

UNITED STATES GOVERNMENT

## Memorandum

TENNESSEE VALLEY AUTHORITY

GNS '850116 050

TO : J. P. Darling, Manager of Nuclear Power, 1750 CST2-C  
 R. W. Cantrell, Manager of Engineering, W11A9 C-K  
 C. Bonine, Jr., Manager of Construction, 12-108 SB-K

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, 249A HBB-K

DATE : January 16, 1985

SUBJECT: NUCLEAR SAFETY REVIEW STAFF (NSRS) REPORT R-84-32-NPS - FOLLOW-UP REPORT OF PREVIOUSLY IDENTIFIED ITEMS

NSRS performed a follow-up review of 22 previously identified items from four earlier reviews for which corrective action had not been verified. The attached report closes four of the items as satisfactorily corrected and four others for NSRS record purposes since they were formally identified and tracked by the Division of Quality Assurance. Three items were left open and require additional response from the responsible organizations. These items and organizations were:

R-81-14-OEDC(BLN)-32 and -41, Office of Engineering  
 R-82-02-WBN-26, Office of Construction

Eleven items associated with the inadequacy of the TVA QA program were consolidated into a single finding addressing the need for a comprehensive integrated quality program. These eleven items were closed for record purposes. The new item, R-84-32-NPS-01, requires response from the Office of Nuclear Power.

It is requested that responsible organizations submit responses including target dates for completion of proposed action to NSRS by February 15, 1985.

If you have any questions concerning this report, please contact M. A. Harrison at extension 4816 in Knoxville.

*K. W. Whitt*  
 K. W. Whitt

MAH:BJN

Attachment

cc (Attachment):

C. W. Crawford, 670 CST2-C  
 H. G. Parris, 500A CST2-C  
 MEDS, W5B63 C-K

**NSRS FILE**

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS REPORT R-84-32-NPS

SUBJECT: FOLLOW-UP REPORT OF PREVIOUSLY IDENTIFIED ITEMS

DATES OF REVIEW: DECEMBER 10 - DECEMBER 20, 1984  
JANUARY 7 - JANUARY 11, 1985

REVIEWER:

M. A. Harrison  
M. A. HARRISON

1/16/85  
DATE

APPROVED:

M. S. Kidd  
M. S. KIDD

1-16-85  
DATE

TABLE OF CONTENTS

	<u>Page</u>
I. SCOPE . . . . .	1
II. CONCLUSIONS AND RECOMMENDATIONS . . . . .	1
III. STATUS OF SELECTED PREVIOUSLY IDENTIFIED OPEN ITEMS . . . . .	2
IV. DETAILS . . . . .	2
A. R-81-14-OEDC(BLN) . . . . .	2
B. R-81-31-NPS . . . . .	7
C. R-82-02-WBN . . . . .	7
D. R-81-11-WBN . . . . .	10
V. REFERENCES . . . . .	11

## I. SCOPE

Late in 1982, after the formation of the Office of Quality Assurance (OQA), the NSRS formally transferred a number of concerns with recommendations to OQA for verification of corrective action and closure. Actions by responsible organizations enabled OQA to close many of the transferred items, but 18 of them had not been closed as of September 27, 1984, when responsibility for verification of actions taken was formally returned to NSRS by OQA. NSRS accepted the responsibility for the items and performed follow-up reviews to determine the status of each of these items as well as others remaining open.

The 22 specific items reviewed are identified in section IV, "Details." The items were among those remaining open from the following NSRS reports:

- A. R-81-14-OEDC(BLN), Major Management Review of OEDC/Bellefonte
- B. R-81-31-NPS, Special Review of Division of Nuclear Power Operator Training
- C. R-82-02-WBN, Major Management Review of Watts Bar
- D. R-81-11-WBN, Special Review - WBNP

In view of the reorganization and realignment of responsibilities in the Office of Power and Engineering (OPE), NSRS focused on closing as many of the items as possible, and consolidation and updating of items where corrective actions were determined still essential. The status of some items remaining open from the four reports is not included here but will be addressed separately in other reports.

## II. CONCLUSIONS AND RECOMMENDATIONS

- A. R-84-32-NPS-01, Inadequate TVA Quality Program

### Conclusion

Action was incomplete on developing and implementing an integrated quality program for TVA nuclear facilities that includes the following attributes consolidated from previous NSRS findings: (Refer to section IV.D and as indicated below.)

1. Identification of activities affecting quality. (Refer to Details, IV.C.1.)
2. Identification of components, systems, structures to which the quality program is applied. (Refer to Details, IV.A.5, IV.C.2, and IV.C.3.)
3. Identification and definition of industry standards and guidance for control of activities outside the scope of regulatory requirement. (Refer to Details, IV.A.1.)

4. Improvement of the Office of Engineering (OE) quality program and procedures and acceptance of the OE quality program by the Office of Nuclear Power. (Refer to Details, IV.A.3 and IV.A.4.)
5. Incorporation of vendor data into a configuration management control system. (Refer to Details, IV.A.2 and IV.A.7.)

#### Recommendation

The Office of Nuclear Power as owner-operator should assure that the integrated quality program, currently being planned and developed, will account for the identification and control of the attributes listed above.

### III. STATUS OF SELECTED PREVIOUSLY IDENTIFIED OPEN ITEMS

NSRS verified that an adequate, ongoing corrective action program had been implemented to resolve four of the findings and these were closed. Other findings reviewed revealed that actions were in progress or plans were being developed for resolution, but additional management involvement was necessary to achieve resolution. Eleven of these findings were determined by NSRS to be directly related to development and implementation of an adequate integrated quality program for TVA nuclear facilities and were consolidated into a single current conclusion and recommendation, "Inadequate TVA Quality Program." Three items requiring additional corrective action remained open under their previous report designations. The status of actions to correct the concerns is addressed in sections IV.A and IV.C. The items remaining open are:

- R-81-14-OEDC(BLN)-32, Inadequate Storage of Audit Support Records
- R-81-14-OEDC(BLN)-41, QAB (QMS) Auditor Training
- R-82-02-WBN-26, Lack of Approved Procedures for Certain Computer Programs

Four other items were determined still not corrected but are closed for record purposes since the Division of Quality Assurance had included the essence of these findings in an audit, CH-8400-07, requiring response and resolution, and the duplication of effort to track and verify the items is unnecessary.

### IV. DETAILS

#### A. R-81-14-OEDC(BLN), Major Management Review of OEDC/Bellefonte

Nine items remained open from this report at the initiation of the follow-up review. The status of each is addressed below, identified by the original finding designation.

1. R-81-14-OEDC(BLN)-03, Regulatory Guides/Standards

Summary of Original Finding

OEDC was not providing a compilation of the regulatory guides and industry standards to which TVA had committed, other than those endorsing the ANSI N45.2 standards.

Current Status

Resolution of this item had not been achieved and, as a result of the reorganization of OPE, responsibility for identification of industry standards which will be used by TVA to establish requirements for control of their respective functions was in need of clarification. Refer also to sections IV.A.3 and IV.D for additional comment. Item R-81-14-OEDC(BLN)-03 is closed for record purposes. For verification of completion of corrective action R-81-14-OEDC(BLN)-03 is incorporated into R-84-32-NPS-01.

2. R-81-14-OEDC(BLN)-14, Drawing Information System (DIS) Implementation Concerns

Summary of Original Finding

OEDC failed to adequately implement the DIS for Bellefonte configuration control.

Current Status

In an interview with the Chief, Information Management Branch, NSRS learned that the DIS had been incorporated into the Drawing Management System (DMS) and that TVA intended to implement DMS as the overall control system (for drawings) for NUC PR, OE and OC. NSRS was also aware of the existence and efforts of a TVA task force on configuration management through a review performed on outage controls in October 1984. Within the scope of this task force were subtask groups' missions to gain control of information provided to TVA via vendor manuals and drawings as part of the planned configuration management system. NSRS believed the efforts to gain control of this situation and the degree of management attention afforded to be fully adequate. No additional recommendations are offered at this time. This item R-81-14-OEDC(BLN)-14 and related item R-81-14-OEDC(BLN)-31 are closed for record purposes. For purposes of verification of corrective action completion, these findings are consolidated into R-84-32-NPS-01.

3. R-81-14-OEDC(BLN)-17, Program and Implementation inadequacies of Engineering Procedures (EPs)

Summary of Original Finding

EN DES EPs were inadequate in that they contained conflicting information, provided insufficient assurance of design quality, and were not consistently implemented.

Current Status

In an interview with NSRS, the Manager of the Quality Management Staff (QMS) of OE discussed OE's intention to redesign and streamline Engineering Procedures as stipulated by the Manager of OE. This effort was considered by NSRS as a necessary part of the overall effort to be coordinated and performed by the Division of Quality Assurance (DQA) to establish a QA program for TVA. Engineering or quality assurance programs developed by OE must be evaluated and approved by DQA for the Office of Nuclear Power (ONP) as required by ANSI N45.2.13 and a more cohesive OE program should be the result. NSRS closed R-81-14-OEDC(BLN)-17 for record purposes. For the purpose of verifying corrective action taken, the essence of this item--establishment and implementation of a comprehensive program capable of achieving and assuring quality in design--is being incorporated into R-84-32-NPS-01.

4. R-81-14-OEDC(BLN)-18, Failure to Establish Detailed QA Policy

Summary of Original Finding

EN DES failed to establish a comprehensive detailed QA policy, especially regarding procedural compliance and review of EPs for adequacy.

Current Status

The Manager of OE had issued a memorandum of quality policy to be included in OE Administrative Instructions. This overall quality policy statement was determined fully adequate, but the pending redesign of OE procedures requires that further verification be performed to assure the policy is incorporated into the new OE program. Therefore, for record purposes R-81-14-OEDC(BLN)-18 is closed, but for verification purposes is incorporated into R-84-32-NPS-01.

5. R-81-14-OEDC(BLN)-20, Lack of Control of Safety-Related Systems List

Summary of Original Finding

EN DES failed to develop a single controlled comprehensive listing of safety-related systems and components for BLN. This item was similar to R-82-02-WBN-07 and -09 for Watts Bar.

Current Status

In a memorandum to the Manager of the Office of Construction (OC) dated December 3, 1984, the Manager of OE stated that the baseline Q-list for BLN would be issued by February 1, 1985. As with Q-lists for other plants, it will be necessary to reach agreement among ONP, OE, AND OC on the content of this list. This effort is considered by NSRS to be part of the overall effort to develop and implement a comprehensive TVA QA program and as such is incorporated in R-84-32-NPS-01. R-81-14-OEDC(BLN)-20 is closed for record purposes.

6. R-81-14-OEDC(BLN)-23, Documentation of System Design Bases

Summary of Original Finding

EN DES was not maintaining accurate, permanent, and controlled design bases (or system descriptions) for safety systems. This item was similar to R-82-02-WBN-10 and -11 for Watts Bar.

Current Status

In response to this item and to items R-82-02-WBN-10 and -11 EN DES issued EN DES EP 3.38, "System Description Documents - Preparation, Review, and Approval," Revision 2 dated February 16, 1983, and EP 3.01, "Design Criteria Documents - Preparation, Review, and Approval," Revision 5 dated December 13, 1982. These documents specify the controls and requirements applied to the generation and maintenance of System Descriptions and Design Criteria Documents, including appropriate criteria for deactivation, and a requirement for review by NUC PR.

According to a System Description status report of December 6, 1984 for Watts Bar, over 60 systems had been designated for provision of controlled system descriptions, and a schedule for the completion of each was given. This project was estimated at approximately 50 percent complete, with all descriptions to be completed by August 1, 1985.

