

EMPLOYEE CONCERNS SPECIAL PROGRAM

**VOLUME 4
MATERIAL CONTROL CATEGORY
SUMMARY AND CONCLUSIONS**

**TVA
NUCLEAR POWER**



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NUCLEAR POWER**



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EXECUTIVE SUMMARY

The Material Control Category Evaluation Group evaluated 97 concerns that raised 62 issues about the adequacy of Material Control functions, including procurement, receiving, handling, storage, and installation. The concerns also addressed the adequacy of procedures governing those functions. Employee concerns and other items included in the Employee Concerns Special Program were those collected or otherwise identified before February 1, 1986. Generally, the concerns cover a timeframe of 1980 to 1985, although some refer to earlier time periods. The evaluations were conducted primarily during the period of February 1986 through July 1987.

Of the 62 issues evaluated, 33 did not identify problems requiring action. Seven of the remaining 29 issues cited problems that had been identified and corrected through existing programs prior to the Employee Concerns Special Program. Fifteen issues were found to be factual, either fully or in part, and identified problems requiring corrective action plans. The remaining seven issues were not factual. In the course of the evaluations, other problems requiring action were discovered.

The results of these evaluations do not indicate that plant safety has been compromised by installation of unsuitable material. However, some installed pressure boundary piping material was not adequately identified and documented and is undergoing evaluation to confirm that it is suitable for service. This problem is primarily one of documentation deficiencies, with some potential for hardware deficiencies. Construction inspection combined with preoperational, startup, and surveillance testing provides a high degree of assurance that appropriate material has been installed. The testing and evaluation programs now underway, or planned, will identify and correct any hardware deficiencies and ensure that installed material meets design requirements.

The most significant weakness identified related to the procedural control of key material control processes. More than three fourths of the corrective actions addressed deficiencies in procedures governing material identification, storage and handling, documentation, and installation.

Two causes were identified for deficiencies in procedural control - incomplete guidance contained in design output documents and deficient site implementation of design requirements.

Design output documents often did not provide sufficient detailed information to the sites. Material requirements were sometimes specified only in terms of the applicable industry standard, or code class, without including the specific methodology for maintaining the degree of control mandated by the relevant codes and regulations. Site implementing procedures did not translate design output into specific material requirements; hence, the procedures were incomplete, i. e., they did not contain sufficient detail to ensure full compliance with applicable codes and regulations, predominantly with regard to documentation of material.

The Division of Nuclear Engineering has initiated a Specification Improvement Program to upgrade the TVA nuclear engineering specifications. The complete set of specifications, i.e., Master Specification, Engineering Requirements Specification, and Pre-Engineered Replacement Items Specifications, will require material identification and traceability consistent with regulatory requirements and with the code requirements applicable to each site. Implementation of the specifications will be controlled in accordance with the Nuclear Procedures System (NPS) requirements. An NPS standard is being developed to provide interdivisional control of implementation of the specifications throughout the Office of Nuclear Power.

The deficiencies in the material control program resulted from a set of underlying conditions that existed prior to 1985. Since 1985, changes in the TVA nuclear program, as outlined in the Nuclear Performance Plan, have greatly reduced or eliminated those conditions, as discussed below.

TVA's nuclear construction program paralleled a period of rapidly evolving technology in the nuclear power industry. Nuclear codes and standards were constantly changing, as were regulatory requirements. The seven plants initially planned by TVA were governed by five different Codes of Record. Each of the current four plants was designed and/or constructed to a different set of codes and regulatory commitments, which mandated progressively more complex requirements for the use and control of nuclear grade materials.

The evolutionary nature of material control requirements and the rapid influx of new personnel to accommodate the expanding construction program dictated the need for intensive and continuous material control function training at each site. As personnel were reassigned to a different site, they needed to be trained in the unique requirements for that site. TVA was slow to recognize the need and did not provide sufficient or timely training. Consequently, TVA nuclear personnel did not keep pace with the changing material control requirements or with state-of-the-art techniques for maintaining the required degree of material identification and control.

