Barlow, Donald G. - Assistant QA Category Group Head

Education

Syracuse University 1953-1956

Experience Summary

Mr. Barlow has over 25 years experience in Quality Assurance/Quality Control activities related to engineering construction, procurement and inspection in various management levels. He contributed to the Stone & Webster corporate development of Quality Assurance/Quality Control methods and systems including preparation of various client quality programs for major nuclear, fossil, and process construction projects. He has provided technical expertise in the preparation of inspection plans and programs for control of mechanical, electrical, piping/welding, NDE, civil, structural, coating/painting surveillance activities. He organized and conducted management workshops for Quality Assurance and Quality Control Management and supervisory personnel. He has prepared Quality Assurance/Quality Control input to various Oil & Gas Offshore proposals in the North Sea and Persian Gulf areas and other marketing proposals.

Mr Barlow has extensive experience in assisting in the direction of 1,000 construction Quality Control personnel at various power plants in disciplines such as NDE, electrical, mechanical, piping/welding, civil, and structural. He also has extensive experience in assisting and directing the management of a Procurement Quality Control Division dealing in inspection and surveillance activities for all Stone & Webster activities throughout the United States and abroad, including Canada, United Kingdom, Holland, France, Italy, and the Far East. He has also acted as Project Manager for several computer programs to assist in storage and retrieval of quality records.

# APPENDIX B

## Quality Assurance Category Evaluation Group

## Personnel

## Subcategory Lead Evaluators

DeAngelis, John J.

Education

Northeastern University - Bachelor of Science - Business Administration - 1964

Experience Summary

Mr. DeAngelis joined Stone & Webster in July 1970 as an Expediter in the Expediting Division and in 1974 was appointed a General Supervisor - Boston Expediting Department. In this capacity, he had the responsibility for supervision of overall day-to-day expediting activities of several nuclear, fossil, and process plant projects. In 1978, Mr. DeAngelis was appointed to his present position of Quality Assurance Engineer in the Procurement Quality Assurance Division. In this position he functions as a Lead Auditor in performing audits of quality assurance programs. In addition, he has been assigned to four special projects involving quality assurance, licensing activities, and a spare parts shelf-life program.

Halverson, Ronald D.

Education

Vallejo Adult School system, Vallejo, CA, Diploma, 1968
College of Marin, Kentfield, CA, 1970 - Contractual Law - Working towards Degree

Experience Summary

Mr. Halverson has 17 years experience in the nuclear industry with 13 years direct involvement with quality control/assurance and quality engineering activities. Currently, as a QA Engineer, he is responsible for the verification and implementation of various quality assurance programs and systems.

Since joining Stone & Webster Engineering Corporation (SWEC) in February 1984, he has been assigned to a 1100 MWe pressurized water reactor plant project as QA Engineer monitoring contractor QA/QC activities. Assignments have included procedure review/development, review and approval of quality assurance manuals/programs, review and approval of nonconformances and design specifications and performance of quality assurance interface between contractors and client.

McCallum, Nita M.

Education - Raymond High School, Raymond WA. - HS Diploma

Grays Harbor College, Aberdeen, WA. - Associates Degree with Environmental Engineering Major - 1980

Experience Summary

Ms. McCallum joined Stone & Webster Engineering Corporation (SWEC), at the River Bend Nuclear Power Station, St. Francisville, Louisiana in October 1981, as a Field Quality Control Inspector Level II in the Civil Discipline. She was trained and certified to work in the cement (chemical and physical) lab performing various tests associated with cement, concrete and its constituents. Ms. McCallum was later assigned to piping and welding inspections. Her nondestructive examination certifications include liquid penetrant, magnetic particle, and visual testing. Ms. McCallum also holds special process certifications in weld material control and welding/brazing and is an AWS certified Welding Inspector. Promoted to Senior Inspector in September 1984, her added responsibilities included ASME documentation review, N-5 review, and system walkdown. In August 1985 Ms. McCallum transferred to Nine Mile II in the FQC Piping/Pipe Support Group to perform similar inspections on ASME small bore piping, and was appointed Lead Senior Inspector over the Pipe Rupture Restraint Group.

In 1986, she was transferred back to River Bend as a Senior Inspector in the mechanical discipline for a planned outage and completed training required for work in radiologically controlled areas including respirator qualifications.

Santos, Daniel L.

Education

University of the State of New York - Associate in Science - Liberal Arts - 1983
Lincoln College - Engineering Courses - 1962, 1974
Bethlehem Steel - Apprentice School Graduate - 1963
Wentworth Institute - Civil and Highway Engineering 1959 - 1960
Northeastern University - Business Administration 1957 - 1958

Experience Summary

Mr. Santos has over 19 years experience in the Quality Assurance/Quality Control profession. Currently, as Supervisor of Procurement Engineering, he is responsible for overall administration and direction of procurement inspection activities.

He joined Stone & Webster in 1972 as a Quality Control Engineer in the Field Quality Control Division and was responsible for conducting audits at various nuclear power plant sites during construction and start-up. He also developed audit programs for various construction sites. Other assignments have included supervisory positions in the Procurement Quality Assurance Division where he was responsible for the implementation of Stone & Webster's program for vendor audits. He was also responsible for performing quality assurance audits of a wide variety of construction activities to assure compliance with established quality programs.

Steelfox, David C.

Education

Stone & Webster Engineering Corporation - Audit Techniques and Performance
Perkin Elmer Corp., Norwalk, CT - Atomic Absorption Spectrophotometry
Waterbury State Tech., Waterbury, CT - Industrial Management and Labor Relations
Warren F. Kaynor Vo-Tech., Waterbury, CT - Graduate
National Institute for Certification of Engineering Technologist (NICET) - Presently obtaining certification as Engineering Technologist

Experience Summary

Mr. Steelfox joined Stone & Webster Engineering Corporation (SWEC) in November 1981 as a Quality Control Inspector in the Civil/Structural discipline at the Nine Mile Point Nuclear Power Station Unit 2, where his responsibilities included inspection in the reactor and other safety-related areas. His responsibilities also included protective coating, structural steel, structural welding, and soils inspections.

In February 1983, Mr. Steelfox was promoted to Senior Quality Control Inspector in the same discipline. Mr. Steelfox's responsibilities included supervision of Quality Control Inspectors, Inspection Planning and Scheduling, Developing Inspection Instructions and Inspection Reporting.

In 1984, Mr. Steelfox was promoted to Inspection Supervisor responsible for the civil/structural/M&TE disciplines. In addition, Mr. Steelfox worked closely with construction, engineering and quality assurance management and was responsible for client/contractor relations, record reviews and document turnovers. In this capacity, Mr. Steelfox was responsible for the supervision of three Quality Control Departments. This responsibility included the direct supervision of Quality Control Inspection Personnel who performed all aspects of inspection in the areas of protective coatings, concrete and soils, structural steel, structural welding and the calibration of tools and instrumentation. Mr. Steelfox also trained and certified inspection personnel in various related inspection activities and was responsible for the development of inspection instructions, inspection planning and scheduling and inspection reporting. Mr. Steelfox was also responsible for Quality Assurance Surveillance Activities of various contractor and sub-contractors to assure that they fulfilled quality-related contract responsibilities and complied with codes, standards, and federal regulations.

Stevenson, Richard R.

Education

Lowell Technological Institute, Lowell, Massachusetts
B. S. - Civil Engineering - 1973
Northeastern University, Boston, Massachusetts
M. S. - Civil Engineering - 1979
Various Stone & Webster Continuing Education Courses and Management Workshops. Various seminars, courses and speciality conferences offered by ASME, ASCE, PCA, ASQC, General Physics Corp. and Ohio State University on Quality Engineering, ASME III Division 1 and 2 and ASME XI.

Registration

Professional Engineer - Rhode Island

Experience Summary

Mr. Stevenson has 15 years experience in the quality assurance and quality control aspects of major construction projects and has been employed in the Quality Assurance Department since he joined Stone & Webster Engineering Corporation in July 1973. He is currently assigned as Senior Supervisor for the Codes and Standards and Engineering Support Sections of the Quality Systems Division and is responsible for Stone & Webster's QA Department Activities in these areas including ASME Section III Division 1 and 2 Programs, ASME XI and National Board Nuclear Repair Program and QA Review of Engineering Documents. In this capacity, his duties include the management of groups of engineers who provide guidance on Quality Assurance requirements of Codes and Standards including assisting in resolution of code compliance issues during design and construction; maintaining Stone & Webster's ASME Section III Certificates of Authorization; maintaining Stone & Webster's National Board Nuclear Repair Certificate of Authorization; providing liaison between Stone & Webster and Authorized Inspection Agency for ASME Section III, ASME Section XI, and National Board Nuclear Repair Work; assisting Headquarters and site personnel in the interpretation of and compliance with various codes and standards including ANSI, ASME Section III Division 1 and 2, ASME XI, and Appendix B to 10CFR50; establishing the detailed requirements for N-5 Certification of ASME III activities and NR-1/NIS-1/NIS-2 Certification of ASME XI repair/replacement activities at Pressurized Water/Boiling Water Reactor Power Plant sites; and performing the QA Department's review of engineering specifications, engineering change orders and engineering dispositions to nonconformances.

Stevenson, Richard R. (continued)

He has, in the past, supervised the development of Stone & Webster's Quality Assurance Manuals for ASME Section III Division 1 and 2 Code work; developed Stone & Webster's Quality Assurance Program for Nuclear repair work under ASME XI and the National Board Nuclear Repair rules; developed procedures in support of Stone & Webster's Standard Quality Assurance Programs; and performed Quality Control planning, inspection, auditing, and documentation activities at Stone & Webster's North Anna Power Station (four 882 MWE pressurized water nuclear reactors).