For BLN, the BLN design project designated personnel responsible for preparation of over 80 System Descriptions to be

generated in accordance with the procedures identified above. A schedule for the generation of the descriptions was loaded into OE's PC III computer program for tracking and reporting status and changes. Although some System Descriptions were scheduled for issue coincident with system preoperational testing, this program appeared to be adequate and in progress. This item is closed. R-82-02-WBN-10 is closed. R-82-02-WBN-11 is closed.

7. R-81-14-OEDC(BLN)-31, Failure to Input Complete Vendor Information Into the DIS

Summary of Original Finding

EN DES EPs failed to require review of vendor manuals for drawings which should be inputted to DIS, as was required by ID-QAP 1.1.

Current Status

This item is closed for record purposes and is incorporated into R-84-32-NPS-01. Refer to R-81-14-OEDC(BLN)-14, section IV.A.2.

8. R-81-14-OEDC(BLN)-32, Inadequate Storage of Audit Support Records

Summary of Original Finding

OEDC QA groups inadequately stored audit support records, e.g., documents other than the actual report and responses, such as the checklist used and the audit plan.

Current Status

The QMS Manager in an interview with NSRS agreed to enter into MEDS the issued audit report with support records such as the audit plan and checklist. The QMS Manager also stated that this control would be procedurally required under the OE procedure system. Duplicate microfilm storage meets the intent of ANSI N45.2.9 for storage of QA records. This item remains open pending approval of the procedure for QMS QA record storage.

9. R-81-14-OEDC(BLN)-41, QAB Auditor Training

Summary of Original Finding

EN DES failed to establish a written, approved program for training QA auditors.

### Current Status

In an interview with NSRS the QMS Manager stated intentions to develop and approve a QMS procedure controlling the training and certification of auditors and lead auditors in accordance with ANSI N45.2.23, which addresses requirements for auditor qualifications. A draft copy of the procedure dated October 29, 1984, was provided to the reviewer and appeared adequate. This item remains open pending approval of the OE or QMS procedure for auditor training and certification.

#### B. R-81-31-NPS, Special Review of NUC PR Operator Training

Four items remaining open from the operator training review were reviewed during this follow-up. The four deficiencies were identified as concerns regarding training programs administered by the Power Operations Training Center. The Division of Quality Assurance completed a comprehensive audit of operator training and requalification, Audit CH-8400-07, issued July 26, 1984. This audit identified similar general and specific concerns and, in follow-up to the four NSRS findings, determined that corrective action was not yet sufficient to justify closing them. The audit was performed in accordance with TVA commitments to ANSI N45.2.12 and as such requires written response and QA verification of corrective actions taken. Therefore, NSRS has determined that the following four findings from NSRS report R-81-31-NPS are closed:

R-81-31-NPS(POTC)-01

R-81-31-NPS(POTC)-02

R-81-31-NPS(POTC)-03

R-81-31-NPS(POTC)-04

#### C. R-82-02-WBN, Major Management Review of Watts Bar

Seven items remaining open from the major management review of Watts Bar were followed up to verify corrective action status. Each item is identified below by its original finding designation.

##### 1. R-82-02-WBN-03, Activities Affecting Quality

#### Summary of Original Finding

This finding identified inconsistencies and omissions in the overall TVA QA program, especially in the areas of identification and control of activities affecting quality and involving interdivisional/interoffice interfaces.

#### Current Status

The status of this item is addressed in section IV.D. For record and tracking purposes this item is closed. For verification this item is included in R-84-32-NPS-01.

2. R-82-02-WBN-07, Inaccuracies in Identifying the Scope of Work Under QA Control

Summary of Original Finding

OEDC did not provide a comprehensive, consistent, controlled listing of structures, systems, and components to which the QA program for Watts Bar was to have been applied. This item was later determined by OEDC QA to be generic to plants in the construction phase (Bellefonte).

Current Status

The Office of Quality Assurance closed this item for Watts Bar, but left it outstanding for the BLN program. As such, it is similar to item R-81-14-OEDC(BLN)-20, included in R-84-32-NPS-01. Action to achieve agreement among ONP, OC, and OE on the Q-list and its implementation for Watts Bar was scheduled to be taken prior to receipt of an operating license for Watts Bar in accordance with a commitment made to the NRC on November 28, 1984. Item R-82-02-WBN-07 is closed for record and tracking purposes. For verification purposes, this item is incorporated into R-84-32-NPS-01.

3. R-82-02-WBN-09, Lack of Control of Safety-Related Structures, Systems and Components List

Summary of Original Finding

EN DES failed to provide positive control of the identification/designation of safety-related structures, systems, and components to the extent that other organizations, notably CONST, were generating and using "safety-related lists" in the absence of clear design guidance.

Current Status

This item is closed for record and tracking purposes and is included in R-84-32-NPS-01. Refer to items R-81-14-OEDC (BLN)-20, section IV.A.5 and R-82-02-WBN-07, section IV.C.2.

4. R-82-02-WBN-10, Inadequate Documentation of Systems Design Base

Summary of Original Finding

EN DES was maintaining incomplete and inconsistent Watts Bar Design Criteria and FSAR System Descriptions. Design Criteria were not provided for some systems. This item was similar to R-82-02-WBN-11 and R-81-14-OEDC(BLN)-23.

Current Status

See section IV.A.6, R-81-14-OEDC(BLN)-23. This item is closed.

5. R-82-02-WBN-11, Improper Inactivation of Some Watts Bar Design Criteria

Summary of Original Finding

EN DES deactivated some Watts Bar Design Criteria by an uncontrolled practice. This item was similar to R-82-02-WBN-10 and R-81-14-OEDC(BLN)-23.

Current Status

See section IV.A.6, R-81-14-OEDC(BLN)-23. This item is closed.

6. R-82-02-WBN-25, Control of Protective Coating Processes

Summary of Original Finding

EN DES failed to define in a controlled design document the areas, structures, systems, and components to be protected by Service Level I protective coatings.

Current Status

The Watts Bar Q-list issued as controlled drawing 91QL series addressed and identified the areas and structures requiring Service Level I protective coating. Bellefonte controlled drawing series OGP-0025 R-0 provided similar information for that project. R-82-02-WBN-25 is closed.

7. R-82-02-WBN-26, Lack of Approved Procedures for Certain Computer Programs

Summary of Original Finding

CONST failed to provide procedural controls on the development, verification and application of computer programs used to support quality in construction such as the Universal computer program.

Current Status

This item was closed for Watts Bar but remained open for BLN as determined by OQA. An interview with the BLN Compliance supervisor revealed that essentially no progress had been made toward adequate resolution of this item. This item remains open.

D. R-81-11-WBN, Watts Bar Unit 1 - Special Review

Two programmatic findings, R-81-11-WBN-01 and -02, remained unresolved and were followed up during this review.

Summary of Original Findings

These findings reported that the TVA QA program for Watts Bar was inadequate to control or assure compliance with requirements and commitments. The report recommended that a thorough review of commitments and implementing procedures be performed by QA and that the results of that review be used to upgrade the program. These findings were considered by NSRS to be similar in nature and scope to R-82-02-WBN-03, -07, and -09, and to R-81-14-OEDC (BLN)-03, -17, -18, and -20, in that all of these findings dealt generally with examples of failures to define, prescribe, and implement the controls necessary to achieve and assure quality during the design and construction phases of nuclear plants.

The Office of Quality Assurance had planned to develop and assure implementation of an "integrated" QA program for TVA in order to resolve these deficiencies. This project, development of the Management Policies and Requirements Manual, was terminated during the TVA reorganization and formation of OPE.

Current Status

As a result of the July 1984 reorganization of the TVA Power organization, ONP, i.e., the owner-operator, was formed with broad authority and responsibility for establishing and executing an integrated QA program for the design, construction, and operation of TVA nuclear facilities. The ONP Division of Quality Assurance (DQA) was delegated the responsibility of developing and maintaining an overall nuclear QA program. DQA specified that the primary goal in the overall program development would be the definition of QA program policies and requirements applicable to the design, construction, services, and operation of nuclear facilities; and secondarily to define and develop requirements for control of key activities that had previously been inadequately controlled. DQA had issued a formal plan for development of a single QA policy- and requirement-oriented program manual, the "Nuclear Quality Assurance Manual," and scheduled its initial issue for December 31, 1984. An intended function of this manual is to replace the former upper tier program manuals, such as the Interdivisional Quality Assurance Manual, Program Requirements Manual, and Office of Power Quality Assurance Manual, which had inadequately defined and controlled requirements and interfaces.

The Office of Nuclear Power had also identified the need to restructure and upgrade ONP procedures that affect and control the quality, consistency, and safety, among other necessary attributes, of performance of ONP activities in support of ONP goals. In a memorandum dated October 29, 1984, the Manager of

ONP planned the development of a Nuclear Policies and Requirements Manual (NPRM) to establish procedural controls for areas outside the scope of the regulatory compliance-oriented nuclear QA program.

NSRS believes that unless otherwise planned, this development effort should also include the management requirements and acceptance standards for work performed for or in support of ONP by organizations such as OE and OC so that adequate performance requirements are communicated, acknowledged, and achieved throughout TVA. These items, R-81-11-WBN-01 and -02 are closed for record and tracking purposes and are included in R-84-32-NPS-01.

## VI. REFERENCES

### A. Nuclear Safety Review Staff Reports/Working Files

1. R-81-11-WBN, Watts Bar Special Review dated July 1, 1981 (GNS 810701 051)
2. R-81-14-OEDC(BLN), Major Management Review of the Office of Engineering Design and Construction dated September 29, 1981 (GNS 810930 054)
3. R-81-31-NPS, Special Review of Division of Nuclear Power Operator Training dated March 30, 1982 (GNS 820330 050)
4. R-82-02-WBN, Major Management Review of Watts Bar Nuclear Plant dated June 3, 1982 (GNS 820603 051)
5. R-82-14-OEDC(BLN), Routine Followup Review of R-81-14-OEDC(BLN) dated November 3, 1982 (GNS 821104 052)
6. R-82-24-WBN, Routine Followup Review of R-80-11-WBN, R-81-11-WBN, R-81-28-WBN, and R-82-02-WBN dated November 4, 1982 (GNS 821104 050)

### B. Correspondence (Other than included in NSRS Report Working Files)

1. Memorandum from H. N. Culver to J. W. Anderson dated December 29, 1982, "Transfer of Responsibility for Followup and Action on Nuclear Safety Review Staff Review Report Findings (GNS 821229 151)
2. Memorandum from J. W. Anderson to H. N. Culver dated September 27, 1984, "Reassignment of NSRS Items" (OQA 840927 002)
3. Memorandum from H. N. Culver to J. W. Anderson dated December 5, 1984, "Reassignment of NSRS Items" (GNS 841205 050)