A major contributor to past material control difficulties was the decentralized organizational structure. Material control responsibilities were not clearly defined, nor were they assigned to functional groups. There was no centralized management control to ensure interdepartmental coordination. The degree of material control and traceability required by upper-tier criteria dictated close cooperation and coordination among the

design, construction, and operating groups. Policies and procedures used by the various groups with material control responsibilities needed to be compatible with one another and directed toward the same objective. This objective probably could have been more effectively accomplished with a centralized nuclear organization, given the evolutionary state of material control requirements and practices.

The overall level of nuclear expertise within TVA has been improved, and continues to improve, through a combination of hiring, training, and retention of experienced personnel. Additionally, the nuclear organization has been restructured to centralize responsibility and define clear lines of authority under the Manager of Nuclear Power. Organizational responsibilities have been clearly defined and managers are being held accountable for the technical adequacy of activities within their respective functional areas. Today's environment is much more conducive to the type of organizational teamwork needed to avoid problems of the type encountered in material control.

The Material Control Category Evaluation Group initiated numerous recommendations that resulted in corrective action plans. Most of these actions were designed to bring about program improvements necessary to control future work or to confirm the adequacy of previous work. The remainder addressed the specific discrepancies found at each site and the programmatic weaknesses and causes identified by the overall category assessment. These and other actions brought about by the Employee Concerns Special Program, along with the program improvements outlined in the Nuclear Performance Plan, should significantly enhance performance, not only in material control activities, but throughout the nuclear program.

EMPLOYEE CONCERNS SPECIAL PROGRAM
VOLUME 4
MATERIAL CONTROL CATEGORY SUMMARY AND CONCLUSIONS

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PREFACE

This report is one of a series prepared under the Employee Concerns Special Program (ECSP) of the Tennessee Valley Authority (TVA). The ECSP and the organization which carried out the program, the Employee Concerns Task Group (ECTG), were established by TVA's Manager of Nuclear Power to evaluate and respond to those Office of Nuclear Power (ONP) employee concerns filed before February 1, 1986 that related to TVA's nuclear power program. Concerns filed after that date are handled by the ongoing ONP Employee Concerns Program (ECP).

The ECSP addressed more than 5,800 employee concerns. Each of the concerns was a formal, written description of a circumstance or circumstances that an employee cited as inappropriate, inefficient, unjust, or unsafe. The scope of the ECSP was to thoroughly evaluate all alleged problems (issues) presented in the concerns and to report the results of those evaluations in a form accessible to ONP employees, the Nuclear Regulatory Commission (NRC), and the general public.

This preface contains background information on how the ECSP was initiated, descriptions of the categories to which concerns were assigned for evaluation, profiles of the Senior Review Panel members who provided independent oversight of the program, and information on feedback of program results to employees.

A HISTORY OF THE EMPLOYEE CONCERNS SPECIAL PROGRAM

In early 1985, a gap in communications between management and non-management employees at Watts Bar Nuclear Plant was recognized. After consultation with the NRC about this situation, the TVA Board of Directors directed that a far-reaching employee concerns program be implemented at Watts Bar. The Employee Concerns Special Program was established to thoroughly review employee concerns. To ensure that employees felt free to express their concerns without fear of retaliation, an independent contractor was selected to interview employees then assigned to Watts Bar.

Precautions were taken throughout the program to protect the identities of those who expressed concerns. The original records of the interviews remain in the custody of the interviewing contractor; the only other copies of these records are held by the NRC. Only the contractor and the NRC have had access to these files. The information provided to TVA was screened to maintain employee confidentiality.

Upon completion of the interview phase on February 1, 1986, 5,876 employees had been interviewed. Approximately one third of the employees (1,850) had expressed one or more concerns, resulting in approximately 5,000 individual employee concerns. Although TVA extended the program to employees at all Office of Nuclear Power sites through the use of mailers and a toll free telephone number, most of the concerns were from Watts Bar employees.