## APPENDIX B
## QUALITY ASSURANCE CATEGORY

## EVALUATORS AND WRITERS

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Akeley, W. M. | 14 | 13 | Senior QA Engineer - Audit and NDE experience. |
| Albee, E. T. | 17 | 16 | QA Engineer - Nondestructive Testing Supervisor, Contractor Surveillance, Mechanical Inspection, and Startup Testing experience. |
| Alexander, R. A. | 5 | 5 | QC Inspector - Civil, Mechanical and Electrical Inspection experience |
| Bednar, M. D. | 8 | 11 | Senior QC Inspector - Contractor Surveillance, Soils, Civil and Material testing experience. |
| Bezanson, W. E. | 17 | 30 | Supervisor, Procurement QA- Audit program development, construction installations, inspection, testing, and turnover experience, for nuclear power and nuclear submarine programs. |
| Bunch, R. L. | 15 | 22 | QC Engineer - Maintenance, Mechanical, Documentation and Welding experience. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Carpeggiani, R. | 15 | 10 | Procurement QA Engineer - Inspection planning, Auditing and Vendor discrepancy analysis. |
| Carey, P. A. | 15 | 15 | QC Engineer - ASME Code analysis, licensing, inspection trend analysis and records management experience. |
| Carter, G. A. | 16 | 16 | Lead Electrical QC Supervisor - Electrical QC and Modifications experience. |
| Collins, G. A. | 7 | 7 | Procurement QA Engineer - Mechanical and Vendor Documentation experience. |
| Cloud, T. W. | 7 | 22 | District Manager, Procurement QA - Auditing, Mechanical inspections, NDE and Metallurgy. Professional Engineer, AWS Certified Welding inspector, and ASNT Level II Certified (RT, MT, UT, & LP). |
| Diem, E. H. | 11 | 22 | QA Engineer - Nondestructive examination. ASNT Level III certified (LP, MP, RT, & VT) and AWS certified welding/brazing inspector. |
| Dudek, L. W. | 15 | 21 | Procurement QA Inspector - Vendor Surveillance, Mechanical Ability and NDE, ASNT Level II certified (LT, LP, MP, RT, & UT) and AWS Certified Weld inspector. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Eldridge, J. W. | 11 | – | Senior Engineering Associate, Engineering Services - Engineering experience in plant availability, improvements, modifications and instrumentation piping systems and controls. |
| Gay, C. E. | 14 | 32 | District Manager, Procurement QA- Experienced with all aspects of QA/QC including civil, structural, mechanical, electrical, NDE, Records Management and Vendor and Contractor Surveillance. |
| Cyphers, M. A. | 8 | 12 | Senior QC Inspector - Vendor and Contractor Surveillance, documentation review including ASME Code compliance and receipt inspection experience. |
| Gray, T. C. | 13 | – | Assistant Superintendent, Construction, Mechanical and Electrical - Completed system testing and maintenance activities. |
| Guyn, T. A. | 16 | 15 | District Manager, Procurement QA- Vendor surveillance, Mechanical inspections, weld inspections, Auditing and NDE activities. |
| Hathaway, W. F. | 9 | – | Assistant Superintendent of Construction - Provided Construction support activities related to all phases of welding and brazing activities at various nuclear power facilities. AWS Certified Welding Inspector. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Holt, D. P. | 5 | 10 | Senior QC Inspector - Mechanical, Piping and Welding inspection experience. |
| Huss, M. J. | 13 | 13 | Engineer, Nondestructive Test - Experience includes Contractor Surveillance, Instrumental inspections, Nuclear Piping and supports and NDE inspections (MP, RT, & UT). |
| Jackson, R. W. | 23 | – | Chief Construction Engineer - Various Construction task including coordination and management of construction in the reactor, main steam cable vault, - safeguard building, boiler conversion and construction control and completion activities. |
| Jordon, R. C. | 14 | 24 | QA Engineer - Audit, inspection document review, Record Management, regerry inspection for the nuclear industry and various QC activities in the nuclear submarine industry. |
| Lanham, D. W. | 15 | 15 | Senior QA Engineer - Electrical, instrumentation, structural, piping, welding, NDE and auditing experience. AWS certified welding/brazing inspector. |
| Laskey, R. J. | 8 | 9 | QA Engineer - Construction site and Auditing experience. |
| Magee, J. M. | 7 | 20 | Senior QC inspector - Electrical, mechanical and modification inspection experience. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Mann, J. E. | 14 | 23 | Assistant District Manager, Procurement QA - Various QC assignments in vendor surveillance, inspections, audits and surveys. |
| McCann, J. J. | 5 | 12 | Engineer, NDE - NDT experience. AWS certified weld inspector and ASNT Level III NDE certification (LP, MP, & VT). |
| McKenzie, L. G. | 16 | 16 | Senior QC Engineer - Various assignments in QC including ASME Small bore piping, receiving inspection, documentation review, component control, field installations, calibration and instrumentation. |
| Michael, G. J. | 7 | 16 | Senior QC Inspector - Test equipment, calibration and repair experience. |
| Morrow, K. E. | 9 | 19 | QA Engineer - Subcontractor surveillance, maintenance, modification, corrective action and QA Program requirement experience. |
| Neal, B. J. | 9 | 15 | Senior QC Inspector - Mechanical and electrical inspection activities at various construction and operating nuclear power plants. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| Patel, B. C. | 9 | 5 | QC Engineer - Mechanical engineering responsibilities and inspections of raceway installations, electrical hangers, studwelding and concrete. anchors to support system and structure turnover activities. |
| Ramey, C. | 4 | 10 | QC inspector - Mechanical, welding, piping systems and ASME N-5 and record QC experience. |
| Qualter, F. J. | 14 | 29 | Assistant Division Manager Procurement QA- Experienced in various areas of QA/QC including vendor surveillance, audits, special studies and experience in the naval nuclear power plant and computer industries. |
| Stitt, D. A. | 15 | 22 | Senior Engineering Associate - Various responsibilities concerning client and SWEC QA Programs including activities directly associated with engineering, quality assurance and employee concern programs. Vendor surveillance and NDE inspections associated with nuclear submarine construction. |
| Tomlinson, E. O. | 5 | 13 | Senior QC Inspector - Experienced in various areas such as weld material control, drilled-in anchors, welding, brazing, studwelding, high strength bolting, structural steel, and welding, and raceway supports. AWS certified weld inspector. |

| Name | Years at SWEC | QA/QC exp. (yrs.) | Remarks |
|---|---|---|---|
| White, R. W. | 10 | 15 | Quality Assurance Engineer , NDE - Inservice inspections, mechanical inspections, internal and external vendor audits and NDE experience. AWS Certified Welding Inspector. |
| Yelle, L. G., Jr. | 8 | 9 | Senior Inspector, Procurement QA- Experience includes vendor surveillance and component inspection. Audits, Surveys and Documentation activities. Nondestructive testing and weld inspections. Also has experience in maintenance, test, radiation protection and monitoring and when in the army was a reactor operator, mechanical maintenance technician and shift supervisor at several military nuclear power plants. |
| Zito, D. W. | 14 | – | Senior Construction Engineer - Extensive construction experience in the civil/structural areas at various nuclear power plants. |

# APPENDIX C
# SUBCATEGORY REPORT OVERVIEWS

This appendix summarizes the findings and corrective actions for each of the six Quality Assurance subcategories.

## 1.0 Subcategory 89100, QA Management and Policy

### 1.1 Summary of Issues

This subcategory report addresses 42 issues that were derived from 106 employee concerns. The issues were grouped into seven elements for evaluation: Nonconformances; QA Procedure Revisions; Procurement; Audits; QA Program (Authority and Independence and Related Issues); QA Effectiveness - Decentralization; and QA Management and Policy. The issues in this subcategory dealt primarily with management of the Quality Assurance Organization and management of certain activities conducted under the Quality Assurance Program (i.e., Nonconformance Control, Quality Assurance Audits and the Procurement and use of "Commercial Grade" items in safety-related applications).

Thirty-seven of the issues were evaluated at Watts Bar; 20 at Bellefonte, 15 at Browns Ferry, and 13 at Sequoyah. As a result of the evaluations, 33 Corrective Action Tracking Documents were issued to address noted problems.

Twenty-five issues were not verified as factual or were factually accurate but what they described were not problems. Eleven issues were factually accurate and identified problems but corrective action for the problems was initiated before the employee concerns evaluation was undertaken. Four issues were factual and identified problems for which corrective action has been or will be taken as a result of the employee concerns evaluation. Two issues did not identify problems, but as a result of the evaluation a problem was discovered for which corrective action was initiated.

Below is a summary of the major findings within this subcategory followed by a discussion of all negative findings and their associated corrective actions.

### 1.2 Major Findings

In reviewing the results of evaluations in this subcategory, two issues were identified which were considered major because they both represented weak implementation of Quality Assurance Program commitments at more than one location. These are summarized below. Of the 17 issues in this subcategory which were determined to be problems, 13 (including the major findings) involved some

aspect of deficient implementing procedures or procedure noncompliance. Since these types of observations occur in each of the QA subcategories, discussion of this topic has been deferred to the QA Category Report.

### 1.2.1 Finding

Materials were purchased at each Tennessee Valley Authority (TVA) Nuclear Power Plant without imposing applicable QA regulatory and design based requirements on suppliers and sub-suppliers. Some of these items were subsequently used in safety-related applications without appropriate action to verify their acceptability. This resulted in conditions at each plant where some material did not meet regulatory requirements for verifying and documenting its acceptability and/or for environmental qualification. At Bellefonte and Watts Bar, where the ASME Boiler and Pressure Vessel Code is a licensing commitment, deficiencies related to performance of confirmatory testing resulted in installed Pressure Boundary Material which did not meet ASME Code requirements. In order to certify that these units meet ASME requirements, this material must be evaluated and shown to meet all requirements of the ASME code or the deviations must be documented in the FSAR and concurred with by the NRC.