4. Memorandum from J. W. Anderson to H. N. Culver dated June 13, 1984, "Updated Responses to NSRS Open Items (OQA 840613 002)
5. Memorandum from J. W. Anderson to H. N. Culver dated August 8, 1984, "Updated Responses to NSRS Open Items (OQA 840808 001)
6. Memorandum from R. M. Hodges to Those listed dated April 11, 1983, "Bellefonte Nuclear Plant - System Descriptions Assignments List" (BLP 830411 011)
7. Memorandum from J. L. Wright to Bellefonte Design Project Files dated April 7, 1983, "System Description Assignments List Coordination Meeting - Notes" (BLP 830405 024)
8. Memorandum from J. W. Anderson to G. H. Kimmons dated December 17, 1983, "NSRS Report R-81-14-OEDC(BLN) - Program Implementation Inadequacies of Engineering Procedures - Item 17" (OQA 831219 003)
9. Letter from J. W. Hufham to J. P. O'Reilly, NRC, dated November 28, 1984, "Watts Bar Nuclear Plant Units 1 and 2 - NRC-OIE Region II Inspection Report 50-390/82-09, 50-391/82-07 - Fourth Revised Response to Item 2" (L44 841128 809)
10. Memorandum from J. C. Standifer to Those listed dated December 6, 1984, "Watts Bar Nuclear Plant System Description - Schedule Update" (WBN 841206 006)
11. Memorandum from R. W. Cantrell to J. W. Anderson dated February 27, 1984, "NSRS Report R-81-14-OEDC(BLN) - Program and Implementation Inadequacies of Engineering Procedures - Item 17" (EEB 840227 001)
12. Memorandum from W. D. Poling to Those listed dated December 3, 1984, "QA Requirements for Regulated Programs" (L00 841203 921) and attachments
13. Memorandum from R. J. Mullin to Those listed dated December 10, 1984, "Quality Assurance Activities Transferred from the Office of Quality Assurance to Other Power and Engineering Organizations" (L16 841207 941)
14. Memorandum from J. P. Darling to Those listed dated October 29, 1984, "Restructuring of Office of Nuclear Power (NUC PR) Procedures" (L00 841025 873)
15. Draft memorandum from J. E. Law to H. N. Culver, "NSRS Deviation R-82-02-WBN-03"
16. Memorandum from J. E. Law to W. R. Brown and R. M. Pierce dated December 4, 1984, "Nuclear Quality Assurance Manual (OQAM) - Owner/Operator Responsibility and Authority" (L16 841204 938)

17. Memorandum from J. P. Darling to J. W. Anderson and P. J. Mullin dated August 9, 1984, "Establishment of Division of Quality Assurance (DQA) - Office of Nuclear Power (NUC PR) - (L20 840809 801)
18. Memorandum from H. N. Culver to J. W. Anderson dated April 27, 1984, "Nuclear Safety Review Staff (NSRS) Open Items" (GNS 840427 050)
19. Memorandum from J. P. Darling to Those listed dated November 11, 1984, "Overall Nuclear Quality Assurance Program - Policy and Status" (L16 841023 885)
20. Memorandum from J. P. Darling to Those listed dated October 1, 1984, "TVA Interdivisional Quality Assurance Procedures Manual (IPM)" (L16 840917 840)
21. Memorandum from J. Killian to J. P. Darling dated July 26, 1984, "OQA Audit Report No. CH-8400-07, Operator Training and Retraining" (OQA 840726 702)
22. Memorandum from R. W. Cantrell to J. W. Anderson dated March 23, 1984, "Watts Bar Nuclear Plant - NSRS Report No. R-82-02-WBN, ITEM NOS. -09, -10, -11, AND -25" (ESB 840323 004)

C. OQA Working Files, NSRS Open Items

D. Procedures

1. EN DES EP-3.37 R0 dated February 26, 1983, "System Description Documents - Preparation, Review, and Approval"
2. EN DES EP-3.01 R5 dated December 13, 1982, "Design Criteria Documents - Preparation, Review, and Approval"
3. 45D from J. S. Colley to QAC Employees dated December 12, 1984, transmitting pen and ink change to EN DES EP-1.29, "EN DES Quality Audit Program"
4. Draft QMS-EP Certification of Audit Personnel - received from J. S. Colley December 12, 1984

UNITED STATES GOVERNMENT

## Memorandum

001 85 0429 050  
TENNESSEE VALLEY AUTHORITY

TO : J. P. Darling, Manager of Nuclear Power, 1750 CST2-C  
R. M. Pierce, Project Manager, Watts Bar Nuclear Plant, 9-169 SB-K

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, 249A HBB-K

DATE : APR 29 1985

SUBJECT: WATTS BAR NUCLEAR PLANT (WBN) - NUCLEAR SAFETY REVIEW STAFF (NSRS)  
FOLLOW-UP REVIEW OF OPEN ITEMS (FROM PREVIOUS NSRS REVIEWS AND  
INVESTIGATIONS) - NSRS REPORT NO. R-85-01-WBN

Reference: My memorandum to you dated February 22, 1985, on the same  
subject (GNS 850222 051)

The NSRS has completed its follow-up review of actions taken on open items associated with previous NSRS reviews and investigations on WBN. Responses to previous recommendations were generally positive and improvement was noted in most areas. The site has agreed to a necessary program correction prior to licensing. Completion of planned actions to close the remaining open items is of less immediate concern.

NSRS would like to express our appreciation for the cooperation and assistance of WBN, OE, and OC personnel during this follow-up review.

  
K. W. Whitt

*HWB* HWB:BJN  
*ML* Attachment

cc (Attachment):

RIMS, SL26 C-K  
B. M. Cadotte, E3C80 C-K - Without report  
W. T. Cottle, Watts Bar  
C. W. Crawford, 670 CST2-C  
R. J. Mullin, 1350 CST2-C  
H. G. Parris, 500A CST2-C



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

001 '85 0429 051

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
NSRS REPORT NO. R-85-01-WBN

SUBJECT: WATTS BAR NUCLEAR PLANT (WBN) - NUCLEAR SAFETY REVIEW  
STAFF FOLLOW-UP REVIEW OF OPEN ITEMS (FROM PREVIOUS  
NSRS REVIEWS AND INVESTIGATIONS)

DATES OF  
REVIEW: MARCH 4-8, 1985

REVIEWERS:

G. G. Brantley  
G. G. BRANTLEY

4/26/85  
DATE

H. W. Bennett  
H. W. BENNETT

4/26/85  
DATE

APPROVED BY:

M. S. Kidd  
M. S. KIDD

4/26/85  
DATE

TABLE OF CONTENTS

	<u>Page</u>
I. Scope . . . . .	1
II. Conclusions and Recommendations . . . . .	1
III. Status of Open Items . . . . .	1
IV. Details . . . . .	6
V. List of Personnel Contacted . . . . .	17
VI. References . . . . .	17

## I. SCOPE

This follow-up review was conducted to assess actions taken on open items that had been identified during the three previous Nuclear Safety Review Staff (NSRS) operational readiness reviews performed during 1984. The review consisted of discussions with Office of Engineering (OE), Office of Construction (OC), and Office of Nuclear Power (NUC PR) personnel, and evaluation of regulatory and TVA documents affiliated with each of the items.

## II. CONCLUSIONS AND RECOMMENDATIONS

During this follow-up review of the operational readiness at WBN, NSRS closed 12 of 20 open items. NSRS found that responses to previous recommendations were generally positive and improvement was noted in most areas. The site has agreed to a necessary program correction prior to licensing in the area of quality control inspection program for major maintenance and modifications activities which include material inspections. Completion of planned actions to close the remaining open items is of less immediate concern.

There were no new areas assessed during this review. One new recommendation for additional action was made concerning workplace quality assurance requirements.

no  
made

## III. STATUS OF SELECTED OPEN ITEMS

### A. R-84-02-WBN-01, Noncompliance with TVA Commitments and NUC PR Requirements for GET Training.

The Site Director, Plant Manager, and Plant Superintendents had been exempted from General Employee Training (GET) contrary to TVA commitments and requirements. WBN had drafted a revision to the applicable administrative instruction (AI-10.1) to remove the exception and to establish GET and retraining position requirements for the positions in question. This item remains open until the drafted revision to AI-10.1 has been issued and all required GET and retraining has been completed (see section IV.A for details).

### B. R-84-02-WBN-04, Enhanced Employee Awareness of TVA's Policy on Expression of Staff Views and Preferred Methodology for Reporting Nuclear Safety Concerns

The NSRS concern was that TVA Code II was not being adequately implemented in that procedures for submitting and handling employee concerns were nonexistent and that NSRS was omitted from General Employee Training (GET) discussions of expression of employee concerns. WBN Standard Practice WB 2.1.10 "Employee Reporting of Nuclear Safety Concerns," approved November 19, 1984, and WBN Standard Practice WB 2.1.11 "Employee Expression of Differing Views," approved December 12, 1984, provide an adequate discussion of responsibilities and reporting methodology that is accessible to employees. A notice entitled "How to Voice Your

Concern" signed by the Site Director on February 11, 1985, includes the NSRS. This notice is to be used as a handout in GET 2.1 and GET 4 until a requested revision to the GET program is implemented. These actions taken by the plant staff are adequate and this item is closed (see section IV.B for details).

C. R-84-05-WBN-02, Station STA Training

All Shift Technical Advisors (STAs) are required to complete specific station training prior to independently assuming shift as a fully qualified STA. Eleven of fourteen WBN STAs had completed their station training and a practical training program had been established to provide the required training to the remaining three STA trainees during the startup of unit 1. This item is closed (see section IV.C for details).

D. R-84-05-WBN-08, High Density Fuel Storage Racks Attenuation Testing

Documentation adequate to verify material certification and installation of the neutron poison inserts could not be found. Neutron attenuation testing was conducted on 15 percent of the storage rack cells without documented justification of the testing sample size. In a meeting with NSRS, OE and OC stated that they are currently addressing this problem and expect to be able to document acceptability of the 15-percent sample size and certification and installation of the poison material by June 1, 1985. This item remains open (see section IV.D for details).

E. R-84-05-WBN-10, Workplan Quality Assurance Requirements

Workplans were found classified "nonsafety-related" when the initiating Engineering Change Notice (ECN) said "QA applies." Corrective action appeared adequate, but the item was held open pending review of additional workplans.

For this follow-up review, 37 workplans were reviewed and 3 of these were found to have been classified "nonsafety-related" when the initiating ECNs were marked "QA applies." Workplans were being reviewed for proper classification in accordance with the Q-list, but not for agreement with the classification of the initiating ECN.

NSRS finds that the previous corrective action was inadequate and recommends that the cause of the discrepancies found be determined, the potential impact of this type of discrepancy be evaluated, and corrective action taken as appropriate. This item remains open (see section IV.E for details).

F. R-84-05-WBN-11, Workplan Functional Tests

The NSRS did not believe adequate functional tests were being performed after workplan completion. Although review of ten workplans identified no problems, the item was held open pending review of additional workplans. For this follow-up review, 37

workplans were reviewed and found to provide or reference post-modification tests where appropriate, or testing was accomplished by a Preoperational Test after completion of the work. This item is closed (see section IV.F for details).

G. R-84-05-WBN-12, Supplemental Information Added to Workplans

Workplans were found with information added without a date or initials. This item was held open pending review of additional workplans. For this follow-up review, NSRS found that the NUC PR Modifications Coordinator was reviewing completed workplans for this problem. NSRS review of 37 workplans found no problems. This item is closed (see section IV.G for details).

H. R-84-05-WBN-14, Inspector Certification Records

Inspector certification records were either not on site or were incomplete. NUC PR expected the problem to be solved TVA wide by implementation of a new interactive computer system. This item was held open pending verification of effectiveness of the new system.

During this review, NSRS found that the system was about to be tested and real time access is scheduled to be available to the plants by April 1, 1985. This item remains open pending verification of effectiveness of the new system.

I. R-84-05-WBN-15, Material Inspection

The WBN inspection program for ASME Section III materials did not meet the full intent of regulatory requirements in that the inspection program did not use an independent quality control inspector to physically verify that the proper material was installed. Further review of the regulatory requirements by NUC PR has determined that some revisions to their program are necessary to fully comply with the intent of the requirements. The revisions will involve a differentiation between the inspection effort required for routine maintenance and modifications and that required for major activities of this nature. These revisions in the inspection program should be made before the operating license is obtained, and this item remains open until the revisions are accomplished (see section IV.I for details).