An Employee Concerns Task Group was established to carry out the program. The Task Group's concentration of qualified personnel and its comprehensive approach to problem resolution also made it the logical organization to resolve concerns and items gathered from several other sources. Therefore, the Task Group's responsibilities included the following:

- Concerns expressed during the contractor interviews.
- Concerns generated by earlier employee concern programs.
- Additional concerns identified from the interview files by the contractor and the NRC.
- Additional items identified by Task Group evaluators.
- Concerns received by the NRC before February 1, 1986, and referred to TVA.
- Concerns identified by TVA's former Nuclear Safety Review Staff.
- Open items identified from reviews of TVA incoming correspondence.

CATEGORIZATION OF CONCERNS

The concerns were grouped into nine categories to provide for consistent evaluation of related concerns. This also aided in identifying and developing corrective actions that addressed identified deficiencies specifically and programmatically to prevent recurrence. The responsibility for each category was assigned to a designated Category Evaluation Group. This responsibility included identification of the issues raised by the concerns, thorough investigation, determination of generic applicability and root causes of deficiencies, evaluation of Corrective Action Plans (CAPs) developed by the line organizations, and preparation of the program reports. In addition, the line organizations evaluated identified deficiencies for potential reportability to the NRC under Title 10 to the Code of Federal Regulations, Parts 50.55(e), 50.72, 50.73 and 21.

The concerns were grouped into the following categories:

- **Construction** - Concerns about the adequacy of construction practices, the quality of as-constructed facilities (excluding welding and as-designed features), in-storage and installed maintenance prior to turnover to operations, measuring and test equipment and handling of equipment used during construction, and construction testing activities. TVA personnel evaluated the concerns in this category.

- **Engineering** - Concerns about the adequacy of the design process and the as-designed plant features. The design process consists of the technical and management processes that commence with the identification of design inputs and lead to and include the issuance of design output documents. These concerns were evaluated by Bechtel Western Power Corporation.
- **Operations** - Concerns about operational activities, including operator qualifications, maintenance or equipment needs, security, health physics, and ALARA (as low as reasonably achievable) implementation, and concerns about preoperational and surveillance testing. Personnel from TVA and from Impell Corporation performed the evaluations in this category.
- **Material Control** - Concerns about the adequacy of material, including its procurement, receipt, handling, storage, and installation, and the adequacy of procedures governing material control. TVA personnel evaluated the concerns in this category.
- **Welding** - Concerns about any aspect of welding, including welder or weld procedure qualification, weld inspection/nondestructive examination, heat treatment, weld quality, filler material quality, and weld documentation. The welding concerns were evaluated by personnel from TVA and the EG&G Idaho Corporation.
- **Intimidation, Harassment, Wrongdoing, or Misconduct** - Concerns about personnel conduct that interferes with the ability of employees to fulfill their assigned responsibilities, unauthorized actions taken against employees for fulfilling their assigned responsibilities, and illegal activities or violations of TVA policies and regulations. Concerns in this category were transmitted by the Task Group to the Office of the Inspector General for evaluation.
- **Management and Personnel** - Concerns about the adequacy of policies, management attitude and effectiveness, organization structures, personnel management, and personnel training and qualification, except training and qualification covered by the Quality Assurance/Quality Control Category. These concerns were evaluated by TVA personnel and contracted consultants.
- **Quality Assurance/Quality Control** - Concerns about the adequacy of Quality Assurance/Quality Control programs and procedures (e.g., auditing; document control; records; deficiency reporting and corrective action; and inspection, except nondestructive examination and welding inspection) and the training, qualification, and certification of Quality Assurance/Quality Control personnel. The concerns in this category were evaluated by Stone & Webster Engineering Corporation.

- **Industrial Safety** - Concerns about the working environment and controls which protect the health and safety of employees in the workplace (excluding health physics and ALARA). TVA personnel and the DuPont Company - Safety Management Services evaluated these concerns.

Concerns that affected more than one category were assigned to multiple categories. In such cases, each category evaluated the concern from its specific point of view.