Corrective Action

Eight Corrective Action Tracking Documents were issued to address various aspects of the procurement system at each site. Corrective action includes procedure revisions to require the imposition of QA Program requirements on suppliers and sub-suppliers, evaluations to determine the scope of corrective action required to bring installed material into compliance with regulations and the ASME Code, and procedure revisions to ensure that future use of commercially procured material in safety-related systems is appropriately accomplished. TVA has initiated the "Replacement Item Program" to evaluate past practices at each nuclear site, ensure that previously installed hardware is acceptable for its end use, and control future activities to assure compliance with requirements. This program was initiated concurrent with QACEG evaluations and has now been accepted by the NRC.

### 1.2.2 Finding

At each nuclear location, implementation of quality assurance auditing commitments was identified as deficient prior to the reorganization and strengthening described in the TVA Nuclear Performance Plan. Quality Assurance Audit Groups were inadequately staffed, all required activities were not audited, and the scope of some of the audits that were conducted

was deficient. Deficiencies were also identified relating to the timeliness of corrective action response and closure time, and the failure to prevent recurring problems. As noted in Nuclear Safety Review Staff Report I-85-06-WBN and as confirmed by this evaluation, audits of the engineering process appear to have concentrated on administrative matters and were weak in addressing technical aspects of engineering product quality. Audits of the construction process were generally more thorough with adequate depth for the areas audited and included hardware verification as part of the audits conducted. In both engineering and construction, audit reports were reviewed that identified problems in the text, but which resulted in no requests for corrective action. In other cases, Audit Deviation Reports were issued and line management responses were accepted by QA which did not result in effective corrective action. Examples of these two conditions include some of the significant problems that are now being addressed by TVA such as environmental qualification, fire protection, instrumentation supports, certain aspects of the corrective action program, and control of vendor information. In combination, the weaknesses noted above resulted in conditions where some problems that could have been identified, corrected, and prevented from recurring were not.

Corrective Action

Overall, actions taken to increase management support for the Quality Assurance Program are described in the Nuclear Performance Plan. Clearly, TVA has established and intends to implement a policy of compliance with regulatory requirements. TVA has restructured and strengthened the QA Audit Program. Staffing is being increased to required levels which should alleviate problems with accomplishing required audits. Technical audits of engineering activities are being conducted to assess product adequacy and the program now includes mandatory requirements for root cause analysis, recurrence prevention actions, and escalation of unresolved audit findings to higher levels of management which should help correct weaknesses in these areas. Weaknesses related to identification and adequate closure of identified problems can only be resolved through a combination of effort by auditing and audited personnel. A CATD was issued to track effective implementation of the changes within the Audit Program, and closure of this CATD should consider the personnel-related aspects of effectiveness as well as the programmatic ones.

## 1.3 Negative Findings

### 1.3.1 Findings

It was alleged that a QA engineer told an EN DES engineer not to issue an NCR for lost documents in the vault. EN DES and not QA objected to issuance of an NCR with use-as-is disposition for missing documents without adequate justification. No NCR was issued contrary to procedure. Missing documents were recovered and placed in the vault. This appeared to be an isolated case. (WBN)

Corrective Action

Since documents had been recovered and this appeared to be an isolated case, no further action was required and no CATD was issued for the procedure violation.

### 1.3.2 Findings

In two identified cases, Quality Management revised procedures to allow poor inspection practices in order to support schedules. FCRs/NCRs were subsequently issued to identify these conditions. (WBN)

Corrective Action

Procedures were revised to reinstitute inspections and eliminate the poor practices.

### 1.3.3 Findings

At all sites, material problems existed. Examples: improper upgrading of materials procured to commercial grade, improper upgrading of ASME materials, and purchase of safety-related materials without imposing QA requirements on suppliers and/or subsuppliers. Some of this material was then used in safety-related applications without adequate "upgrading."(BFN, BLN, SQN, WBN)

Corrective Action

Procedures are being or have been revised. Prior work is being evaluated on a sample basis to determine the scope of the problem. ASME code compliance is also being evaluated. The replacement item program has been initiated and provided to the NRC. Various CAQRs have been initiated and are being evaluated to determine whether NRC reporting is required.

### 1.3.4 Finding

WBN review results were omitted from the NSRS Report on Procurement Practices. No determination could be made as to why this was done because the CI currently has a lawsuit in process against TVA and information was therefore not releasable. (WBN)

Corrective Action

NSRS report information from other sites will be used to develop integrated procurement processes at WBN.

### 1.3.5 Finding

One case was identified at BLN where management pressured an auditor to close a deviation before the auditor was satisfied with corrective actions. At BFN, SQN, and WBN no instances were identified where this had occurred. Audit finding closures reviewed by QACEG appeared appropriate. (BLN)

Corrective Action

BLN will take appropriate action to properly close the audit deviation which was previously improperly closed.

### 1.3.6 Finding

The QA audit program in the past suffered from a lack of resources, failure to audit all required areas of activity, and ineffective corrective action follow-up. Some of these problems have not been totally resolved but corrective action was initiated prior to QACEG evaluation. (BFN, BLN, SQN)

Corrective Action

The entire audit program has been restructured and strengthened (re: NPP). Staffing needs have been identified and authorized and staffing is in progress. Mandatory escalation of unresolved audit deviations should result in appropriate action to obtain satisfactory corrective action. Audit groups are now effectively identifying internal problems and getting them resolved.

**1.3.7 Finding**

The amount of paperwork and the number of procedures required at a nuclear station is significant and may be considered burdensome to some personnel. TVA has had a problem in the past with these two areas and has perhaps created more procedures/paper than required for effective operation. Action which will help alleviate this condition is described in the NPP. (BFN, BLN, SQN, WBN)

Corrective Action

The entire procedure system is being improved and restructured. In the process, this should help the problem with too much paperwork.

**1.3.8 Finding**

At BLN CAR's and DR's, issued due to INPO and NRC findings, were identified which documented that NQAM requirements were not incorporated into the QC program. Corrective actions by BLN had addressed only the specific cases and did not address causes or determine whether the condition existed elsewhere. At BFN and WBN these type conditions had also been identified but corrective action had already been initiated. (BFN, BLN, WBN)

Corrective Action

BLN corrective action referenced the CAQR program which now requires root cause and generic applicability analysis to be performed. WBN and BFN have initiated action to identify problems and revise procedures as necessary. CAQR's will be used to document new procedure discrepancies if they are found. At BFN 26 QA instructions have already been issued to conform to the recently revised NQAM.

**1.3.9 Finding**

WBN has been committed to comply with certain industry codes and standards throughout its construction. During the construction phase, some of these commitments and some of the requirements in the codes and standards changed. There was not an effective method for tracking these changes and ensuring that they were translated into working level documents which could have caused the CI to believe that complying with codes was not emphasized until the plant was nearly complete. TVA had recognized this condition and initiated corrective action before the QACEG evaluation. (WBN)

Corrective Action

TVA has committed to review the FSAR, identify requirements, and demonstrate to the NRC that the requirements are met. Matrices are being prepared to show how the requirements of ANSI standards are incorporated in WBN procedures. CAQR's have been written to identify concerns over FSAR accuracy at each plant.

**1.3.10 Finding**

NCR dispositioning did not include effective root cause analysis or action to prevent problem recurrence. This has been identified in specific cases at all plants and generically in the NPP. Corrective action was initiated in March 1986. (BFN, BLN, SQN, WBN)

Corrective Action

A "Conditions Adverse to Quality (CAQ)" program was initiated. This program consolidated a number of deficiency reporting and resolution methods. It initially had some weaknesses regarding root cause analysis and generic applicability evaluations. These were corrected through subsequent revisions. Also, at WBN, NCR's that were dispositioned "use-as-is" are being reviewed and will be corrected if necessary. (Corporate)

**1.3.11 Finding**

Construction engineering at WBN was responsible for interpretation of engineering requirements from EN DES and for acting as the interface with engineering to obtain necessary engineering input. Deficiency evaluation, in order to determine whether corrective action is required, has been authorized within the QA program and is appropriate. However, instances have been identified where this process was misused. Some NCR's and IRN's have been improperly dispositioned. (WBN)

Corrective Action

NCR's with use-as-is dispositions are being reviewed to validate these dispositions. When IRN's are identified as being questionable they are being reviewed. Since IRN's were not retained as QA records, this review is limited. Various reinspection programs have been instituted which should confirm plant hardware quality is at an acceptable level.

**1.3.12 Finding**

The Division of Nuclear Quality Assurance recognized a deficiency in the Nuclear Quality Assurance Manual, Part II, Section 5.3, regarding instrumentation inspection during routine maintenance. Certain requirements were not included regarding inspection of work and therefore, these requirements had not been incorporated in site procedures. This occurred even though the condition has been identified on a CAR at WBN which was forwarded to all other plants for generic applicability reviews. The CAR was invalidated because of the NQAM deficiency which did not impose the requirements. QA issued a CAQR to document the deficiency and obtain corrective action. (BFN, BLN, SQN, WBN)

A CAQR has been issued to document the NQAM deficiency and obtain resolution.

**1.3.13 Finding**

TVA procedure for oversight of inspectors by their supervisors was not being followed in four of six inspection sections. Only one individual expressed the view that QC supervision was uncooperative. This is considered an isolated case and not indicative of a general attitude. (WBN)

Corrective Action

New methods for evaluating inspector work performance are being implemented. Until they are implemented, oversight of inspection work will be followed.

**1.3.14 Finding**

The QC supervisor who was cited by the CI for poor leadership which resulted in low morale and discontent among inspectors was removed from the QC unit and transferred to another department prior to the evaluation by QACEG. (BFN)

Corrective Action

On June 6, 1986, the Site Quality Manager notified the Director of Nuclear Quality Assurance that the person in question was causing problems and had been removed.