J. R-84-05-WBN-16, Records

NSRS found there was a problem with the capability of NUC PR to retrieve OC records associated with workplans. During this follow-up review, NSRS determined that NQAM procedure N-OQAM, part III, section 4.2, and Administrative Instruction AI-4.1 had been revised to require NUC PR Document Control Unit (DCU) individuals be identified to interface with OC Document Control Unit (Records Section). NSRS determined by interviews that these individuals were identified and had attended meetings with OC on

their records system. DCU was able to retrieve, in a reasonable time, OC records associated with five workplans selected by NSRS. This demonstrates the capability of NUC PR to retrieve OC records associated with workplans, and this item is closed (see section IV.J for details).

K. R-84-05-WBN-17, Two-Year Review Cycle for Procedures and Instructions

NSRS believed the WBN procedure review program was inadequate in that successful performance of an instruction was considered by WBN management to be an instruction review. During this follow-up review, NSRS found that AI-3.1, R8, "Plant Instructions - Control and Use," had been revised (revision 8) so that successful performance of an instruction can no longer be used as the two-year review. This item is closed.

L. R-84-05-WBN-24, Interface Review After Unit 1 Fuel Loading

NSRS recommended periodic physical verification of interface points after unit 1 fuel loading. During this follow-up review, plant management agreed that the importance of the interface program warranted a 100-percent verification of interface points within a year after fuel loading in addition to the 100-percent verification being conducted prior to fuel loading. Also, AI-1.6, "Interface - Establishment and Control," is to be revised to transfer responsibility for interfaces from Preop to another plant section at fuel loading. This item remains open pending revision of AI-1.6 and definition and implementation of the interface control program after unit 1 fuel loading (see section IV.L for details).

M. R-84-15-WBN-01, Preoperational Testing

NSRS agreed that the Preoperational Test Program for unit 1 was adequate, but believed it could be improved for unit 2. During this follow-up review, NSRS determined that the site has taken actions intended to ensure adequate procedures, operable equipment, and complete systems are available for the preoperational test. The actions taken are adequate to address the NSRS concerns, and this item is closed (see section IV.M for details).

N. R-84-15-WBN-02, Storage of Maintenance Requests

NSRS had identified a concern with the handling of Maintenance Requests (MRs) while awaiting review by the Plant Quality Assurance (PQA) organization and recommended that the handling procedures be improved. During this review NSRS determined that two separate tracking systems were implemented to prevent loss of the MRs while in the review cycle, and one provided opportunity for retrievability of some information in the event the MR was lost. Additionally, PQA was no longer in the review cycle for MRs. This item is closed (see section IV.N for details).

O. R-84-15-WBN-03, Configuration Control and Independent Verification by Operations Section

NSRS originally found that implementation of the procedures for system configuration control and independent verification were improperly implemented and recommended that training on the procedures be provided to the Operations Section. During this follow-up review, NSRS found that progressive management attention had been provided to the program and definite program improvement was evident. The training on the procedures was underway and is currently scheduled for completion by April 1, 1985. This item remains open until that training has been completed (see section IV.O for details).

P. R-84-15-WBN-04, Shift and Relief Turnover of Operations Section

NSRS had observed inadequate shift turnovers involving some of the operations staff and recommended that the established administrative controls for this activity (shift and relief turnover) be reviewed with and emphasized to that staff. During this follow-up review, NSRS verified that the administrative controls had been reviewed with the Operations staff in the form of group discussions and that periodic evaluation of the effectiveness of the controls as specified in AI-2.10, "Shift and Relief Turnover," was provided. This item is closed (see section IV.P for details).

Q. R-84-15-WBN-05, Field Quality Engineering (FQE) Activities

NSRS had found that checklists for surveillance of health physics activities had not been prepared and had recommended that they be prepared and surveillance of those activities performed during fuel load and startup of unit 1. During this follow-up review, NSRS found that the checklists were in the initial stages of preparation, and it was planned to perform the surveys early in the startup phase of unit 1. This item remains open until the checklists have been prepared and the initial round of surveys have been performed (see section IV.Q for details).

R. R-84-15-WBN-06, Health Physics Organization

NSRS had expressed some concern that the plant organizational structure did not conform to the current regulatory guidance for health physics organizations in that the Health Physics Supervisor (HPS) reported to the Engineering and Operations Superintendent instead of directly to the Plant Manager. NSRS recommended that the reporting chain be changed so that the HPS would report directly to the Plant Manager. During this follow-up review, NSRS determined that even though NUC PR had not adopted the NSRS recommendations, they had placed more organizational emphasis on the importance of the radiation protection program. The WBN health physics staff felt that they had good support for their program from upper plant management and that there were no

identified problems stemming from the current plant organizational structure. This item is closed (see section IV.R for details).

S. R-84-15-WBN-07, Health Physics Program Administrative Controls

The primary administrative system for providing controls for the personnel protection against exposure to radioactive materials and radiation had been revised into a new Radiation Work Permit System. NSRS recommended that training be provided to the plant staff on the new system. During this follow-up review, NSRS found that WBN had developed a formal training program, provided the significant portion of the recommended training, and had formally scheduled the training not yet completed. This item is closed (see section IV.S for details).

T. R-84-15-WBN-08, Health Physics Section Personnel Stop Work Responsibility and Authority

NSRS was concerned the plant Radiological Control Instructions (RCIs) did not clearly delineate Health Physics Section personnel responsibility and authority for imminent danger conditions. During this follow-up review NSRS determined that the applicable RCI had been revised to provide a much stronger and clearer statement as to the Health Physics Section responsibility and authority relating to these conditions. This item is closed (see section IV.T for details).

#### IV. DETAILS

A. R-84-02-WBN-01, Noncompliance With TVA Commitments and NUC PR Requirements for GET Training

TVA had committed through the TVA Topical Report and the WBN Final Safety Analysis Report (FSAR) that all persons regularly employed at WBN would be trained in certain areas covered by general employee training (GET). During Phase I of the Operational Readiness Review (ORR), NSRS found that WBN had exempted the Plant Manager, Assistant Plant Manager, and the two Plant Superintendents from all GET and periodic retraining except for courses for health physics and security. An exemption so stating had been included in the plant administrative instruction for training (AI-10.1, "Plant Training Program").

NSRS had recommended that AI-10.1 be revised to remove the exemption to be in full compliance with TVA commitments and requirements as specified in the Topical Report, FSAR, and the N-OQAM. NSRS indicated that an acceptable alternative would be to acquire formal exception to the established commitments and requirements. NUC PR responded that no action was necessary because the Plant Manager, Assistant Plant Manager, and superintendents are, by virtue of their positions, knowledgeable in the areas of concern, and whether that knowledge is obtained through formal training classes or otherwise is not relevant.

During Phase III of the ORR, NSRS found that A1-10.1 had not been revised to be in full compliance with TVA commitments and formal exceptions to the commitments had not been obtained. NSRS basically disagreed with NUC PR's position that they met the intent of the commitments and continued to recommend that the exemption should be removed from A1-10.1 or formal exception to the commitments should be obtained.

During this review, NSRS found that the WBN staff had drafted a revision to A1-10.1 to establish training position requirements including GET for the Site Director, Plant Manager, and Plant Superintendents, and to delete the exemption statement. The drafted revision to A1-10.1 satisfies the NSRS concern and this item remains open until the drafted revision has been issued and the related GET and retraining has been completed.

B. R-84-02-WBN-04, Enhanced Employee Awareness of TVA's Policy on Expression of Staff Views and Preferred Methodology for Reporting Nuclear Safety Concerns

Employees interviewed previously were unaware that nuclear safety concerns can be taken to the NSRS before they are taken to the NRC. GET training courses 2.1, "Health Physics" and 4.0, "Quality Assurance," included a discussion of reporting employee concerns but the NSRS was not mentioned. There were no plant procedures to address the process of expressing employee concerns.

During this follow-up review, NSRS found that the plant training section had requested changes to the GET classes to address NSRS's role in employee concerns, but the organization responsible for the GET material, the Plant Operations Training Center (POTC), has not agreed to make the changes. Until the GET material can be changed, WBN is handing out a notice "How to Voice Your Concern" in both GET 2.1 and 4.0. This notice, signed by the Site Director, provides a clear, straightforward discussion on expressing employee concerns inside TVA, including the role of NSRS. WBN Standard Practices WB 2.1.10, "Employee Reporting of Nuclear Safety Concerns," approved November 19, 1984, and WB 2.1.11, "Employee Expression of Differing Views," approved December 12, 1984, provide an adequate discussion of responsibilities and methodology for expressing employee concerns that is accessible to employees.

Issuance of WB 2.1.10 and WB 2.1.11 and the use of the notice "How to Voice Your Concern" are adequate actions to correct the problem at WBN, and this item is closed. However, NSRS may review the GET program in the future to verify it has been revised to include the NSRS in a discussion of expressing employee concerns.

C. R-84-05-WBN-02, Station STA Training

A1-10.1 indicated that special training course RST 26, "Station Shift Technical Advisor Training," should be completed prior to

assuming shift duties for the first time. During Phase II of the ORR, NSRS found that none of the plant STAs had completed the RST 26 training. NSRS recommended that the RST 26 training be completed. NUC PR responded that the STAs would complete the necessary training.

During Phase III of the ORR, NSRS found that the STAs were receiving the RST 26 training but it had not been completed. A target date of September 1, 1984, was established for completion of the training.

During this follow-up review, NSRS found that 11 of 14 WBN STAs had completed their required RST 26 training. The remaining three STAs are trainees and were still in training status. It is planned that they will not be assigned independent STA duties until the training has been completed. A new station STA training program had been issued in the form of an Engineering Section Instruction Letter, ENSL A23, "Station Shift Technical Advisor Training". This program requires that the STA trainee stand 21 shifts of STA duties along with a qualified STA and receive training in related administrative duties, reactivity control, and process and prime computer use. The trainee demonstrates his/her proficiency in these subjects and is then qualified to independently assume the STA shift. Based upon the completion of the station training by 11 STAs and issuance of a practical training program for the remaining STA trainees, this item is closed.

D. R-84-05-WBN-08, High Density Fuel Storage Racks Attenuation Testing

Documentation adequate to verify material certification and installation of the neutron poison inserts in the high density fuel storage racks (HDFSR) could not be found during Phase II of the ORR. Neutron attenuation testing was conducted on 15 percent of the rack storage cells without documented justification for the 15-percent testing sample size. The site response indicated that EN DES should provide justification for the 15-percent sample size.

For this follow-up review, NSRS met with OE and OC personnel to determine the status of the HDFSR problem. OE and OC are currently searching TVA and vendor documentation to verify that adequate records exist. OE is seeking justification of the 15-percent sample size from the contractor who performed the testing. These efforts are expected to be complete by June 1, 1985. OE also agreed to verify that adequate qualified storage cells are available for a complete core unload, should that be necessary. This item remains open.

E. R-84-05-WBN-10, Workplan Quality Assurance Requirements

During a review of workplans for Phase II of the ORR, one NUC PR and two OC workplans were found to be inconsistent with the

initiating ECNs in that the ECNs were checked "QA applies" but the workplans were marked to indicate that QA did not apply. The site response indicated that workplans would be reviewed for this discrepancy beginning June 25, 1984.

For this follow-up review, NSRS reviewed 25 OC and 12 NUC PR workplans randomly selected from those completed since June 25, 1984, and 5 additional OC workplans on safety-related systems (references 39 through 75). Three of the OC workplans (4239, 4724, and 4745) were marked as nonsafety, yet were being used to implement portions of ECNs marked "QA applies." NSRS interviewed the NUC PR Modifications Coordinator and found he was reviewing workplans for proper classification in accordance with the Q-list, but not specifically for agreement with the QA classification of the initiating ECN.

