closure of the Q-List CAP.

- The necessary personnel were checking the Q-List "Verified" field, using the General Notes to classify nonverified or non-itemized components, and, in general, using the Q-List correctly for classification of components.
- Component classification workload has been reduced by incorporation of a Q-List "As-designed" screen which allows the user to perform a quick check of outstanding design changes to the Q-List.
- TVA issued a memo on December 16, 1993, to all plant personnel reemphasizing the importance of training to SSP-3.03. Particular emphasis was given to the requirements to check for Q-List change paper and limited QA program applicability.
- Per TVA memo dated March 8, 1994 (RIMS T25940308867) an EMS Users Group is being formed to follow-up on the previous Q-List initiatives and to expand the effort to all aspects of EMS. The group's charter includes identifying training needs, conducting training, identifying process and system concerns, recommending corrective actions, and implementing required changes.

The inspectors verified that all identified findings, problems, and issues were adequately resolved during the performance of this assessment. The inspectors agreed with the TVA conclusion that, based on the results of 100 percent assessment, the Q-List CAP had been adequately implemented.

7. Q-List CAP Closure Documentation (TI 2512/29)

In a letter dated November 12, 1992, TVA was requested to provide a documentation package for each CAP or SP to support NRC inspections. The package provided documentation to support TVA's conclusion that the CAP/SP implementation was complete and was to address the items listed below. The inspectors reviewed the closure package to evaluate TVA's basis that the CAP implementation was complete and outstanding issues did not affect closure of the project (Note: item numbers below correspond with the numbers used in the November 12, 1992 NRC letter).

Documentation Package Attributes

- (1) FSAR/Code requirements have been approved and met.

Chapter 17 of the FSAR was revised in Amendment 57 to describe the Q-List accurately per the Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A. As a result, FSAR Question 260.2 required revision, as well. This change has been incorporated into the FSAR and submitted to the NRC via FSAR Change Package No. 911.

- (2) Any SER open items have been resolved.

NRC to TVA letter dated March 17, 1994, documented that TVA had resolved all previous questions and concerns regarding the Q-List CAP. The letter stated that the safety evaluation which provides this conclusion will be published in SSER 13 of the Watts Bar SER (NUREG-0847).

- (3) All commitments made by the CAP/SP have been adequately implemented.

The inspectors reviewed all (30) commitments resulting from source CAQs and numerous CAP-related commitments to verify complete and proper closure. This is documented in IR 390,391/93-68 and paragraph 5 of this report. Tab I of the closure package also identified these 30 commitments and included documentation verifying that 114 of 114 CAP-related commitments were also closed.

- (4) Specific items which formed the basis for the CAP, which were identified in TVA's matrix dated July 13, 1989, have been resolved and field implemented.

As discussed in paragraph 7.(3) above, the inspectors reviewed all Q-List CAP source CAQs and verified that all problems were resolved and specified corrective action was implemented. Tab H of the closure package lists these CAQs and their resolution.

- (5) Items such as CAQs, CATDs, NRC commitments, etc., which were identified by TVA (after July 13, 1989) to be resolved by the CAP corrective actions, have been resolved and field implemented, and the documentation for them adequately closed.

Review of corrective action documents is discussed in IR 390,391/93-68 and paragraph 5 of this report. Review of CATDs is discussed in paragraph 9 of this report. Tabs J and K of the closure package specifically address CAQs and CATDs, respectively. The inspectors noted that all commitments, including those that form the basis of the CAP and those resulting from implementation of the CAP, were contained in QA Assessment Report Number NA-WB-93-0122. Review of this assessment is discussed in paragraph 6 of this report.

- (6) Corrective action for all other OIL items (VIOs, URIs, and IFIs) related to the specific CAP/SP have been completed.

The remaining NRC open items related to the Q-List CAP are addressed in paragraph 9 of this report. Tab M of the closure package identifies all of the NRC items associated with the Q-List CAP and provides the TVA status for each.

- (7) All Sargent & Lundy VSR findings related to the CAP/SP are closed.

Tab N of the closure package documented the results of TVA's review of VSR findings. No items were identified which were within the scope of the Q-List CAP. The inspectors reviewed a listing of the VSR items contained in the Sargent & Lundy Vertical Slice Review Final Report and confirmed that there were no findings associated with the Q-List CAP.