### 1.3.15 Finding

The CI alleged that management/supervision was not responsive to quality or they adversely influenced inspection efforts. Personnel interviewed indicated that relationships with management were strained because of past administrative and organizational practices and that there is still room for further improvement. Except for the instrumentation group, no cases were documented where past practices resulted in adverse effects on the inspection effort. In the instrumentation area, two cases were identified where quality management had changed procedures to permit poor inspection practices in support of construction schedules. (WBN)

Corrective Action

The NPP describes general approaches to improved management-employee relations through training to improve supervisory skills. These are applicable to all sites. The two cases of poor inspection practices had been identified and corrected through NCR's and FCR's.

### 1.3.16 Finding

The concern that because of the slow restructuring of the QA organization, 250 persons did not complete their internal procedures in 2-1/2 years is factual. During the time in question, TVA was in the process of decentralizing the nuclear power organization. Before this effort was complete, a decision was made to centralize the nuclear power organization under the Office of Nuclear Power. This was accomplished in order to provide central management and direction and to restore public, NRC, and employee confidence in TVA nuclear operations. Although the previous QA organization did not complete the transition, at no time was TVA without a QA program or a QA organization. (WBN)

Corrective Action

The QA organization was restructured along with the rest of the nuclear power organization to provide strong central management and control. This reorganization is described in the NPP.

## 1.4 Peripheral Findings

In addition to the above findings, the following peripheral findings were identified:

### 1.4.1 Finding

A number of problems were identified relating to the calibration and use of ultrasonic thickness measuring instruments. Also, a 1/2 inch transducer had been used when the specification required the use of a 1/4 inch transducer. This had been documented in 1985, closed, and documented again in 1986 but was never properly resolved (BLN).

Corrective Action

BLN is to revise the procedure for UT thickness measuring devices to require calibration and documentation in accordance with the specification and has issued a CAQR to have engineering determine specific calibration requirements and revise the specification if necessary.

### 1.4.2 Finding

IRN's had been voided or invalidated during periods of time when this action was not authorized by procedure (WBN).

Corrective Action

WBN review indicated that although there was no procedural method for voiding IRN's, there was sufficient justification for voiding those cases identified. QCI 1.02-1, which covers this activity, was revised on March 8, 1985, to provide procedural controls for voiding IRNs.

## 2.0 Subcategory 80200, Inspection

### 2.1 Summary of Issues

This subcategory report addresses 44 issues that were derived from 121 employee concerns. The issues were grouped into four elements for evaluation: Receipt Inspection; Procedures/Inspection Criteria; Incomplete/Inadequate Inspection; and Inspection Responsiveness. Eighteen issues were not verified as factual or were factually accurate but not a problem. Fourteen issues were factual and identified a problem, but corrective action was initiated before the employee concerns evaluation of the issue was undertaken and 12 issues were factual and identified problems for which corrective action was initiated as the result of an employee concern evaluation.

Eleven of the issues were evaluated at Browns Ferry, 15 at Bellefonte, 16 at Sequoyah and 39 at Watts Bar. As a result of the evaluations, 47 Corrective Action Tracking Documents were issued to address noted problems.

Below is a summary of the major findings within this subcategory, followed by a discussion of all negative findings and their associated corrective actions.

## 2.2 Major Findings

The evaluation conducted for this subcategory indicated that many of the inspection and test procedures used by TVA had deficient inspection and acceptance criteria. Of the 26 issues that were determined to represent problems, 20 contained some aspect of deficient procedures. Examples of procedure deficiencies include:

Failure to include requirements for: receipt inspection of warranty parts; calibration of certain measuring and test equipment; static head pressure considerations during hydrostatic testing; inspection of bends or exposed threads in conduit; compression fitting installation; and inspection of conax connectors for wire bend radius, torquing, and use of grafoil sealant.

Unclear requirements existed for: concrete and anchor bolt perpendicularity inspections; dry film thickness measurements of paint; some visual weld inspection attributes; and hanger location inspections.

Many of the procedure deficiencies described in this report had been previously identified and corrected by TVA, however, there was no requirement to evaluate the impact of procedure deficiencies on prior installations and determine whether reinspection and/or rework might be necessary.

The deficiencies identified in this subcategory have contributed to some of the significant issues currently being addressed and resolved by TVA. Examples include the cable installation program at WBN, the welding program, and the instrumentation program. In general, they resulted from policies and procedures that did not adequately address inspection requirements as opposed to inadequate inspector performance. In a few cases, inspectors were not adequately trained or did not follow procedures, but this was not judged to have been a major problem. This tends to confirm the conclusion of QA subcategory 80300, "Quality Assurance Personnel" that, with a few exceptions, deficient inspection resulted from the tools provided inspectors (such as inspection requirements and acceptance criteria), rather than personnel inadequacies.

Corrective Action

The specific cases identified either prior to or as a result of this evaluation have been documented and have been or are being resolved. Where necessary, reinspection programs for existing installations have been or will be accomplished, and evaluation of procedure deficiencies to determine whether reinspection/rework is required has been made a requirement.

Problems with the TVA procedure system were recognized, in a general sense, in the corporate Nuclear Performance Plan. In this plan, TVA has committed to revising the procedure system which should help resolve many of the types of problems noted in this subcategory report. The Nuclear Procedures Branch in TVA headquarters has been tasked with this responsibility and implementation is in progress.

## 2.3 Negative Findings

### 2.3.1 Finding

Evaluation indicated that in isolated cases warranty parts, supplied free of charge to TVA, were not adequately receipt inspected. (WBN and SQN)

Corrective Action

WBN - warranty items were identified, segregated and controlled until proper inspection was performed. SQN - no longer allows contract free material to be used in CSSC systems. The NQAM now addresses the receipt inspection of spare parts regardless of source.

### 2.3.2 Finding

Some unsatisfactory vendor welds were identified at SQN and WBN. Some of the same vendors supplied parts to BFN and BLN resulting in a potential problem there also. (BFN, BLN, SQN, WBN)

Corrective Action

Questionable welds were identified and corrected at SQN. At WBN, a program for review and reinspection of vendor welds had been made a commitment to the NRC. BFN and BLN will inspect vendor welds in cases of problems being identified with common suppliers by other sites.

**2.3.3 Finding**

Evaluations by NSRS, TVA, NRC, and QACEG have identified problems with the installation of compression fittings. At BLN, there was a 13 month period when compression fittings had not been inspected. (BFN, BLN, SQN, WBN)

Corrective Action

Compression fitting procedures have been or are being revised, training has been performed and is now a prerequisite for performing work or inspection. Hardware has been or will be reinspected and replaced if necessary.

**2.3.4 Finding**

Procedures were identified with conflicting, unclear, and incomplete inspection criteria. (BFN, BLN, SQN, WBN)

Corrective Action

Specific procedures identified are being corrected. The Nuclear Procedures Group has been tasked with revising the overall procedure system.

**2.3.5 Finding**

At SQN, voided Maintenance Requests were not being statused back to the originator. (SQN)

Corrective Action

SQN to revise method of handling Maintenance Requests to provide status information to the originator.

**2.3.6 Finding**

Changes to hanger detail drawing notes caused potential problems with past installations. (BLN, WBN)

Corrective Action

FCRs H-5463 and H-6141 were issued to document and clarify the use of notes and general hanger details.

**2.3.7 Finding**

Supplemental acceptance criteria from hanger drawing notes were not being documented by QC inspectors on their inspection reports. (BLN, SQN, WBN)

Corrective Action

Walkdowns will resolve issue at SQN. CAQRs were initiated at BLN and WBN to validate the acceptability of each configuration. Further inspection may be required if configurations are not acceptable.

**2.3.8 Finding**

Procedure used for dry film thickness measurements contained two attachments with different acceptance criteria (WBN).

Corrective Action

Procedure to be revised to eliminate confusing criteria. Possible misuse of acceptance criteria in the past is to be evaluated.

**2.3.9 Finding**

Conduit bends and exposed threads were not required to be inspected. (SQN)

Corrective Action

DNE to evaluate past installations. Procedures were revised to require conduit inspections for bends and exposed threads in the future.

**2.3.10 Findings**

Problems were identified with cable installations at all sites including pull tension, sidewall pressure calculations, inadequate inspection of pulling activities and inadequate training. (BFN, BLN, SQN, WBN)

Corrective Action

Cables pulled at WBN without responsible engineer present were replaced, reworked, or tested and found satisfactory. DNE electrical action plans address other items. Specs and procedures revised and personnel trained. Extensive testing performed.

**2.3.11 Finding**

One instance was identified of craft impeding electrical inspection activity. (WBN)

Corrective Action

NCR written for cable evaluation. Cable was replaced. Disciplinary action was taken.

**2.3.12 Finding**

At BLN, two pipe supports were installed incorrectly due to mislocated control lines. At WBN, hanger location has been identified as a problem. (BLN, WBN)

Corrective Action

At BLN, NCRs were issued to provide disposition for the hangers. AT WBN, the Hanger Reinspection Program was instituted. Procedures were revised and personnel were trained.

**2.3.13 Finding**

Inspectors cannot calculate torque conversion values when using extensions on torque wrenches. (BFN, BLN, WBN)

Corrective Action

Inspectors using torque wrenches with extensions are to be trained and torque conversion tables to be included in applicable procedures.

**2.3.14 Finding**

A high rate of procedure noncompliance has been identified by TVA. There is also a problem in that the term adverse trend has not been properly defined prohibiting the issuance of corrective action reports. (BFN, BLN, SQN, WBN)

Corrective Action

Procedures are being improved, training in the need to follow procedures is being strengthened, and TVA's new policy for making unit supervisors responsible for quality has been instituted.

Also, TVA QA committed to having a consultant review the program, define a criteria for adverse trends and incorporate these in the Trend Analysis Program.

**2.3.15 Finding**

Engineering accepting equipment by waiving required inspections was factual at BLN until 1984. At WBN, an indeterminate amount of anchor bolt perpendicularity inspections were waived due to a misinterpretation of a note on a design drawing. (BLN, WBN)

Corrective Action

At BLN, specific responsibilities were defined regarding interpretations and waiving of requirements to preclude this from happening again. At WBN, a CAQR was issued to evaluate the impact of the waived inspections.