Classification of workplans in accordance with the Q-list is appropriate. However, the initiating ECN should also agree with the Q-list. If it does not agree, the discrepancy should be resolved before the workplan is classified. NSRS recommends that the cause of the classification discrepancies in workplans 4239, 4724, and 4745 be determined, the potential impact of this type of discrepancy be evaluated, and corrective action be taken if necessary. This item remains open.

F. R-84-05-WBN-11, Workplan Functional Tests

In the Phase II ORR review, several workplans reviewed appeared to have inadequate details for testing following modifications. The site response indicated no corrective action was necessary. NSRS reviewed 10 additional workplans in the Phase III ORR review and found no problems.

For this follow-up review, 25 OC workplans and 12 NUC PR workplans completed since June 25, 1984, were reviewed (references 39 through 75). Where testing was appropriate, it was included in the workplan referenced, a Preoperational Test was referenced, or the workplan was used specifically to clear a preop restraint or deficiency. How testing was accomplished could be determined in every case. This item is closed.

G. R-84-05-WBN-12, Supplemental Information Added to Workplans

In the Phase II ORR review, several workplans were found to have information added without dates or initials of the person adding the information. The site response was to have completed workplans reviewed for this problem. NSRS reviewed a small number of workplans in the Phase III ORR review and found no problems.

For this follow-up review, NSRS reviewed 37 workplans completed after June 25, 1984, (references 39 through 75) and found no problems. The NUC PR Modifications Coordinator was reviewing completed workplans specifically for this problem. This item is closed.

H. R-84-05-WBN-14, Inspector Certification Records

No additional details necessary.

I. R-84-05-WBN-15, Material Inspection

TVA is committed through the TVA Topical Report to develop and implement quality assurance procedures and instructions to assure that the inspection efforts during maintenance and modification efforts of critical structures, systems, and components (CSSC) meet quality assurance standards at least equal to those of the original installation. In section 17.2.10, the Topical Report addresses the quality control inspection effort during maintenance and modification activities on CSSC. It specifies that instructions covering these activities (maintenance and modifications) shall contain appropriate inspection requirements, including mandatory holdpoints, which are in accordance with the original inspection efforts or acceptable alternatives which are in accordance with applicable requirements.

TVA is also committed through the Topical Report to comply with the quality assurance requirements specified in ANSI Standard N18.7-1976. Clarification of required inspection efforts is offered in the forward to that standard which indicates that a large modification effort involving the installation of a new plant system or a major repair effort using offsite construction forces would ordinarily require an approach to inspection of the modified or repaired system similar to that used during original construction. The standard indicates, on the other hand, small modifications made by the onsite operating organization would ordinarily be performed using the same type of inspections that are applied to routine maintenance. During the original construction effort at WBN, quality control inspectors were used to independently verify that ASME Section III materials were installed in safety-related systems. The inspections were physical verification of the materials in place in the systems.

During Phase II of the ORR, NSRS found that the related NUC PR inspections for installation of ASME Section III materials were in the form of surveys which only checked the paper requirements and not the actual installation of material during modification activities. NSRS recommended that these surveys inspect not only the paper requirements, but also the actual installation of materials during plant modifications. This type of inspection is consistent with the original inspection effort. NUC PR responded that the N-OQAM allowed a cognizant individual to verify material in lieu of QC holdpoints and that surveys would be performed to physically verify installation of materials including Section III materials.

During Phase III of the ORR, NSRS found that the survey discussed above was not performed on a scheduled interval, but only on a random basis and that the inspection activities for plant modifications were not equivalent to the original construction inspection.

tion program for ASME Section III materials. NSRS concluded that the use of a cognizant individual to verify material installation in lieu of a QC holdpoint was unacceptable. Subsequent to the Phase III review the item was identified to NUC PR as one that should be resolved prior to fuel load in order to be in compliance with regulatory requirements.

During this review, NSRS found that the WBN staff had determined that an inspection program for major maintenance and modifications should be compatible with that performed during original construction. NSRS concurs that an inspection program of this nature would meet the intent of ANSI 18.7. WBN was reviewing and revising their administrative instructions to clarify that QC inspections during major maintenance or modifications will be compatible with those performed during construction (independent inspection). Major modifications and maintenance were to be defined. The review and revisions were scheduled for completion by March 31, 1985. This item remains open until the applicable instructions have been appropriately revised.

J. R-84-05-WBN-16, Records

In the Phase II ORR, NSRS found there was a problem with retrievability of OC records associated with workplans. The site response indicated that this problem would be addressed by the As-Constructed Drawing Task Force, and their recommendations would be implemented.

During this follow-up review, NSRS determined that a paragraph entitled "Interface Responsibilities Before Transfer of QA Records" had been added to NQAM procedure N-OQAM, part III, section 4.2, revised October 12, 1984, and AI-4.1, revision 8, dated November 26, 1984, to address the problem. The paragraph required that document control personnel be identified by NUC PR to interface with the OC Document Control Unit (Records Unit). The intent was to provide NUC PR familiarity with the OC records program and thereby ensure retrievability by NUC PR. NSRS interviewed the Document Control Unit (DCU) Supervisor and a clerk (two of the three designated OC interface individuals), who were familiar with the OC records system and had attended meetings with OC on their records system. DCU had received no requests to retrieve OC documentation, so NSRS requested that DCU retrieve selected documentation associated with five QA system workplans completed since June 1984 (references 71 through 75). DCU was able to retrieve all the requested records, even though some of them had not yet been sent to the vault. This item is closed.

K. R-84-05-WBN-17, Two-Year Review Cycle for Procedures and Instructions

No additional details necessary.

L. R-84-05-WBN-24, Interface Review After Unit 1 Fuel Loading

In the Phase II ORR, NSRS recommended periodic physical verification of interface points after unit 1 fuel loading. This was

felt to be necessary because of the importance of interface points and the extended time between unit 1 fuel loading and unit 2 operation when the interface points must be maintained. The site responded that a planned 100-percent verification prior to fuel loading coupled with the normal controls applied to hold orders and temporary conditions would be adequate.

During this follow-up review, NSRS discussed interface controls with the Interface Coordinator in the Preoperational Test Section, the Preoperational Test Section Supervisor and Assistant Supervisor, and the Superintendent of Operations and Engineering (acting for the Plant Manager). Prior to this follow-up review the NSRS also discussed this item with the Site Director and the Plant Manager, who agreed that verification of interface points after unit 1 fuel loading in addition to normal controls would be appropriate. The Superintendent of Operations and Engineering agreed to revise AI-1.6, "Interface Establishment and Control," to transfer responsibility for interfaces from prep to another plant section at fuel loading and to perform another 100-percent verification of interface points within a year after fuel loading. The verification sampling size, frequency, and responsible organization had not been determined. This item remains open.

M. R-84-15-WBN-01, Preoperational Testing

In the Phase III ORR, NSRS agreed that the Preoperational Test Program for unit 1 was adequate, but believed it could be improved for unit 2 to more nearly match the apparent intent of the program described in upper tier documents. The "ideal" program would use test instructions that have been shown to be adequate in "dry runs" to test entire systems that have previously been demonstrated functional by initial testing.

During this follow-up review, NSRS determined that WBN had addressed this concern in three parts.

- o Procedure adequacy is addressed by revising unit 2 test instructions to include changes that were necessary in the unit 2 tests. Also, an initial system operation (ISO) period is scheduled between tentative transfer of the system and start of the test for checkout.
- o Transfer boundaries for unit 2 have been defined such that entire systems will generally be transferred for the preoperational test.
- o A new policy has been implemented to operate equipment and systems, beginning at the time of the intermediate walkthrough inspections, and to fix any problems found prior to tentative transfer.

These measures taken together should be adequate to make the unit 2 Preoperational Test Program much more like the "ideal" program. This item is closed.

N. R-84-15-WBN-02, Storage of Maintenance Requests

During Phase III of the ORR, NSRS identified a concern involving MRs awaiting final review by Plant Quality Assurance (PQA) organization. The MRs were being kept at the reviewers desk for up to three days without any precautions being taken to prevent loss or damage to the documents. NSRS recommended that the MRs be stored in a suitable environment to prevent possible damage or loss while awaiting final review by PQA. NUC PR responded that a log was maintained by PQA to track the MRs while in their possession and that the MR number and work description were included in the plant's Office System 6 (OS6) tracking system which could provide retrievable information. NUC PR felt that no further action was required.

During this follow-up review, NSRS determined from interviews with QC inspectors responsible for tracking and reviewing MRs while in PQA, observation of review and tracking activities, and inspection of the PQA tracking list that the MRs were being afforded adequate attention and maintenance while in PQA possession. Additionally, NSRS verified that the MRs were tracked on the plant's OS6 "QA Review List." The primary administrative instruction for control of MRs (AI-9.2, "Maintenance Requests and Equipment and Maintenance History") had recently been revised and PQA is no longer required to review MRs after they have been worked. Based upon demonstrated adequate tracking through PQA and the plant's OS6 programs along with the recent removal of PQA from the MR review cycle, this item is closed.

O. R-84-15-WBN-03, Configuration Control and Independent Verification by Operations Section

During Phase III of the ORR, NSRS identified that implementation of the procedures for configuration control and independent verification was inadequate. Two Corrective Action Reports (CARs) had been written against the program citing examples of failure to perform independent verification and to maintain configuration controls. NSRS recommended that the procedures (Operations Section Instruction Letter OSL-A2, "Maintaining Cognizance of Operational Status," and Administrative Instruction AI-2.19, "Independent Verification") be reviewed with the Operations staff to stress the importance of proper implementation. NUC PR responded that OSL-A2 was changed to correct identified problems, corrective actions were taken, the reasons for the problems were verbally passed on to each operating shift, training on AI-2.19 had been completed, and OSL-A2 training would be completed by April 1, 1985.

During this follow-up review, NSRS verified that the procedures discussed above had been revised and some training had been provided as part of the specified corrective actions necessary to alleviate the adverse conditions specified in the two CARs. Both of the CARs were closed. Additionally, the Operations Section Management had requested the PQA organization perform an indepth

survey of the implementation of the procedures. The survey (of the auxiliary feedwater system) had been in progress for approximately three weeks and appeared to NSRS to be very thorough. Problems identified were referred to the Operations Section for corrective actions. Preliminary indications from the survey indicated significant improvement over previous surveys. It is planned to perform another survey of the configuration control and independent verification program in the near future after allowing the Operations Section time to correct identified problems. Current plans are to use the Chemical and Volume Control System (CVCS) as a base for this survey as it is a complex system containing many flowpaths, valves, and other equipment.

The cooperation between the PQA organization and Operations Section represented a progressive attitude on the part of those managers, engineers, and operators involved that should result in improved configuration control and independent verification programs. Operator training on OSL-A2 is scheduled to be completed by April 1, 1985, and this item remains open until that training has been completed.

P. R-84-15-WEN-04, Shift and Relief Turnover of Operations Section

During Phase III of the ORR, NSRS observed inadequate shift turnovers at the Assistant Shift Engineer (ASE) and Shift Engineer (SE) levels. NSRS recommended that the administrative controls for this activity specified in Administrative Instruction AI-2.10, "Shift and Relief Turnover," be reviewed with the Operations staff to emphasize the requirements and importance of shift and relief turnover. NUC PR responded that a review and discussion of AI-2.10 requirements would be held with the Operations staff during routine shifts and during normal group rotational training classes. The review and discussion was scheduled to be completed by April 1, 1985. NUC PR indicated that follow-up review and discussions would be held when inconsistencies were observed in the future.

During this review, NSRS verified through discussions with Operation Section managers and observation of schedules that the requirements of AI-2.10 had been discussed with the operating staff. A requirement had been added to AI-2.10 that established a requirement that the Compliance Section perform an independent review of the effectiveness of AI-2.10 on an annual basis. The checklist for this review had not been prepared or the review scheduled. NSRS recommends that the review be scheduled to ensure compliance with the requirement of AI-2.10. Based upon completion of the AI-2.10 training administered to the Operations staff, this item is closed.