- (8) All CATDs related to the CAP/SP are closed.

All CATDs related to the Q-List CAP are discussed in paragraph 7.(5) above and in paragraph 9 of this report.

- (9) All CDRs related to the CAP/SP are closed.

Only one CDR (CDR 390/85-56, 391/85-53) was identified as being related to the Q-List CAP. This CDR was closed in IR 390,391/93-68. Tab L of the closure package provides a summary status of CAP/SP related CDRs.

- (10) All NRC Bulletins, Information Notices, and Temporary Instructions related to the CAP/SP are closed.

All NRC OIL items are included in the discussion in paragraph 7.(6) above.

- (11) All issues identified by previous TVA assessments (B&V, NSRS, and other contractors) have been resolved.

Tab O of the closure package documented TVA's review of various assessments. This review indicated that the Watts Bar Program Team (WBPT) identified several findings associated with the safety classification of components at Watts Bar. These findings were identified by the WBPT during their independent reviews of the NSRS Major Management Review NSRS Report No. R-82-02-WBN and of the Theodore Barry and Associates Management Performance Review of TVA's Office of Engineering Design and Construction. The inspectors reviewed the WBPT findings and verified that each finding was resolved by the Q-List CAP.

- (12) All corrective actions related to the area identified by TVA in the ECSP and not a CATD have either been implemented or other action taken to resolve the identified issue.

Tab P of the closure package documented TVA's review of ECSP Class C concerns. Class C concerns are those concerns which were determined to be factual and identified a problem but corrective action was initiated before evaluation of the issue was undertaken. The inspectors verified that all corrective actions from the ECSP related to the Q-List CAP were enveloped by CATDs. These CATDs (20901-WBN-01 and 20901-WBN-02) are discussed in paragraph 9 of this report.

- (13) Issues identified in NRR audits have been adequately resolved.

As stated in paragraph 7.(2) above, NRC to TVA letter dated March 17, 1994, documented that TVA had resolved all previous questions and concerns regarding the Q-List CAP. The letter stated that the safety evaluation which provides this conclusion will be published in SSER 13 of the Watts Bar SER (NUREG-0847).

- (14) All issues identified in the March 30, 1987, TVA to NRC letter have been resolved.

Tab R of the closure package indicated that there were no issues contained in the March 30, 1987 letter within the scope of the Q-List CAP. The inspectors reviewed the listing of issues in the letter and verified that it did not contain any issues within the scope of the Q-List CAP.

- (15) All Employee Concerns (post ECSP) related to the area have been closed or evaluated for impact.

Tab Q of the closure package documented TVA's conclusion that there were no employee concerns (post ECSP) which addressed issues related to the Q-List CAP.

- (16) Independent Verification Program is complete.

Tab F of the closure package contained a memo documenting the Q-List CAP 100 percent evaluation. This memo referenced the QA assessments performed as part of the IVP and the resulting conclusion that the Q-List CAP was adequately implemented to support the CAP closure.

- (17) All other TVA open items on the issue are closed.

Tab F of the closure package contained TVA QA Assessment Report Number NA-WB-93-0122. As discussed in paragraph 6 of this report, the assessment addressed all identified Q-List CAP issues to ensure complete implementation of the CAP. No open items remain which prevent implementation of the CAP.

- (18) Any issues known to NRC/TVA which are likely to effect closure are resolved.

The inspectors did not identify any issues associated with this item. In addition to the QA assessments discussed in paragraph 6 of this report, the inspectors reviewed the Q-List CAP Record Plan which was included in Tab G of the closure package. This review, documented in IR 390,391/93-68, verified that the CAP objectives were consistent with the identified problems and that corrective action was consistent with meeting the CAP objectives. Additionally, the inspectors verified that the records produced

were adequate to meet the CAP objectives and resolve all CAP issues.

(19) All applicable PACR items.

While the closure package did not contain a specific list of PACR items, TVA QA Assessment Report Number NA-WB-93-0122 contained in Tab F of the closure package, listed all Q-List CAP commitments including PACRs. The inspectors' review of corrective action documents, discussed in paragraph 5 of this report, included verification that all Q-List CAP commitments including PACRs were satisfactorily resolved.