**2.3.16 Finding**

At BFN, an isolated instance was identified of an inspector coming to work drunk. (BFN)

Corrective Action

The individual was entered into the Employee Assistance Program and reassigned job responsibilities.

**2.3.17 Finding**

Problems were identified with electrical installations including electrical supports, conduit installations, and anchor bolt verification for junction boxes and supports. (WBN)

Corrective Action

NCRs were issued addressing electrical support and conduit installation discrepancies and walkdown procedure WB EP-WP-3 was prepared for all junction boxes and supports.

**2.3.18 Finding**

Instrumentation installation problems involving slope and cleanliness were identified. (WBN)

Corrective Action

Stop work order issued in January 1987. Instrumentation program to be revamped and evaluation performed on installed hardware by TVA Instrumentation Project.

**2.3.19 Finding**

Annulus rack piping had not been inspected for thermal expansion and seismic movement. (WBN)

Corrective Action

Re-analysis, calculations, modifications, drawing issue and inspection is scheduled prior to fuel load.

**2.3.20 Finding**

Prior to March, 1986, "Information Only" copies of drawings were used in the field. There was no procedure in effect that mandated the use of controlled drawings in the field. (WBN)

Corrective Action

In March 1986, QCI 1.60 was issued which established the method for controlling work inspection activities and defined responsibilities. QCI 1.60 requires controlled drawings as part of each work package.

**2.3.21 Finding**

A HVAC duct support was installed and inspected prior to the issuance of the design drawing. (WBN)

Corrective Action

Reinspection of the support for location and orientation.

**2.3.22 Finding**

Inconsistent interpretation of acceptance criteria by inspectors. (BLN, WBN)

Corrective Action

NCRs issued to document specific problem areas. Weld Task Group to resolve more general problems. Procedures were revised to provide more explicit criteria. Welding inspectors were retrained to visual inspection criteria and measuring gages provided to inspectors.

**2.3.23 Finding**

Many of the reinspection and verification programs at WBN have been initiated partly because of inadequate inspections. (WBN)

Corrective Action

Numerous verification and reinspection efforts have been initiated such as HVAC, welding, instrumentation, cable, conduit, electrical supports, hangers, and instrument panel wiring.

**2.3.24 Finding**

Installation criteria and inspection requirements for conax connectors did not cover wire bend radii, torquing and use of grafoil sealant. (SQN)

Corrective Action

Revised procedure and performed 100% reinspection of conax connectors.

**2.3.25 Finding**

Forms used to document hydrostatic testing do not have a signature block for the Authorized Nuclear Inspector (ANI). This may cause the impression that the ANI did not witness the test as required. (BLN)

Corrective Action

Form used to document hydrostatic tests was revised to provide a signature block for the ANI.

**2.3.26 Finding**

Evaluation indicates that untimely response by QC to requests from craft to perform inspections may have been a problem in the past. (WBN)

Corrective Action

Improved communication with craft and improved staffing for work loads has improved response times.

## 2.4 Peripheral Findings

In addition to the above findings, the following peripheral findings were identified:

### 2.4.1 Findings

Revision 1 through 7 of the NCM could not be located so verification of procedure adequacy and adherence could not be accomplished. (WBN)

Corrective Action

NCU-CAR-87-003-B was issued documenting the need for an evaluation to determine the impact of the missing procedure revisions and the inability to judge adequacy of compliance.

### 2.4.2 Finding

A problem was identified at BFN involving the use of uncalibrated M&TE for receipt inspection. (BFN)

Corrective Action

The use of uncalibrated M&TE was resolved by Project Engineering by revising QCI 1.1 to invoke calibration requirements of the NQAM and standards.

### 2.4.3 Finding

Installed hardware is not reinspected when deficient procedures are found. (BLN, WBN)

Corrective Action

NQAM Part I, Section 2.16 will be revised to require a review for impact on hardware due to procedures or specifications found to be deficient in specifying inspection acceptance criteria.

### 2.4.4 Finding

At BLN, QC was using less stringent tolerances for load point inspections of hangers than was required. (BLN)

Corrective Action

CAQR-BLF 87007S was issued to document the use of less stringent load point criteria.

### 2.4.5 Finding

Improper repair of electrical cable and incorrect reporting of cable status was identified. (SQN)

Corrective Action

DNE will evaluate long term effect on improper cable repair. Cable is no longer in automatic service or in a safety related function.

## 3.0 Subcategory 80300, Quality Assurance Personnel

### 3.1 Summary of Issues

This subcategory addresses 73 employee concerns about Qualification, Certification, Training, and Testing of Quality Assurance/Control Personnel. The concerns were grouped into 23 issues which were covered by four elements.

Eleven issues were evaluated at Browns Ferry, 11 at Bellefonte, 12 at Sequoyah, and 22 at Watts Bar. Seventeen corrective action tracking documents were issued as a result of the evaluations of this subcategory.

Twelve issues were not verified as factual or were factually accurate, but not a problem. Four issues were factual and identified problems for which corrective action had been taken prior to employee concerns evaluations. Five issues were factual and identified problems for which corrective action has been or will be taken as a result of the evaluation. Two issues did not identify problems but as a result of the evaluation, a problem was discovered for which corrective action was initiated.

Below is a summary of the major findings within this subcategory, followed by a discussion of all negative findings and their associated corrective action.

## 3.2 Major Findings

### 3.2.1 Finding

Inadequate training of personnel in the requirements of Title 10 to the Code of Federal Regulations, Part 21. (WBN)

Corrective Action

10CFR21 training will be incorporated into the General Employee Training (GET004) program for new employee indoctrination and periodic retraining of current employees.

### 3.2.2 Finding

Failure to perform inspector eye testing at the proper intervals for a number of individuals at each site. (BFN, BLN, WBN)

Corrective Action

Procedures are being revised to cover situations where eye tests have elapsed, control renewal testing, and determine further action in case of test failures.

### 3.2.3 Finding

Improper certification of an isolated group of supervisors as inspectors. (BLN, WBN)

Corrective Action

A program is being phased in to recertify all QC personnel in accordance with the consolidated QA program. In addition, DNQA immediately instituted the policy that only those personnel who meet certification requirements be permitted to perform quality inspections.

## 3.3 Negative Findings

### 3.3.1 Findings

Although personnel met minimum requirements, records at each site had not been kept current in a number of cases. This had been previously identified and corrected at BFN and SQN. At WBN and BLN, corrective action was initiated as a result of this evaluation. (BFN, BLN, SQN, WBN)

Corrective Action

Construction QC and nondestructive training program, as well as a sample of inspector certification records, will be reviewed against the topical report requirements and any deficiencies corrected.

**3.3.2 Finding**

Problems with the nuclear parts program including; unfamiliarity with the procedure process, ineffective purchase document reviews, lack of planning, and problems with QA, had been recognized and addressed prior to this evaluation. (BFN, BLN, SQN, WBN)

Corrective Action

The NQAM was revised to provide clear direction. TVA sent the Replacement Items Program description, addressing corrective action for previously purchased and installed parts as well as future purchases, to the NRC (BFN, BLN, SQN, WBN).

**3.3.3 Finding**

Inadequate training of personnel in the requirements of Title 10 Code of Federal Regulations, Part 21. (WBN)

Corrective Action

10CFR21 training will be incorporated into the Office of Nuclear Power's ongoing General Employee Training (GET004) program for new employee indoctrination and periodic retraining.

**3.3.4 Finding**

Informal, undocumented craft training in QA/QC program was identified and corrected at WBN and SQN prior to evaluation. (SQN, WBN)

Corrective Action

Introduction of GET004, "QA/QC Course" in 1982, formalized and provided documentation for craft training.

**3.3.5 Finding**

Management and supervisory personnel were certified to perform inspections without meeting all requirements of ANSI N45.2.6. (BLN & WBN)

Corrective Action

DNQA is phasing in a program to recertify all QC personnel in accordance with the consolidated QA program. In addition, DNQA immediately instituted the policy that only those personnel who meet certification requirements be permitted to perform quality inspections.

**3.3.6 Finding**

One case of an uncertified supervisor performing and signing off non-destructive examinations. (WBN)

Corrective Action

NCR 7027 was issued and all welds were reinspected. Personnel certification records will be updated to aid clerical personnel reviewing documentation to discover such discrepancies.

**3.3.7 Finding**

Inadequate management of the welder certification program. (WBN, BFN)

Corrective Action

The welder certification program has been strengthened and questionable welders have been retested and recertified. The weld project was established by TVA to validate hardware quality.

**3.3.8 Finding**

Discrepancies in certification records were identified which indicate that personnel did not meet requirements. (WBN, BLN)

Corrective Action

QA is to evaluate personnel records, determine qualification status of personnel, and issue CAQRs as necessary.

### 3.3.9 Finding

Annual eye test renewals were not conducted as required and no provisions were made for resolving cases where eye tests had elapsed. (WBN, BLN, BFN, SQN)

Corrective Action

Procedures will be revised to cover situations where eye tests have elapsed, control renewal testing, and determine further action in the case of test failure.

## 3.4 Peripheral Findings

In addition to the above findings, the following peripheral findings were identified:

### 3.4.1 Finding

Training of electrical design branch engineers in calculation procedures had been to previously issued procedures but not to the current ones. (SQN)

Corrective Action

A new training program will be implemented by Sargent and Lundy and TVA, covering the preparation, issuance, and control of electrical calculations and all electrical engineers received training in current revisions of calculation procedures. (SQN)

### 3.4.2 Finding

Difficult or impossible to verify the degree of program compliance to the on-the-job training (OJT) program, corrected prior to this evaluation. No response to "request for reportability" on issue. (WBN)

Corrective Action

A major revision to the training, qualification, and certification program will combine both the Division of Construction and Division of Nuclear Power Program and will upgrade the existing requirements for documentation of OJT. No response to reportability request was required since no CAQ was identified.