Q. R-84-15-WBN-05, Field Quality Engineering (FQE) Activities

During Phase III of the ORR, NSRS found that FQE (now PQA) checklists for surveillance of health physics activities had not been

prepared, and surveillance of health physics activities by FQE had been minimal. NSRS recommended that FQE checklists be prepared and surveillance of health physics activities scheduled during the fuel loading and startup phases of unit 1 to assure that the radiation protection functions are being performed in compliance with established program requirements and to determine the quality of that performance. NUC PR responded that no deficiency existed as the frequency of surveys had been appropriate to the levels of health physics activities. They indicated that health physics program areas would be surveyed or reviewed as those associated activities became operational.

During this follow-up review, NSRS found that checklists are currently being prepared by PQA to survey the WBN health physics activities as the plant becomes operational. It is planned that the checklists will be prepared and activities associated with the Radiation Work Permit (RWP), radiation survey, personnel monitoring, and contamination control programs will be performed as those programs are implemented. This item remains open until the checklists have been prepared and the initial round of surveys have been performed.

R. R-84-15-WBN-06, Health Physics Organization

During Phase III of the ORR, NSRS expressed concern that the plant organizational structure did not provide the plant Health Physics Section independence from line operational pressures and organizational flexibility to deal directly with all aspects of the plant health physics program. Specifically, the Health Physics Section Supervisor reported through the Operations and Engineering Superintendent instead of directly to the Plant Manager. NSRS recommended that the plant organization be changed to establish the reporting chain of the Health Physics Section Supervisor directly to the Plant Manager. NUC PR responded that no action was required as the Health Physics Section Supervisor had free access to the Plant Manager if he deemed necessary and it was felt that routine operations were best handled in the current mode.

During this follow-up review, NSRS found it apparent that the plant health physics staff had support from upper plant management and the Health Physics Supervisor had no reservations about his access to the Plant Manager. The health physics management positions at the plant had recently been upgraded, reflecting increased organizational emphasis on the radiation protection program. The NSRS current position is that even though the organizational structure is not ideal and does not conform to regulatory guidance, it is recognized that there are some definite advantages with the current structure (increased upper plant management involvement in the program and close interface with operations and engineering personnel). To date there have been no identified problems stemming from the current organizational structure. Based upon added recent organizational emphasis on the importance of the radiation protection program and appa-

rent upper management support of the program, this item is closed.

S. R-84-15-WBN-07, Health Physics Program Administrative Controls

During Phase III of the ORR, NSRS found that the Special Work Permit/Radiation Work Permit (SWP/RWP) program had been significantly revised. Due to the importance of the new RWP system in that it is the primary administrative control for personnel exposure to radioactive materials and radiation, NSRS recommended that awareness seminars for the new RWP program be provided to the plant staff prior to the startup of unit 1. NUC PR responded that training for plant personnel for the new RWP system would start on March 1, 1985, and would be completed by April 1, 1985.

During this follow-up review, NSRS found that a formal lesson plan, "Familiarization and Use of RWPs," had been prepared and was being presented to plant managers, foremen, and dual-rate foremen. Classes had been conducted and were formally scheduled through March 15, 1985, to provide reasonable assurance that the plant managers, supervisors, foremen, and group leaders are trained on the new RWP program. This item is closed.

T. R-84-15-WBN-08, Health Physics Section Personnel Stopwork Responsibility and Authority

NSRS was concerned that the Health Physics Section personnel did not have sufficient authority to terminate an activity involving imminent danger conditions or situations. Radiological control Instruction RCI-1, "Radiological Hygiene Program," specified that termination of an activity would be accomplished through the Plant Manager or his designated representative. This implied that only the Plant Manager or his designated representative could authorize stopwork. NSRS recommended that RCI-1 should be revised to specify that health physics personnel have the responsibility and the authority to stop work or order an area evacuated when, in their judgment, the radiation protection conditions warrant such an action and those actions are consistent with plant safety. NUC PR responded that RCI-1 would be revised to include a much stronger stopwork provision.

During this follow-up review, NSRS determined that RCI-1 had been revised to provide a stronger stopwork provision in that it now indicates that qualified health physics technicians or supervisors shall have the responsibility to request the person in charge of the operation to stop work or order the area evacuated when, in their judgment, the radiation protection conditions warrant such an action and such actions are consistent with plant safety. This item is closed.

V. LIST OF PERSONNEL CONTACTED

R. A. Beck, WBN Health Physics Supervisor  
L. W. Blevins, Office of Quality Assurance Engineer  
R. J. Blevins, Jr., WBN Document Control Unit Supervisor

T. Bonnough, WBN Compliance  
 R. E. Bradley, WBN Assistant Operations Supervisor  
 W. P. Brooks, WBN Quality Assurance  
 W. L. Byrd III, WBN Preoperational Test Supervisor  
 L. N. Callahan, WBN Modifications  
 R. T. Chattin, WBN Administrative Services Supervisor  
 W. S. Delk, WBN Reactor Engineering Unit Supervisor  
 O. R. Doman, OE Nuclear Engineering Branch  
 J. W. Dillard, WBN Quality Assurance  
 D. M. Gammons, WBN Preoperational Test  
 T. L. Howard, WBN Plant Quality Assurance Supervisor  
 G. T. Jordan, WBN Modifications  
 J. T. Kirkpatrick, WBN Modifications Electrical Section Supervisor  
 J. E. Law, NUC PR DQA Quality Systems Supervisor  
 D. L. Lester, WBN Preoperational Test Unit Supervisor  
 S. H. Mindel, WBN Quality Assurance  
 D. L. Michlink, OE Nuclear Engineering Branch  
 R. Miles, WBN Modifications Manager  
 L. C. Miller, WBN Quality Engineering and Control Supervisor  
 H. L. Pope, WBN Quality Control Supervisor  
 R. G. Rucker, WBN Quality Assurance  
 R. C. Sauer, WBN Compliance Supervisor  
 L. J. Smith, WBN Quality Surveillance Supervisor  
 R. H. Smith, WBN Assistant Preoperational Test Supervisor  
 R. D. Tolley, WBN Project Management Staff  
 B. D. Varga, WBN Plant Training Supervisor  
 V. M. Welch, WBN Document Control Unit  
 B. W. Whittier, OE Civil Engineering Branch  
 B. S. Willis, WBN Superintendent of Operations and Engineering

## VI. REFERENCES

1. Code of Federal Regulations, Title 10, Part 50, Appendix B, revised as of January 1, 1983
2. ASME Boiler and Pressure Vessel Code, Section XI, "Rules for In-service Inspection of Nuclear Power Plant Components," 1983 SI Edition, October 1, 1983
3. American National Standard, ANSI 18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," approved March 8, 1971
4. American National Standard, ANS-3.2/ANSI-N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants," approved February 19, 1976
5. TVA Quality Assurance Topical Report, TVA-TR75-1A, revision 8
6. N-OQAM, Part III, Section 4.2, "Transfer of Quality Assurance Records from the Office of Engineering and the Office of Construction," revised October 12, 1984
7. N-OQAM, Part II, Section 5.3, "Maintenance and Modification Inspection Program," revised October 12, 1984

8. NUC PR Area Plan 1200A10 (formerly DPM No. N7904), "Shift and Relief Turnover," revised February 14, 1984
9. WBN Administrative Instruction AI-2.10, "Shift and Relief Turnover," revision 9, approved January 16, 1985
10. WBN Administrative Instruction AI-2.19, "Independent Verification," revision 2, approved November 21, 1984
11. WBN Administrative Instruction AI-3.2, "Plant Instructions - Control and Use," revision 8, approved January 25, 1985
12. WBN Administrative Instruction AI-4.1, "Quality Assurance Records," revision 8, approved November 26, 1984
13. WBN Administrative Instruction AI-5.4, "Material Issue, Transfer, and Traceability," revision 10, approved August 10, 1984
14. WBN Administrative Instruction AI-7.1, "Quality Control (QC) Inspection Program," revision 6, approved July 11, 1984
15. WBN Administrative Instruction AI-8.5, "Control of Modification Work on Transferred Systems Before Unit Licensing," revision 13, approved March 7, 1985
16. WBN Administrative Instruction AI-8.8, "Control of Modifications Work After Unit Licensing," revision 4, approved March 7, 1985
17. WBN Administrative Instruction AI-9.2, "Maintenance Requests and Equipment Maintenance History," revision 11, approved August 24, 1984
18. WBN Administrative Instruction AI-9.2, "Maintenance Requests and Equipment Maintenance History," revision 12, approved February 26, 1985
19. WBN Administrative Instruction AI-10.0, "Plant Training Program," revision 11, approved March 29, 1985
20. WBN Standard Practice WB 2.1.10, "Employee Reporting of Nuclear Safety Concerns," revision 0, approved November 19, 1984
21. WBN Standard Practice WB 2.1.11, "Employee Expression of Differing Views," revision 0, approved December 7, 1984
22. WBN Radiological Control Instruction RCI-1, "Radiological Hygiene Program," revision 11, approved February 4, 1985
23. Notice "Quality! Safety! How to Voice Your Concern," signed by W. T. Cottle, February 11, 1985
24. WBN Administrative Services Section Instruction Letter No. D-13, "Receipt and Processing of ASME Section III Code, N-5 Data Packages," issued December 11, 1984

25. WBN Engineering Section Instruction Letter ENSL A23, "Station Shift Technical Advisor Training," revision 0
26. WBN Operational Section Letter OSL-A2, "Maintaining Cognizance of Operational Status," revision 8, approved February 8, 1985
27. WBN Plant Quality Assurance Staff Instruction Letter PQA-SIL-2.1, "Handling, Storage, and Control of QA Records," revision 5, approved December 6, 1984
28. WBN Plant Quality Assurance Staff Instruction Letter PQA-SIL-43, "Completed Data Review," revision 4, approved December 11, 1984
29. WBN Plant Quality Assurance Checklist, "Temporary Alterations Handling," approved January 17, 1985
30. WBN Plant Quality Assurance Checklist, "Compliance to Workplans," revision 0, approved January 17, 1985
31. WBN Plant Quality Assurance Checklist, "Temporary Alterations Control," approved January 28, 1985
32. WBN Plant Quality Assurance Checklist, "Compliance to and Review of Maintenance Requests (MRs)," revision 0, approved February 7, 1985
33. WBN Plant Quality Assurance Checklist, "Compliance to Maintenance Instructions (MIs)," revision 0, approved February 7, 1985
34. WBN Plant Quality Assurance Checklist, "Unit Interface," approved March 5, 1985
35. Training Plan, "Familiarization and Use of RWPs"
36. Training Plan, "Issuance and Use of Dosimetry Devices"
37. Correction Action Report WB-CAR-84-30, approved October 17, 1984
38. Correction Action Report WB-CAR-84-38, approved October 24, 1984
39. NUC PR Workplan 2247
40. NUC PR Workplan 2330
41. NUC PR Workplan 3675
42. NUC PR Workplan 3725
43. NUC PR Workplan 4277
44. NUC PR Workplan 4543
45. NUC PR Workplan 4638
46. NUC PR Workplan 4649