Each Category Evaluation Group sorted its assigned concerns into subcategories, according to the subject matter of the concerns, then into elements. An element is a group of related concerns that raise the same or similar issues. An issue is an alleged problem cited or implied, as interpreted by an evaluator, in one or more concerns. Concerns were evaluated according to the issues they raised. A comprehensive explanation of the evaluation and reporting process is contained in the introduction section of each category report and in the program summary report.

PROGRAM OVERSIGHT

The ECSP has been reviewed, audited, and inspected by the NRC, the TVA Office of the Inspector General, and the TVA Nuclear Quality Assurance Division. To provide additional independent and objective oversight, the TVA Manager of Nuclear Power established a Senior Review Panel of recognized experts within the nuclear power industry. Those selected had extensive backgrounds with experience in the design, construction, operation, quality assurance and safety evaluation of nuclear power plants.

The Senior Review Panel provided oversight to ensure that (1) the scope and depth of the evaluation effort was adequate, (2) the evaluation findings and conclusions were logically derived from the evidence, (3) the proposed CAPs adequately addressed identified deficiencies, and (4) the reports adequately described the evaluation effort, the evaluation findings and conclusions, and the measures taken to resolve the identified deficiencies.

Profiles of the Senior Review Panelists

Myer Bender

Querytech Associates Inc., Knoxville, Tennessee. Consultant on engineering practices for nuclear and advanced technology programs. More than 40 years of experience with complex technological activities including the Manhattan Project, and advanced nuclear fuel processing and waste management installations. Former Director of Engineering at the Oak Ridge National Laboratory and, for ten years, a Member of the NRC Advisory Committee on Reactor Safeguards (Chairman in 1977). Known for his work in standards, quality assurance, and system failure assessment.

James M. Dunford

Former startup readiness consultant for Three Mile Island. Former manager in the Naval Reactor Program. Former Vice President for Naval Reactor Plant Construction for New York Shipbuilding Corporation. Former Professor of Mechanical Engineering at the University of Pennsylvania. Nearly 50 years of experience in engineering management, material procurement, quality control, radiological control, construction, and training related to nuclear facilities.

Richard E. Kosiba*

Former Vice President for Quality and Technology, Babcock and Wilcox Company. Former manager in the Naval Reactor Program. Former Assistant Director (Plant Engineering) for the Atomic Energy Commission. Forty years of experience in the design, manufacturing, research and development, testing, operation, and maintenance of nuclear plants.

Joseph C. LaVallee, Jr.

Former Nuclear Project Manager for Sargent and Lundy. Twenty-five years experience in project management, licensing, construction, design, and operation of nuclear power facilities.

Daniel L. Garland*

Former Manager, Nuclear Quality Assurance Program Office for Westinghouse Hanford Company. While at Westinghouse, assisted Department of Energy in developing Quality Assurance standards and programs. Thirty years of experience in the quality assurance of nuclear plants, including preparation of plans, procedures, and manuals; indoctrination and training of personnel; and participation in more than 400 quality assurance audits, frequently as audit team leader.

James R. McGuffey* (Deceased)

Over 40 years experience in ASME Code fabrication work, specialty welding practices, materials technology, and quality assurance methodology. Former Director of Quality Assurance and Inspection for the Oak Ridge National Laboratory.

*These members served on the panel for part of the duration of the program.

QUESTIONS ABOUT CONCERNS

How to Find a Concern

These category reports and their appendices are intended to inform the concerned individual as to how his or her concerns were addressed. These reports summarize the Employee Concerns Task Group's investigations, findings, and line management identified corrective actions. In most cases the concerned individual should be able to identify the resolution of the issue associated with his/her concern using the following steps:

1. Determine which category would contain the concern. A list of the categories begins on page ii of this preface.
2. Review the category report identified in step 1, above. In particular, review the "Category Assessment" and "Conclusions" sections and the appendix titled "Subcategory Report Overviews."

A process has been developed which will permit employees to obtain additional information concerning their specific concern. As has been the case throughout this program, this will be done in a manner that ensures the confidentiality of the individual. Details of this process will be made available coincident with the release of these category reports.