## 4.0 Subcategory 80400, Nonconformance Control and Corrective Action

### 4.1 Summary of Issues

This subcategory addresses 69 employee concerns about the Quality Assurance Organization and its operating procedures. The 69 concerns were itemized into 29 issues which focus attention on the inadequacy of the TVA control systems employed for the control of nonconforming items and the prompt correction of nonconforming conditions in accordance with Appendix B to 10CFR50.

Twenty-six of the issues were evaluated at Watts Bar, 16 at Bellefonte, nine at Browns Ferry, and seven at Sequoyah. Nine of the issues were determined to be generic and 20 were determined to be site-specific. As a result of the evaluations, 24 corrective action tracking documents were issued to address related problems.

Fourteen issues were not verified as factual or were factually accurate but not a problem. Five issues were factually accurate and described problems but corrective action for the problems was initiated before the employee concerns evaluation was undertaken. Nine issues were factual and identified problems for which corrective action has been or will be taken as a result of the evaluation. One issue did not identify a problem, but as a result of the employee concerns evaluation a problem was identified for which corrective action was initiated.

Below is a summary of the major findings within the subcategory, followed by a discussion of all negative findings and their associated corrective action.

### 4.2 Major Findings

#### 4.2.1 Finding

Nonconformance discrepancies were not promptly identified. (BFN, BLN, WBN)

Corrective Action

Procedures were revised to eliminate the routing of draft reports for concurrence and streamline the administrative process for issuing final reports.

#### 4.2.2 Finding

Reporting systems were overly complicated and confusing. (Corporate)

Corrective Action

TVA committed to develop and implement a single corrective action system. The CAQR system was implemented in 1987 to fulfill this commitment.

4.2.3 **Finding**

Licensing commitment tracking was inadequate resulting in the FSAR being out of date. (BFN, BLN, WBN, SQN)

Corrective Action

TVA is reviewing and updating the FSAR to assure that it reflects plant conditions involved in the licensing basis for each plant.

4.2.4 **Finding**

Sampling of identified noncompliances as a basis for acceptance was inadequate. (BFN, BLN, WBN)

Corrective Action

BFN has been utilizing NCIG-02 as a basis for sampling programs. Subsequent to this evaluation, the NRC had accepted the use of this standard and therefore no further action is required. BLN also indicated that although the basis for samples is not always documented, samples used approach 100% in many cases and no cases were identified where sample size did not greatly exceed recognized industry standards. WBN has committed to evaluate sampling based activities in those areas for which field walkdowns, verifications, or reinspections are not already planned and if any are deficient, take corrective action. To prevent recurrence, sample plans will be based on recognized industry standards or will have the technical basis for the sample documented.

4.3 **Negative Findings**

4.3.1 **Finding**

Deficiency documentation is not being issued in a timely manner. Use of "Draft" reports and administrative processing slowed the issuance of reports. (BFN, BLN, WBN)

Corrective Action

Procedures were revised to eliminate the routing of draft reports for concurrence and streamline the administrative process for issuing final reports.

**4.3.2 Finding**

Problem reporting systems were overly complicated. The corrective action system was complex and inter-divisional procedures were not provided to cover interfaces. TVA recognized this problem in the NPP and committed to provide a single system for corrective action. (Corporate)

Corrective Action

TVA committed to develop and implement a single corrective action system. The CAQR system was implemented in 1987 to fulfill this commitment.

**4.3.3 Finding**

FCRs misincorporated in drawings are corrected using FCRs rather than NCRs. The governing procedure was unclear in this aspect of FCR processing. (WBN)

Corrective Action

TVA revised the governing procedure to clarify when FCRs and NCRs should be utilized.

**4.3.4 Finding**

Licensing documents are inadequate. FSAR inaccuracies have been identified at each TVA plant and SCRs issued documenting this. (BFN, BLN, SQN, WBN)

Corrective Action

TVA is reviewing and updating the FSAR to assure that it reflects plant conditions that are the licensing basis for each plant.

**4.3.5 Finding**

NCR cause determination is inadequate in general and the root cause for the significant NCRs on the spent fuel pool racks is inadequate. Seventeen of 19 NCRs reviewed did not have root cause determinations as required. The root cause of the specific NCR included in this issue was appropriate. (WBN)

Corrective Action

Root cause determinations will be made for significant NCRs that do not have them as appropriate. Further corrective action regarding NCRs is not required because of the TVA conversion to the CAQR program which has an appropriate process for root cause determination.

**4.3.6 Finding**

Sampling plans are not based on recognized standard practices. (BFN, BLN, WBN)

Corrective Action

BFN has been utilizing NCIG-02 as a basis for sampling programs. Subsequent to this evaluation, the NRC had accepted the use of this standard, therefore no further action is required. BLN also indicated that although the basis for samples is not always documented, samples used approach 100% in many cases, and no cases were identified where sample size did not greatly exceed recognized industry standards. WBN will evaluate sampling based activities in those areas for which field walkdowns, verifications, or reinspections are not already planned and if any are deficient, take corrective action. To prevent recurrence, sample plans will be based on recognized industry standards or will have the technical basis for the sample documented.

**4.3.7 Finding**

Status of rejected items at turnover indicated acceptability, but there is no acceptance documentation to support this. At BLN, the issue was factual, but corrective action was initiated prior to the employee concern evaluation. At WBN, the issue itself was not factual, but a problem was identified with the use of percent (%) signs in the data base which could have different meanings. (BLN, WBN)

Corrective Action

BLN now requires performance and documentation of engineering evaluation for acceptability prior to item turnover. WBN engineering will determine if the percent (%) signs in the data base are erroneous and will ensure that there is an engineering disposition for each evaluation of hardware acceptability at turnover.

**4.3.8 Finding**

Status tracking of NCRs, QCIRs, and IRNs is assigned to the originating department, which is inappropriate and causes difficulty because the overall status is unknown. (BLN, BFN, SQN, WBN)

Corrective Action

The establishment of the TROI system as described in Administrative Instruction, AI 7.9 Revision 0, July 30, 1986, provided the basis for centralized tracking of NCRs. Effective March 30, 1987, TVA's Corporate Level Program, "Corrective Action for Conditions Adverse to Quality" effective for all TVA sites, assigns responsibility for tracking and statusing CAQs to the CAQ coordinator.

**4.3.9 Finding**

ASME Code Tanks (Volume Control Tanks U2 and U1) were overpressurized to the point of deformation during hydrostatic testing and system flushing, respectively. TVA did not notify the NRC that these tanks had been deformed and still listed them as acceptable. (WBN)

Corrective Action

TVA and Westinghouse (system designer) performed a stress analysis of the U1 Volume Control Tank and the result was that the tank meets all design requirements for service. A similar analysis will be performed on the U2 Volume Control Tank. The results of the analysis, including recommended disposition's together with TVA's justification, will be submitted for review and acceptance to the NRC as a FSAR change. After review and final NRC acceptance, these will be incorporated into the WBN FSAR. NRC's 3877 and 6379 were written initially to address the problem. Personnel training to prevent recurrence was addressed in the disposition.

**4.3.10 Finding**

Inadequate reporting of NCRs and IRNs. Conflicts were identified between three of the procedures which governed NCR processing. These conflicts resulted in a situation where the correct processing methods were unclear. NCRs processed in accordance with one procedure would not meet the requirements contained in another procedure. IRNs were not being issued for deficiencies if the deficiency was corrected before the inspector left the work area. (WBN)

Corrective Action

In short term, corrective action conflicts were removed from the existing procedures. The CAQR program was then instituted which consolidated the Corrective Action Program and eliminated the potential for conflicts. IRN procedures were revised prior to this evaluation to require that an IRN be issued for each identified deficiency.

**4.3.11 Finding**

IRNs are not considered to be quality documents. This issue was verified as factual at both sites. IRNs are utilized by quality control inspection personnel to document the results of failed in-process inspections and were not considered quality documents, therefore not retained as a life of plant document. (BLN, WBN)

Corrective Action

IRN status will be changed to make them quality documents therefore requiring life of plant storage.

**4.3.12 Finding**

NCRs are not trended and IRN trending is inadequate. This issue was found not factual at BLN. At WBN, trending of NCRs and IRNs has been in place, however, since IRNs were not issued for all deficiencies noted during in-process inspections until September of 1985, the trend analysis data prior to this time would have been incomplete. (BLN, WBN)

Corrective Action

QCI-1.02-1 was revised to require an IRN be generated to document all restraints to the acceptance of work in progress.

**4.3.13 Finding**

QCIRs superseded by IRNs. TVA did in fact supersede QCIRs with IRNs at BLN. While the IRN system is an acceptable method for documenting failed in-process inspections, use of IRNs was deficient in that they were not issued for all noted deficiencies at WBN until September of 1985, and IRNs were not considered quality records at either WBN or BLN until 1987. (BLN, WBN)

Corrective Action

WBN revised the policy of not issuing IRNs if deficiencies were corrected prior to the inspector leaving the work area. Both BLN and WBN have designated IRNs as quality records that will be retained as life of plant documents.

**4.3.14 Finding**

The quality program is inadequate to identify all nonconformances. This issue relates to the broad topic of corrective action and was evaluated through review of other QACEG evaluation reports and reports of such organizations as NSRS, NRC, INPO and consultants. The Corrective Action Program had a number of problems which included; the failure to identify all nonconforming conditions, inadequate root cause determinations, slow response time to identified deficiencies, weak recurrence prevention actions, audit program weaknesses, and ineffective trend analysis. Many of these problems had been identified and corrective action had been initiated prior to evaluation by QACEG. Some problem areas were identified by QACEG and corrective action was initiated. (BLN, BFN, SQN, WBN)

Corrective Action

The CAQR program was initiated to consolidate the multiple deficiency reporting and resolution programs which had existed prior to 1986, strengthen root cause analysis, generic applicability determinations, improve response time of identified deficiencies, require mandatory escalation of unresolved problems, and to enhance the ability to keep problems from recurring. The IRN system was strengthened and IRNs were designated as quality documents. The audit programs were consolidated in the Division of Nuclear Quality Assurance and an Engineering Assurance Organization was established. The audit programs themselves were also strengthened.