47. NUC PR Workplan 4662
48. NUC PR Workplan 4682
49. NUC PR Workplan 4735
50. NUC PR Workplan 4803
51. OC Workplan 2540
52. OC Workplan 3059
53. OC Workplan 3942
54. OC Workplan 4122
55. OC Workplan 4229
56. OC Workplan 4239
57. OC Workplan 4436
58. OC Workplan 4483
59. OC Workplan 4485
60. OC Workplan 4510
61. OC Workplan 4514
62. OC Workplan 4527
63. OC Workplan 4607
64. OC Workplan 4608
65. OC Workplan 4627
66. OC Workplan 4669
67. OC Workplan 4695
68. OC Workplan 4745
69. OC Workplan 4777
70. OC Workplan 9225
71. OC Workplan 4186
72. OC Workplan 4494
73. OC Workplan 4724

74. OC Workplan 8002
75. OC Workplan 9412
76. Memorandum from H. N. Culver to H. G. Parris dated April 13, 1984, "Watts Bar Nuclear Plant - Operational Readiness Review - Nuclear Safety Review Staff Report No. R-84-02-WBN" (GNS 840413 050)
77. Memorandum from H. N. Culver to H. G. Parris dated June 5, 1984, "Watts Bar Nuclear Plant (WBN) - Operational Readiness Review Phase II - Nuclear Safety Review Staff (NSRS) Report No. R-84-05-WBN" (GNS 840605 050)
78. Memorandum from James P. Darling to H. N. Culver dated August 14, 1984, "Watts Bar Nuclear Plant - Operational Readiness Review Phase II - Nuclear Safety Review Staff (NSRS) Report No. R-84-05-WBN" (GNS 840815 100)
79. Memorandum from James P. Darling to H. N. Culver dated September 4, 1984, "Watts Bar Nuclear Plant - Operational Readiness Review Phase II - Nuclear Safety Review Staff (NSRS) Report No. R-84-02-WBN" (GNS 840906 105)
80. Memorandum from E. R. Ennis to Guenter Wadewitz dated October 29, 1984, "Watts Bar Nuclear Plant - Preop Test Program: Improvements for the Transfer and Testing Process for Unit 2" (84'031 HO 418)
81. Memorandum from H. N. Culver to J. P. Darling dated December 27, 1984, "Watts Bar Nuclear Plant (WBN) - Operational Readiness Review Phase III - Nuclear Safety Review Staff (NSRS) Report No. R-84-15-WBN" (GNS 841227 050)
82. Memorandum from G. W. Killian to Those listed dated January 4, 1985, "Second Quarter FY85 and Revised Annual FY85 Plan and Schedules for Verification of Quality Assurance Activities for the Operations Program" (L17 840104 809)
83. Memorandum from W. E. Andrews to R. J. Mullin dated January 31, 1985, "Management Review Guidelines" (LO-4 E50131 802)
84. Memorandum from E. R. Ennis to Those listed dated February 27, 1985, "Health Physics Training" (T08 850220 812)
85. Memorandum from E. R. Ennis to Those listed, "Radiation Work Permit and Dosimetry Training" (T08 850227 813)
86. Memorandum from James P. Darling to K. W. [unclear] dated March 4, 1985, "Watts Bar Nuclear Plant (WBN) - Operational Readiness Review Phase III - Nuclear Safety Review Staff (NSRS) Report No. R-84-15-WBN" (T03 850206 832)

UNITED STATES GOVERNMENT

# Memorandum

001 '85 0422 050  
TENNESSEE VALLEY AUTHORITY

TO : W. R. Brown, Bellefonte Project Manager, 9-167 SB-K  
 J. P. Darling, Manager of Nuclear Power, 1750 CST2-C

FROM : K. W. Whitt, Director of Nuclear Safety Review Staff, E7B31 C-K

DATE : **APR 22 1985**

SUBJECT: BELLEFONTE NUCLEAR PLANT (BLN) - FOLLOW-UP REVIEW OF THE CONSTRUCTION CLEANING AND FLUSHING PROGRAM - NUCLEAR SAFETY REVIEW STAFF (NSRS) REPORT NO. R-85-04-BLN

Reference: My memorandum to you dated January 24, 1985, on the same subject (GNS 850124 050)

The NSRS has completed its follow-up review of the construction cleaning and flushing program for safety-related systems at BLN. NSRS is pleased to report that significant improvement was observed in the affiliated programs and activities in the Offices of Engineering, Construction, and Nuclear Power. There are some improvements and resolutions identified in the report that NSRS continues to recommend. The report also notes issues that have regulatory implications (variance from TVA commitments to NRC).

NSRS would like to express our appreciation to those members of your staffs who provided cooperation during this follow-up review.

*K. W. Whitt*  
 K. W. Whitt

GGB:BJN

Attachment

cc (Attachment):

- RIMS, SL26 C-K
- B. M. Cadotte, E3C80 C-K (without attachment)
- L. S. Cox, OC, Bellefonte
- C. W. Crawford, 670 CST2-C
- H. G. Parris, 500A CST2-C
- A. M. Qualls, NUC PR, Bellefonte
- R. J. Mullin, 1350 CUBB-C

SEE PAGE 2 FOR W. R. BROWN ENDORSEMENT.

APR 22 '85

Project Manager's Office  
Bellefonte Nuclear Plant

	Date
1 WRB	✓
2 GRM	
3 MSI	
4 FEG	
JDP	
TES	
7 ANR	
4 FEL	
File Code	
I-01	

APR 24 '85

Routing	Noted
✓ Whitt	last
LMH	
BUN	
WCS	
JTH	
✓ CMK	call
① IRG	call
② GCB	call
HUB	call
TARG	
✓ file JTH	



F01 '85 0423 702

4/23/85--WRB:JM

cc: RIMS, SL26 C-K

\*L. S. Cox, OC, Bellefonte

\*R. M. Hodges, 9-113 SB-K (with attachment)

\*A. M. Qualls, NUC PR, Bellefonte

K. W. Whitt, E7B31 C-K

\*This is a good report. It represents the concerted efforts of a dedicated group of employees to correct problems and deficiencies in a program that was floundering. They are to be commended for their efforts.

We now need to concentrate on the additional improvements and recommendations of NSRS; resolution of variances from commitments regarding particle size; and, finally, completion of the system flushes.--WRB

001 '85 0422 051

TENNESSEE VALLEY AUTHORITY  
NUCLEAR SAFETY REVIEW STAFF  
REVIEW  
NSRS REPORT NO. R-85-04-BLN

SUBJECT: BELLEFONTE NUCLEAR PLANT - FOLLOW-UP REVIEW  
OF THE CONSTRUCTION CLEANING AND FLUSHING PROGRAM

DATES OF REVIEW: FEBRUARY 12 - FEBRUARY 15, 1985

REVIEWERS:

G. G. Brantley  
G. G. BRANTLEY

4/19/85  
DATE

H. W. Bennett  
H. W. BENNETT

4/19/85  
DATE

APPROVED BY:

M. S. Kidd  
M. S. KIDD

4/19/85  
DATE

TABLE OF CONTENTS

	<u>Page</u>
I. SCOPE . . . . .	1
II. CONCLUSIONS/RECOMMENDATIONS . . . . .	1
III. STATUS OF PREVIOUSLY IDENTIFIED OPEN ITEMS. . . . .	2
IV. DETAILS . . . . .	6
V. LIST OF PERSONNEL CONTACTED . . . . .	23
VI. REFERENCES (DOCUMENTS REVIEWED) . . . . .	23

## I. SCOPE

This follow-up review was performed to evaluate actions taken by the Offices of Engineering (OE), Construction (OC), and Nuclear Power (NUC PR) to correct identified weaknesses in the Bellefonte Nuclear Plant (BLN) cleaning and flushing program for safety-related systems. NSRS positions (recommendations) concerning actions to correct these programmatic weaknesses were presented in NSRS Report No. R-83-08-BLN issued May 12, 1983. This review consisted of personnel interviews and review of applicable program documents, correspondence, and regulatory information.

(NOTE: During the following discussion the acronyms EN DES, CONST, and NUC PR will be used when describing activities and program status during the original review in 1983. The acronyms OE, OC, and NUC PR will be used to denote activities performed by the respective and current TVA offices.)

## II. CONCLUSIONS AND RECOMMENDATIONS

During this follow-up review of the OC flushing program at BLN, NSRS closed out 8 of 11 open items. NSRS concluded that actions taken by OE, OC, and NUC PR had been effective in improving the quality of the BLN flushing and cleaning program. There was an observed improved working relationship between organizations involved in the program. Detail had been added to the upper tier OE documents and implemented into the respective OC program documents. Criteria and responsibilities for OC and NUC PR review of test procedures and packages had been specified and the review program was working, as applied to the flushing program. Uncertainties about the acceptability of obtaining particulate samples in flush water with bypass strainers or filters had been resolved. The training program for CONST test directors was implemented and acceptable.

NUC PR's involvement in the flushing program was at an acceptable level and their reviews of flush test packages were thorough. The Chemical Laboratory Analysts (CLAs) training program had been formalized and the qualifications of those CLAs performing analyses to support CONST flushing was acceptable. Water chemistry specifications with out-of-limit action levels had been specified in plant documents. Portions of the chemical laboratory quality control program had been implemented sufficiently to assure quality results pertaining to the OC flushing program.

NSRS does continue to recommend some improvements in the program involving additional detail in the form of guidance in the upper tier OE documents, clarification and addition of flushing acceptance criteria and pertinent data in future flush test packages, resolution of uncertainties concerning previous flushes accepted on a variance of TVA commitments to NRC, and acquiring approval from NRC for the variance. Although NSRS continues to consider all of the recommendations important, those associated with variance from TVA commitments to NRC are the most significant.

There were no new areas assessed during this review, and no new conclusions or NSRS positions (recommendations) resulted for presentation in this report.

### III. STATUS OF PREVIOUSLY IDENTIFIED OPEN ITEMS

#### A. R-83-08-BLN-01, Review of Corrective Action Process in OEDC (as it Relates to the Flushing Program)

EN DES and CONST had investigated and documented problems encountered in the CONST testing program at SQN. Corrective actions were specified to strengthen the testing program (including CONST flushing activities) at other TVA facilities. However, these corrective actions were not properly implemented at BLN and problems with the testing program similar to those that had occurred at SQN and later at WRN were encountered. Additionally, problems existed at BLN with the local corrective action program particularly in the disposition of Quality Control Investigation Reports (QCIRs).

NSRS recommended that OEDC review their corrective action program to determine the root cause for the breakdown in program control which resulted in program deficiencies at BLN and take corrective action to prevent recurrence.

Prior to this follow-up review, OC had implemented a program to communicate potential generic problems from project to project and to/from the CONST manager's office in the form of Quality Bulletins (QBs). This program requires investigation and feedback as to applicability and corrective actions to be taken. NSRS determined that the program was in place.

At BLN the QCIR program had been replaced by a similar program using Inspection Rejection Notices (IRNs). No IRNs had been written against the OC flushing program in over a year. This item is closed (see section IV.A for details).

#### B. R-83-08-BLN-02, Development of Cleaning/Flushing Program Control Procedures

The EN DES-generated construction specifications did not contain all of the requirements of the ANSI standard governing the CONST flushing program. Inadequate detail was provided to facilitate development of an acceptable flushing and cleaning program by relatively inexperienced site personnel. As a result not all of the requirements of the ANSI standard were being met and not enough detail was provided in the CONST procedures to prevent some significant problems.

Prior to this follow-up review, OE and OC had upgraded General Construction Specification G-39, Construction Specification N4M-891, and Construction Test Procedure CTP 6.1 considerably to provide better program controls. However, some improvements are still recommended involving better documentation of acceptance

criteria and pertinent information before, during, and after flushes, sulfide analyses of flush water, particle size variance for purge dam and glue materials, sampling guidelines, qualitative criteria for identifying purge dam and glue particles, and a conductivity variance for chemical analyses. This item remains open (see section IV.B for details).