What to Do If You Believe Your Concern Has Not Been Adequately Addressed

The Employee Concerns Task Group has made an intensive effort to thoroughly evaluate and report on all the issues raised by the concerns. In some cases, adequate information may not have been available to properly evaluate your concern or the concern may have been misinterpreted by the Task Group. Any employee who believes that his/her concern has not been adequately addressed by the ECSP is requested to bring this to TVA's attention by taking the question to the Employee Concerns Program site representative.

1.0 INTRODUCTION

Employee concerns and other items included in the Employee Concerns Special Program were collected or otherwise identified before February 1, 1986. Generally, the concerns represent an approximate timeframe of 1980 to 1985, although some refer to earlier time periods.

The Material Control Category Evaluation Group evaluated 97 concerns that raised 62 issues about the adequacy of Material Control functions, including procurement, receiving, handling, storage and installation, and the adequacy of procedures governing those functions. The evaluations were conducted primarily during the period of February 1986 through July 1987.

Readers are cautioned not to construe this category report to represent a comprehensive evaluation of all aspects of the TVA nuclear Material Control Program. The findings and analyses presented in this and the seven Material Control subcategory reports are based solely on the evaluations of the issues raised by the employee concerns and peripheral issues that were identified in the course of the concern evaluations. The subject matter represents a small, negatively biased set of issues identified in the concerns.

It is also important, for a proper understanding of the context of this report, that readers be aware of the basic objective of Employee Concerns Task Group evaluations. The primary objective was to provide for evaluation and timely disposition, correction, and closeout of safety-related employee concerns in order to provide assurance that plant safety was not affected by identified issues.

To this end, major emphasis was placed on analysis of negative findings. The process was designed to be self-critical, to seek out and resolve deficiencies, and to promote enhanced performance throughout the Office of Nuclear Power as a result of actions initiated for findings identified by the Employee Concerns Task Group.

The results of the issue evaluations have been published in a series of seven subcategory reports and 12 Sequoyah element reports. This category report summarizes the information contained in the subcategory and element reports and assesses the cumulative findings. A list of the 20 reports that comprise the total Material Control Category is included as Appendix A, Table of Reports.

1.1 Evaluator Qualifications

The evaluations and subsequent analyses of findings in the Material Control category were performed by a team of trained and qualified evaluators under the direction of a Category Evaluation Group Head. The successive Group Heads were TVA managers with an average of 16 years of TVA project experience.

A list of members of the Material Control Category Evaluation Group, with a brief description of the work experience of each, is included as Appendix B, Evaluator Profiles.

1.2 Evaluation Process

1.2.1 General Methodology

The starting point of evaluations in the Material Control category was with the 97 employee concerns assigned to the category. Before any evaluation began, the concerns were sorted into seven subcategories, according to the subject matter of the concerns.

Within each subcategory, concerns were further divided into elements. An element is a group of related concerns, i.e., concerns that raise the same or similar issues. An element, then, consists of one or more closely related issues. Issues are alleged problems cited in one or more concerns.

Evaluations of individual concerns were conducted at the element/issue level. The results of element evaluations were reported and analyzed in a series of seven subcategory reports; subcategory findings were then combined and evaluated to produce the overall evaluation of the Material Control category, as presented in this report. Each step of the evaluation process is explained below.

1.2.2 Element Evaluation Process

Evaluations were performed and documented in accordance with an approved Material Control Category Evaluation Plan by personnel who had successfully completed the approved Evaluator Training Program.

The evaluators reviewed applicable upper-tier/baseline requirements documents (e.g., regulations, technical specifications), site implementing procedures and instructions, relevant documents generated by the Nuclear Regulatory Commission, and investigation reports on concerns that had been previously investigated by other organizations. They interviewed personnel who had knowledge of or responsibility for items under evaluation, visually inspected plant systems and components, and researched relevant historical data such as maintenance records and surveillance documentation.

Issues that were determined to be generically applicable to additional plants were evaluated at those plants. Similarly, issues with implied applicability to other structures, components, or processes within a plant were evaluated accordingly.