### 4.4 Peripheral Finding

In addition to the above findings, the following peripheral finding was identified:

#### 4.4.1 Finding

Issue - Status of rejected items at the time of turnover indicates acceptability, but there is no documentation of the evaluation for acceptability. At WBN, the issue could not be verified as factual, but another problem was identified as a result of the evaluation. The status listing of evaluation results indicated a percent sign for the method of evaluation. The percent sign, as stated in WBN-QCI-1.08, meant two different methods of evaluation had taken place. (WBN)

Corrective Action

The percent (%) evaluation definition discrepancy in WBN-QCI-1.08 paragraph 6.5.5 will be identified, corrected, and documented in the correction method specified in SCR 6722 for WBN unit 1, and SCR 6723 for WBN unit 2. Each responsible engineering unit will review and correct all percent evaluations that do not specify an NCR number. WBN-QCI-1.08 will be revised to delete the last sentence in 6.5.5 as part of the correction method of the above SCR's.

## 5.0 Subcategory Report 80500, Document Control and Records

### 5.1 Summary of Issues

This subcategory addressed 134 employee concerns about the Quality Assurance Organization and its operating procedures. The 134 employee concerns were itemized into 25 issues which were evaluated under four elements: Falsification of Records; Inadequate Documentation; Drawing Control; and Record Management.

NOTE:The QACEG evaluation of the Element "Falsification of Records" was an attempt to establish whether or not alternations to quality assurance records were proper and made in an authorized manner and what effect the issue had on plant quality. Falsification issues are being investigated by the TVA Office of Inspector General.

Ten of the issues were evaluated at Browns Ferry, nine at Bellefonte, 11 at Sequoyah, and 20 at Watts Bar.

Nine issues were not verified as factual. Eight issues were factual and identified a problem for which corrective action had been taken prior to evaluation. Eight issues were factual and identified a problem for which corrective action has been or will be taken as a result of the employee concerns evaluation. Twenty-one corrective action tracking documents were issued as a result of the evaluations of this subcategory of which 10 were related to major findings.

Below is a summary of the major findings within the subcategory, followed by a discussion of all negative findings and their associated corrective actions.

## 5.2 Major Findings

### 5.2.1 Finding

At WBN and BFN, original welder certification documents had essential test data or dates changed by the use of correction fluids or by typing whiteout strikeovers. This is in violation of the Nuclear Quality Assurance Manual, Section 4.1, and Administrative Instruction AI-7 paragraph 4.2.6.

Corrective Action

The Welding Engineering Unit will review and correct all welder performance qualification test records from initial construction to present. If records are found to have potential deficiencies, they will be evaluated in accordance with QCI-1.08 and unacceptable records will be rejected in accordance with QCI-1.02. The Division of Nuclear Construction (DNC) at BFN has committed to a review of historical welder qualification records and identified problems will be addressed on a Condition Adverse to Quality Report.

### 5.2.2 Finding

At SQN, the Generic Concern Task Group (GCTG) Report IN-85-463-006, June 5, 1986, substantiated that no specific inspection acceptance criteria was provided on typical instrumentation installation detail drawings. The report included recommendations for verification of proper installations on all safety-related instrument mountings and provisions for the Division of Nuclear Engineering (DNE) to provide drawings for all safety-related instrument mountings. However, no evidence could be found that responsible SQN personnel had responded to the corrective action recommendations of the GCTG report.

Corrective Action

The Sequoyah Site Director has committed to pre-restart and post-restart actions to address the GCTG recommendations which include initiating corrective actions for each problem installation.

**5.2.3 Finding**

The DNE had no procedure in place at WBN to define the methods used to distribute and control vendor documents. At SQN, the Document Control Center had not implemented the Drawing Management System (DMS) as the single configuration control system, and the Site Director failed to provide corrective action.

Corrective Action

The Watts Bar Engineering Procedure (WBEP) AI-3.01, "Vendor Material Receipt Transmittals Form," will be revised to include specific processes to ensure proper documented receipt/transmittal. In addition, procedure WBEP 5.15, "Document Control," will be prepared for inclusion in the WBEP Project Manual.

**5.2.4 Finding**

Other major findings at SQN related to distribution and control of drawings were: inadequate drawing control requirements at offsite Document Control Centers and a lack of corrective action for deficiencies with the Vendor Drawing Control Program within DNE. There was also a lack of corrective action where vendor drawings did not depict the plants' as-constructed configuration due to revision level inaccuracies. Also, no reviews or hardware impact assessments have been performed concerning the use of outdated vendor manuals/drawings.

Corrective Action

As recommended in NSRS Report I-85-472-NPS the Drawing Management System (DMS) will be utilized exclusively by site Document Control.

### 5.2.5 Finding

At SQN, corrective actions of previously identified deficiencies remained open for an excessive period of time. Documented evidence of these deficiencies was not addressed in a tracking document, such as a CAR, for the implementation of correction in accordance with the requirements of the NQAM, Part III, Section 7.2, paragraph 4.1.6.

Corrective Action

The Engineering Records and Information Systems (ERIS) Program Development Group at SQN will be writing or rewriting procedures and instructions to ensure controls are in place for DNE drawings. The ERIS Program Control Group will conduct program surveillance throughout DNE to identify deficiencies and ensure they are corrected in a timely manner.

## 5.3 Negative Findings

### 5.3.1 Findings

At BFN, SQN, and WBN, whiteout had been used to alter information on certifications including essential variables and dates which is contrary to requirements. SQN identified this problem in 1985 and corrected it. QACEG initiated corrective action at BFN and WBN. No problems were identified at BLN. (BFN, SQN, WBN)

Corrective Action

Welder performance qualification test records were reviewed at SQN and will be reviewed at BFN and WBN. Any problems identified have been or will be corrected.

### 5.3.2 Finding

Three instances of inappropriate alternation of records were identified, one at each plant. These had been identified and were either corrected or were being investigated by the TVA Office of General Counsel at the time of this evaluation. (BFN, BLN, WBN)

Corrective Action

At BFN, the records were identified and corrected. At BLN and WBN, corrective action will depend on the outcome of the Office of General Counsel Investigations.

### 5.3.3 Finding

An instrument line inspection was signed off by an individual other than the inspector. The documentation in question was incorrectly signed off based on a review of hardware. No determination was made by QACEG of whether this was an error by the inspector or whether the signature had been forged since this matter is the responsibility of The Office of the Inspector General. Review of a selection of other instrument line documentation did not identify similar problems. (WBN)

Corrective Action

WBN has corrected records and hardware. Further corrective action may result from investigations by the The Office of the General Counsel and/or The Office of the Inspector General.

### 5.3.4 Finding

Problems with instrument installation have been identified at each site. These problems all involved installation criteria, but in different ways. At BFN, BLN and WBN, corrective action was initiated prior to this evaluation. At SQN, although this issue was identified by the Generic Concern Task Force, action had not been initiated to correct the problem. (BFN, BLN, SQN, WBN)

Corrective Action

At BFN, deficiencies in the instrumentation program were corrected through CAQRs which resulted in appropriate installation and inspection criteria. At BLN, drawings were revised to incorporate appropriate information. At WBN, the Instrumentation Project is tasked with resolving this type of problem along with others. SQN committed to identify safety-related instruments, identify their locations, perform walkdowns, initiate corrective action as necessary, and initiate ECNs to provide adequate instructions on drawings.

### 5.3.5 Finding

Unauthorized work performed on safety systems and authorized work performed but not documented (WBN).

Corrective Action

WBN procedures for work control were revised prior to this investigation. Review of the workplans now in use indicates that they are adequate for the work being performed. SCR 6497-S was issued February 1, 1986, to address the review of unauthorized and/or undocumented work performed for acceptability.

**5.3.6 Finding**

Improperly documented work caused SQN to be shutdown. Since SQN was shutdown due to equipment qualification concerns, it was assumed that the concern in this issue was referring to this area. Based on this assumption, the issue is factual. (SQN)

Corrective Action

Environmental qualification of equipment has been a problem at each TVA location. Environmental qualification programs have been or will be initiated at each plant to resolve this issue.

**5.3.7 Finding**

Problems with document distribution control have existed at each site. At BFN and BLN, corrective action was initiated prior to this evaluation. At WBN, ECTG identified problems in that no procedure was available for distribution and control of vendor documents, and revised procedures were being distributed with effective dates that would not allow sufficient time for personnel training prior to implementation. At SQN, problems were identified with drawing control and inconsistencies between revision levels in use and those contained in the document management system. Additionally, implementing procedures for document control were not available at offsite Document Control Centers. Vendor manuals had not been verified and no hardware assessments had been performed to determine the impact of using outdated vendor information. (BFN, BLN, SQN, WBN)

Corrective Action

At BFN, the Document Management System was implemented and control of vendor information was improved in 1983. At BLN, corrective action was taken in response to several audits through Significant Condition Report SCR-GENIUS-8501 and NCR-5092. At WBN, procedures will be revised and prepared for the control of vendor documentation and procedures will be reviewed prior to issue to assure sufficient lead time for training. SQN has committed to review and

update vendor manuals as well as evaluate whether hardware has potentially been affected. The Document Management System will be used exclusively to determine drawing status. The Engineering Records and Information Systems Development Group is now responsible for programs ensuring that appropriate controls are in place for engineering documents.