C. Review of Site-Generated Procedure and Construction Test Packages

1. R-83-08-BLN-03, EN DES Review of Site-Generated Construction Test Procedures

The initial site-generated CONST test procedure CTP 6.1 contained inadequate details and positive test controls to properly accomplish the task intended for the procedure. Completed test packages contained inadequate documentation of test results that the flushes met the applicable acceptance criteria.

A flush test package examined by NSRS during this follow-up review contained inadequate documentation and test results records to indicate whether the flush had met the 1/32-inch particle size criteria specified by ANSI N45.2.1 and committed to by TVA or the 1/8-inch particle size criteria variance specified by N4M-891. This item remains open until the 1/8-inch variance is granted by NRC or the completed flush packages accepted by the 1/8-inch or 1/32-inch criteria have been differentiated, and CTP-6.1 has been revised to require inclusion of acceptance criteria and pertinent information including test director and inspector observations and results of analyses (see sections IV.C.1 and D for details).

2. R-83-08-BLN-04, Bellefonte Site Engineering Units and NUC PR Review of Site-Developed Construction Test Packages

The CONST engineering units and NUC PR did not have clearly established guidelines to describe specific responsibilities and criteria for review of CONST test packages. The quality of the reviews that were being performed needed improvement.

During this follow-up review the NSRS determined that a new OC procedure had been written which detailed responsibilities and criteria for OC test packages and a NUC PR procedure had been significantly expanded to assure a more detailed and complete review. From review of memorandums between NUC PR and OC it was determined that the NUC PR reviews were thorough and effective in stimulating dialogue on matters of concern. This item is closed (see section IV.C.2 for details).

D. R-83-08-BLN-05, Approval of the 1/8-Inch Variance for Acceptable Purge Dam Residual Particle Size

TVA had requested from the NRC a variance to the proof flushing particle size acceptance criteria in ANSI N45.2.1-1973 for purge dam materials at BLN. Improper purge dam procedures resulted in large quantities of purge paper and glue that CONST was unable to flush from several safety-related systems, so the variance was sought based on technical analyses indicating the purge dam residual is acceptable.

At the time of the review, NRC had not approved or rejected the variance. If the variance is rejected, all systems in which purge dams were used and the ANSI N45.2.1-1973 particle size acceptance criteria were not met may have to be reflushed. For flushes conducted since the criteria were relaxed in N4M-891, there is no way to identify which met the stricter ANSI criteria from the data in the flush packages. This item remains open (see section IV.D for details).

E. R-83-08-BLN-06, Bypass Filter Versus Inspection of Inline Full Flow Strainers

EN DES considered side stream sampling equivalent to inspection of full flow strainers as a method to demonstrate compliance with ANSI N45.2.1-1973 proof flush particle size criteria. There was, however, no documented evidence that the sample flow was representative of the process flow. NSRS recommended that full flow strainers be used.

Prior to this follow-up review the following actions had been taken:

- ° N4M-891 had been revised to require full flow strainers for proof flushing certain stainless steel systems where purge dam residual may be a problem.
- ° OE gained provisional agreement from ASME that side stream sampling meets the intent of ANSI N45.2.1-1973.
- ° A flow test demonstrating that side stream sampling can be representative of process flow was conducted. This satisfies the ASME provision and conditionally satisfied the BLN NRC resident inspector and NSRS.
- ° Measures designed to ensure representative sampling have been included in specifications G-39, N4M-891, and construction test BLN-CTP-6.1. These measures satisfy the NRC and NSRS conditions.

This item is closed (see section IV.E for details).

F. R-83-08-BLN-07, Construction Qualification, Certification, and Training Program

An informal training program had been implemented for flushing personnel, but a formal program in compliance with ANSI N45.2.1 did not exist.

The program now in place, implemented by BNP-QCP-10.50, meets the requirements of ANSI N45.2.1. One minor discrepancy was identified in that BNP-QCP-10.50 had not been fully implemented in the Flushing Engineering Unit (FEU). The FEU supervisor should revise the present training requirements as necessary to meet actual training needs and document them on BNP-QCP-10.50, Attachment B. NSRS also recommends that BNP-QCP-10.50 be revised to require that unit training printouts be regularly sent to the appropriate Unit Training Officers (UTOs) to minimize duplicity of records. No response is required. This item is closed (see section IV.F for details).

G. R-83-08-BLN-08, NUC PR Involvement in the Flushing Program

NSRS originally took the position that NUC PR should provide a test representative to coordinate support and represent NUC PR interests in acceptability of system flushes.

The shift engineer or NUC PR Coordinator currently performs this function for NUC PR as was the case at the time of the original NSRS review. NSRS finds that this means of coordination is acceptable and we agree with the NUC PR position that separate test representatives are not necessary. This item is closed (see section IV.D for details).

H. NUC PR Chemical Unit Program Improvement

1. R-83-08-BLN-09, Chemical Unit Training

Although the Chemical Unit Analysts (CLAs) had been trained to perform the analyses to support CONST's cleaning and flushing program, the training was informal and training records were not being properly maintained. Not all of the CLAs met the ANSI 18.1 and NUC PR requirements for technicians in responsible positions.

During this follow-up review NSRS found that a formal training program for analysts had been issued and was in the process of being implemented. Training records had been properly classified as quality assurance records, which provides proper record maintenance controls. All analysts meet or will soon meet the ANSI 18.1 requirements for their positions. This item is closed (see section IV.H.1 for details).

2. R-83-08-BLN-10, Laboratory Quality Control

The pertinent portions of the NUC PR specified quality control program applicable to analyses performed to support the CONST flushing and cleaning program had not been implemented at BLN.

During this follow-up review NSRS found that pertinent portions of the quality control program had been implemented sufficiently to assure that quality chemical analytical results are provided to OC to support the flushing and cleaning program. This item is closed (see section IV.H.2 for details).

3. R-83-08-BLN-11, Safety-Related Systems Water Chemistry Specifications and Logsheets

Water chemistry specifications, data logsheets, and corrective action levels for out-of-limit conditions had not been prepared and implemented.

During this follow-up review NSRS found that water chemistry specifications with action level statements for out-of-limit conditions had been established. It is planned to use a computer-based data management system to maintain and trend chemical parameters of systems instead of using logsheets. Currently, results of chemical analyses are being recorded in the chemical laboratory journal. Chemical parameters of systems in wet lay-up are being adequately tracked by OC. This item is closed (see section IV.H.3 for details).

#### IV. DETAILS

Interviews were conducted with OE, OC, and NUC PR personnel and documents were reviewed to determine the status of actions taken to implement the NSRS recommendations made in NSRS Report No. R-83-08-BLN. The following are the results of those interviews and document reviews:

A. R-83-08-BLN-01, Review of Corrective Action Process in OEDC (As it Relates to the Flushing Program)

In 1982 the BLN site issued a "Stop Work Order" because of a number of adverse events that had occurred during flushing activities similar in nature to those that had occurred at SQN in 1980 and at WBN during their construction testing program. An investigation was conducted at BLN and a five-point corrective action plan was presented to NRC to improve the testing program. NSRS concluded that the appropriate corrective actions were not initiated by TVA for the development and implementation of the BLN flushing and cleaning program since many of the conditions that existed at SQN and WBN were not corrected prior to initiation of construction testing at BLN. Failure to adequately implement TVA commitments to NRC through meaningful corrective actions led to similar problems during the initial implementation of the flushing program at BLN.

In addition, problems existed with the local (BLN) corrective action program in that many Quality Control Investigation Reports (QCIRs) were being written against the flushing program and were being improperly closed. NSRS found that the Startup Test and Coordination Unit (STCU) was not taking the necessary corrective actions to ensure that deficiencies cited against the program were being corrected. In some cases the STCU was improperly closing out the QCIRs and was not routing them back to the originating section Mechanical Quality Control Unit (MQCU) for closure as required by plant procedures.

NSRS recommended that the OEDC corrective action program be reviewed to determine the root cause for the breakdown in program control which resulted in program deficiencies at BLN and that actions should be taken to prevent recurrences.

In reference 39 CONST indicated that the inadequate transfer of "lessons learned" from project to project had been recognized as a problem that had resulted in part due to their decentralized organization structure and lack of communications between projects. Recognizing this, CONST indicated that they had moved to greater standardization of procedures and a closer working relationship between project managers, division management, and OEDC project managers. Additional actions implemented or planned to preclude repeated mistakes/problems included:

1. The Program Information Notice (PIN) process was being formalized in a CONST-QAP and strengthened to include written responses from construction projects to the Manager of Construction identifying actions taken on PINs.
2. Establishment of requirements for distribution of relative reports and correspondence received or prepared by CONST to the CONST Manager's office and construction projects.

In reference 36 the BLN project identified that the problems with the QCIRs were the result of initial confusion as to the STCU's and MQCU's respective responsibilities upon the creation of the Quality Manager's organization during that time period. The response indicated that STCU personnel had been retrained in the applicable requirements with emphasis on the proper procedure for disposition and closing of QCIRs.

During this follow-up review NSRS determined that the PIN program had been replaced by a similar Quality Bulletin (QB) program. This program as delineated in QAP-16.7 and BNP-QCP-10.44 is the method used for informing QC organizations of identified quality programs that may affect different projects. A QB may be initiated at any of the projects or by the QC Manager's office. The QB is distributed to each project or organization for information purposes or for investigation. If the QB is distributed for investigation a written response is required by the investigating organization.

BLN management informed NSRS that no QBs had been written against flushing activities at BLN. NSRS examined QB No. 84-10, "Failure to Back Grind or Back Gauge Attachment and Support Welds," dated May 1, 1984, and QB No. 85-04, "Defective Auma Valve Operators," dated February 1, 1985. QB No. 84-10 had been written as a result of a WBN nonconformance report (NCR) and an NRC violation written against WBN and assigned to BLN for investigation. BLN had investigated and determined that problems identified by QB 84-10 were applicable to the BLN program. As a result of the QB an NCR had been written for the BLN program. This information was recorded in the QB. QB No. 85-04 had been written as a result of an NRC-identified problem at BLN and had been assigned to WBN for investigation. Based upon the review of the OC and BLN procedures for QBs and the specific QBs discussed, NSRS concludes that the QB program appears to be workable and should be an effective method for identifying generic quality problems and sharing the information between projects and the OC Manager's office. However, the QB program as part of the overall corrective action program may be reviewed further in the future.

The QCIR program at BLN had been replaced by the Inspection Rejection Notice (IRN) program as delineated in BLN QCP-10.43. IRNs are written when an inspection is rejected by the OC quality control units. The method for closure for the IRNs is similar to that for the QCIR in that the originating organization closes out the IRN when corrective action has been accomplished. NSRS discussed the closure method with Flushing Engineering Unit (FEU) personnel and determined that those personnel were familiar with the IRN closure process. (NOTE: The FEU is a subsection of the STCU and is assigned the primary responsibilities for executing flushing and chemical cleaning activities at the BLN site.) No IRNs had been written against the flushing program in the past year. This was attributed to the facts that flushing activities were continued until the flush met the applicable acceptance criteria, a better working relationship existed between the MQCU and the FEU personnel, and responsibilities relating to FEU and MQCU activities were better defined and understood.

NSRS discussed Construction Quality Assurance Branch (CQAB) activities relating to the BLN flushing program with CQAB personnel. One CQAB auditor onsite is assigned the flushing and cleaning program as his primary responsibility for cognizance. The auditor indicated that although some problems had been identified in the past, he felt that they had been or were being properly addressed by FEU personnel and that the quality of the flushing program was much improved from the program that existed at the time of the original NSRS review.

Based upon the implementation of the QB program, no identified problems with the current IRN program, and the reported improved relationship between the FEU and MQCU personnel, this item is closed.