8. Conclusions and Summary (TI 2512/29)

The inspection results indicate that TVA has adequately resolved the NRC concerns identified in IR 390,391/93-68. The issues identified in that inspection report have been reviewed and closed by the NRC as documented in this report.

TVA has addressed the issues identified in the NRC letter dated November 12, 1992, with regard to the Q-List CAP closure package. TVA's IVP has documented the independent evaluations and basis for concluding that the Q-List CAP has been properly implemented. The outstanding actions are being tracked for closure and do not impact the technical resolution to the Q-List CAP. Therefore, based on the results of this inspection, the NRC concluded that TVA had adequately implemented the Q-List CAP, as described in the NPP, Volume 4, Revision 1, and as approved in the NRC SER.

9. Action on Previous Inspection Findings

(Closed) IFI 390,391/93-68-01, Verify Adequate Closure of Open PERS and CATDs

This item identified that corrective action documents WBPER930124 and WBPER930211 and CATDs 20901-1 and 20901-2 were open at the Q-List CAP 75 percent completion point.

As discussed in paragraph 4, WBPER930211 and WBPER930124 were two of several CAP-related corrective action documents reviewed by the inspectors. WBPER930211, which was subsequently upgraded to WBSCA930229, involved the misclassification of fire protection, post-accident monitoring, and ATWS cables. Classification of cables is not controlled by the Q-List but by the Conduit and Cable Routing System (CCRS). As a result, the inspectors determined that the discrepancies identified in WBSCA930229 are not applicable to the Q-List and, therefore, are not related to implementation of the Q-List CAP. Nevertheless, the inspectors reviewed WBSCA930229 and determined that the identified discrepancies, extent of condition, and specified corrective action appeared to have been adequately and completely documented and that incomplete corrective actions were being tracked to

resolution. This SCAR is still open pending completion of all corrective action.

WBPER930124 involved component classification discrepancies for like components listed on the Q-List and Q-List DCNs. The root cause was determined to be a failure of personnel to follow procedures in preparation and review of the DCNs prior to issue. The inspectors reviewed WBPER930124 and determined that the identified discrepancies, extent of condition, and specified corrective action appeared to have been adequately documented, resolved and completed. This PER was closed in December 1993.

The inspectors reviewed CATDs 20901-WBN-01 and 20901-WBN-02, which completely overlapped the issues of the Q-List CAP. The inspectors found that the CATD closure packages contained the same corrective action documents that were reviewed during the 75% inspection (IR 390,391/93-68) and those reviewed above. The CATD closure packages mirrored the Q-List CAP closure package and adequately addressed the issue.

This item is closed.

10. Exit Interview

The inspection scope and findings were summarized on April 7, 1994, with those persons indicated in Paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report.

<u>Item Number</u>	<u>Status</u>	<u>Description and Reference</u>
390,391/93-68-01	Closed	IFI-Verify Adequate Closure of Open PERs and CATDs (paragraph 5 and 9)

11. List of Acronyms and Abbreviations

AI	Administrative Instruction
ATWS	Anticipated Transient Without Scram
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CATD	Corrective Action Tracking Document
CCRS	Conduit and Cable Routing System
CDR	Construction Deficiency Report
CSSC	Critical Systems Structures and Components
DCN	Design Change Notice
ECSP	Employee Concerns Special Program
EMS	Equipment Management System
FSAR	Final Safety Analysis Report
IFI	Inspector Followup Item
IR	Inspection Report
IVP	Independent Verification Program

NCR	Nonconformance Report
NPP	Nuclear Performance Plan
NQA	Nuclear Quality Assurance
NQAM	Nuclear Quality Assurance Manual
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSRS	Nuclear Safety Review Staff
OIL	Open Item List
PACR	Program to Assure Completion Resolution
PER	Problem Evaluation Report
QA	Quality Assurance
QE	Quality Engineering
SER	Safety Evaluation Report
SP	Special Program
SSP	Site Standard Practice
TI	Temporary Instruction
URI	Unresolved Item
VIO	Violation
VSR	Vertical Slice Review
WBN	Watts Bar Nuclear Plant
WBNP	Watts Bar Nuclear Plant
WBPT	Watts Bar Performance Team