**5.3.8 Finding**

Because of age, reproduction of third generation copies, and drawings which were reproduced on poor quality material, some shop drawings were identified in the past that were illegible. Corrective action was taken in 1985. (WBN)

Corrective Action

Legibility reviews are now required prior to drawing issue.

**5.3.9 Finding**

Problems were identified and corrected in 1986 related to Document Control Units without current revisions of drawings due to slow distribution and with the failure to implement requirements for sample reviews of drawings to verify status. The methods used for control of outdated drawings changed in 1985 and no longer rely on the return of the corners of outdated drawings. Review by NSRS in 1985 and by QACEG in 1987 indicates that accuracy levels are in excess of 99% which is adequate. (WBN)

Corrective Action

Paperwork flow was streamlined and distribution problems were corrected between 1983 and 1985. In addition, the Power and Engineering Configuration Control Task Force was established to evaluate and correct any problems identified with paperwork management.

**5.3.10 Finding**

Documentation and records have been lost, misplaced, regenerated and are not easily retrievable. Corrective action was initiated at each location beginning in 1983 and is continuing to date. At BFN, a problem was noted with record accountability in that personnel are not checking out records properly, returning records in a timely manner and were not responding to

notices that return of the documents was delinquent. Verification of current records retrievability at each location indicates that the programs are adequate. (BFN, BLN, SQN, WBN)

Corrective Action

BLN experienced only minor problems which were corrected as they occurred. BFN initiated the Document Management System in 1983. SQN began action to identify construction records and enter them in a Record Management System in 1983 and this activity was ongoing at the time of this investigation. WBN has established a records accountability program to identify, collect, index, and retrieve or regenerate required records.

**5.3.11 Finding**

Poor control of material traceability. Problems included: Failure to impose QA program requirements on suppliers; inadequate material upgrading; inadequate material control instructions; material traceability; and failure to follow procedures. Not all of the noted problems occurred at all plants but each plant will need significant corrective action. (BFN, BLN, SQN, WBN)

Corrective Action

Corrective actions include verification of material acceptability for ASME III applications, revising material control procedures, revising procurement procedures, training personnel, and implementing the TVA Replacement Items Program.

**5.3.12 Finding**

Improper storage of records. At SQN, problems were identified in 1985 with vendor drawings in work plans and corrective action was taken. At WBN, vendor documents were identified that were not properly stored. (SQN, WBN)

Corrective Action

SQN placed more restrictive controls on vendor drawings in work plans. WBN committed to review the documentation and place those that are QA records in the record vault.

**5.3.13 Finding**

Insufficient inspection/documentation of "Q" material prior to establishment of QC program. Insufficient documentation for rejected painted material and non-code material. QC type inspection was conducted by responsible engineering units until the establishment of a separate QC group in 1982. There have been problems with the adequacy of some inspection activities which have resulted in a number of reinspection and reverification programs. These problems do not appear to have disappeared with the establishment of a QC group in 1982 and no assessment of relative performance was made. Documentation problems also have been identified and are being addressed. The painted items in question were rejected in process by crafts/construction prior to QC inspection. This requires no documentation. The non-code items referred to do not require inspection or documentation. (WBN)

Corrective Action

The QA program including QC has been centralized and strengthened. The various reinspection programs and reverification programs will demonstrate hardware quality and result in correction where necessary. The Records Accountability Program will result in an acceptable set of QA records.

**5.3.14 Finding**

Inadequate review of installation documentation. Reject rates for documentation received by records vault personnel indicates inadequate review by submitting groups. (WBN)

Corrective Action

On January 20, 1987, DNQA issued SIL-2.2, which requires a more formal review of records prior to submission to the vault. These provisions were subsequently incorporated in QMI-810.7, "Inspection Documentation Review."

**5.3.15 Finding**

Inadequate system for tracking documents for input into the document accountability system. (SQN)

Corrective Action

SQN instituted system for handling QEB records.

### 5.3.16 Finding

Controlled documents contain conflicting or obsolete data. Procedure for requesting duplicate drawings could have resulted in two revisions of the same document being issued for use. This was identified and corrected prior to this evaluation. (SQN)

Corrective Action

Additional training had been provided for personnel regarding drawing issue and additional supervision was assigned to the Document Control Unit prior to this evaluation.

## 6.0 Subcategory 80600, General Management and Policy

### 6.1 Summary of Issues

This subcategory addresses 37 employee concerns about Management and Policy dealing with corrective actions, deviations, control of craft, awareness of quality assurance functions, and failure to follow procedures. The concerns were grouped into 21 issues which were covered in five elements.

Thirty-three of the concerns were evaluated at WBN, 17 at SQN, 13 at BFN and 15 at BLN.

Thirteen of the issues were not verified as factual or were factually accurate but not a problem. Seven issues were factual and identified a problem but corrective action for the problem was initiated before the employee concerns evaluation. One issue was nonfactual, but as a result of the employee concerns evaluation, a problem was discovered for which corrective action was initiated. Two corrective action tracking documents were issued to address noted problems.

Below is a summary of the major findings within this subcategory, followed by a discussion of all negative findings and their associated corrective action. The major finding is:

### 6.2 Major Findings

The Quality Assurance Category Evaluation Group (QACEG) evaluation concluded that there was one major finding. This finding dealt with management effectiveness in implementing a Corrective Action Program. The procedural system did not assure timely resolution of deficiencies and determination of root causes.

There were several procedures in effect, each of which had its own system for resolution. The procedures were sometimes contradictory and had no common trending program which tended to obscure problem visability. The management organization was fragmented and had no central point for resolution of the deficiencies.

Corrective Action

TVA implemented a new Corrective Action Program on March 31, 1987. The Nuclear Quality Assurance Manual has a new procedure that modifies the program and provides a central tracking system for corrective action. Organizational changes have also been made that establish responsibilities for implementing the system, and provide a central point for problem resolution.

Recent review by TVA QA of this new Corrective Action Program indicates it suffers from some of the same policies and decisions as the original system. The primary cause of the problems, as stated in the TVA reviews, is management lack of an aggressive and positive attitude toward the CAQ program both in the line and Site Quality Manager's organization. Implementation of the CAQ program is being tracked by Corrective Action Tracking Documents (CATDs). These CATDs will remain open until the program has been adequately implemented.

## 6.3 Negative Findings

### 6.3.1 Findings

TVA's Corrective Action Program and policy does not obtain prompt and effective corrective action. Weaknesses in the Corrective Action Program included a very complex system with multiple methods for reporting and resolving deficiencies. The various procedures did not interface well with each other and there were no inter-divisional procedures to define interfaces, responsibility, and authority. Each deficiency resolution method (SCR, NCR, PIR, CAR, etc.) had some weaknesses such as poor root cause analysis and generic applicability evaluation. Some deficiencies remained undocumented and some which were documented were not adequately resolved. Action to prevent recurring problems was weak. (Corporate)

Corrective Action

In March, 1987, TVA implemented the "Conditions Adverse to Quality Report" Program that consolidated the various deficiency reporting methods and strengthened the overall Corrective Action Program.

**6.3.2 Finding**

Management suspending and/or threatening to suspend crafts for receiving IRNs. At WBN, this policy had been in effect and could have caused personnel to coverup defective work. This policy was changed in July of 1986. Penalties are now only imposed for deliberate acts and, in weekly meetings, personnel are encouraged to report honest errors. (WBN)

Corrective Action

TVA has revised the policy regarding penalties for defective work.

**6.3.3 Finding**

IRN issuance did cause communication problems between crafts and QC, particularly when TVA revised policy and no longer allowed inspectors to write IRNs only for deficient work that could not be corrected before the inspector left the work area. This communication problem was identified and corrected prior to this evaluation. (WBN)

Corrective Action

Procedures governing IRNs were revised and weekly meetings were instituted to allow craft and supervisors to discuss IRNs and other work-related problems.

**6.3.4 Finding**

Many members of nuclear plant management are not aware of the existence of the NQAM much less the manual contents. (WBN)

Corrective Action

Since March 1986, the NQAM is included in Training Course Number PPT301.005, "Why We Have Procedures/Attention to Detail." The training course is a basic familiarization course for managers, supervisors, and employees. Attendance records are now maintained and it is estimated that approximately 95 percent of WBN management have satisfactorily attended and completed this course. The course content covers quality assurance criteria from 10CFR50 Appendix B and the NQAM down through the work package data. The course explains the responsibilities that are imposed upon the licensee to provide adequate procedures and exercise supervision over employees, including contractor employees and to assure adherence to procedures and NRC requirements.

### 6.3.5 Finding

NCR 5609 had EN-DES memorandum which contained information to support the disposition missing from the copy provided to the NRC. (WBN)

Corrective Action

NRC was sent the required documents.

### 6.3.6 Finding

Corporate management imposed schedule commitments on projects that were not always consistent with QC requirements. Also, in two identified cases, procedures were inappropriately revised to support construction. (WBN)

Corrective Action

In the Nuclear Performance Plan, TVA has clearly stated its policy regarding quality and is instituting appropriate measures to enforce it. In the case of the two procedures, the procedures were re-revised and hardware was evaluated and dispositioned using NCRs and FCRs as necessary.

### 6.3.7 Finding

Craft told that it was their responsibility to identify and obtain correction for administrative and engineering errors in work packages and workplans. (WBN)

Corrective Action

Project Management issued direction to cease all practices of placing the responsibility of incorrect work packages with the craft. The Assistant Construction Engineer (ACE) is responsible for review and approval of work packages. The Responsible Engineering Unit (REU) is responsible for preparation, making required revisions to, and closure for work packages.

## 6.4 Peripheral Finding

In addition to the above findings, the following peripheral finding was identified:

### 6.4.1 Finding

Noncompliance with ASME requirements for witnessing of welds during hydrostatic testing of penetrations. (WBN)

Corrective Action

Amend ASME code data report and FSAR as necessary and obtain Authorized Nuclear Inspectors and NRC concurrence.