Findings requiring action were reviewed with responsible line managers, who developed corrective action plans to resolve the identified problems. Corrective action plans were then submitted to the Group Heads and evaluators for concurrence.

Element reports were published only to document the results of evaluations of those issues directly affecting Sequoyah Nuclear Plant. All element evaluations are included in subcategory reports.

1.2.3 Subcategory Evaluation Process

Subcategory reports contain the results of the element evaluations (including corrective actions, causes, and significance for substantiated issues). Every concern assigned to the Material Control category was addressed, either individually or as part of an issue evaluation, in one of the seven Material Control subcategory reports.

Problems identified through the element evaluations were systematically analyzed to determine the immediate causes and to detect symptoms of underlying root causes. Problems identified through this root cause analysis were referred to the responsible managers for preparation of corrective action plans.

1.2.4 Category Evaluation Process

At the category level, the negative findings, or problems, identified at the subcategory level were analyzed for important patterns that might not have been apparent when the subcategories were examined individually. This analysis identified programmatic weaknesses and "root causes", evaluated the extent to which they had been or were being corrected through the Nuclear Performance Plan and/or other performance enhancement programs, and determined whether additional action was needed.

2.0 SUBCATEGORY DESCRIPTIONS

This section contains a brief description of each of the seven subcategories that comprise the Material Control Category. Summaries of the findings and corrective actions for issues that identified problems are contained in Appendix C, Subcategory Report Overviews.

Subcategory 40200 - Purchasing and Requisitioning

The Purchasing and Requisitioning subcategory evaluated eight issues alleging that: (1) components and materials procured for a specific plant, unit, system, etc., were being used (transferred) elsewhere without proper documentation; (2) code material was supplied by an uncertified vendor; (3) material requisitions were improperly prepared; (4) vendor (Westinghouse) items were removed from the Watts Bar site and altered without documentation; (5) materials of questionable quality were being purchased; (6) materials are transferred from other TVA sites to Watts Bar, but these other sites are not on the Watts Bar approved vendor list; (7) nondestructive examination materials were not being procured as safety-related items at Bellefonte; and (8) fire protection equipment was furnished without a Certificate of Compliance.

Subcategory 40300 - Installation

The Installation subcategory addresses 10 issues concerning installed materials. The issues alleged that: (1) valves are substituted without revising drawings; (2) a valve on unit 1 pressurizer is cracked; (3) pipe fittings have low tensile strength; (4) pipe fittings do not have nondestructive examination reports; (5) material from an uncertified vendor is installed in the steam generator blowdown system; (6) electrical cable was issued from the warehouse without vendor certification documentation; (7) previously scrapped material has been retrieved from the scrapyard and installed in the plant; (8) Westinghouse material was received at Watts Bar without proper documentation; (9) two different pipe sizes have the same heat number; and (10) poor quality structural steel beam containing laminations (cracks and splits) was found in a non-code system and all of it may not have been identified and removed.

Subcategory 40400 - Storage and Handling

The Storage and Handling subcategory addresses issues pertaining to the storage and handling of material from receipt until installation. Eleven issues alleged that: (1) storage facilities do not provide adequate storage environments, (2) instruments, hanger material, snubbers, junction boxes and thermo lag insulation material are not stored in appropriate nuclear storage areas, (3) protective covers and seals are not maintained on conduit and pipe ends, (4) austenitic stainless steel is stored and transported in contact with carbon steel, (5) safety-related and nonsafety-related materials are not adequately separated to prevent inadvertent mixing and installation

of incorrect material, (6) heat numbers marked with ink on half-inch stainless steel instrumentation pipe sometimes rub off, (7) handling practices result in damaging material and equipment, (8) material in storage is not correctly listed on warehouse ledger records, (9) material is issued to the field before receiving proper receipt inspection, (10) warehouses at all four nuclear plants do not have adequate fire protection, and (11) maintenance and storage practices were inadequate before 1984.

Subcategory 40500 - Material Identification

The Material Identification subcategory addresses issues regarding material marking as required by upper-tier documents and site procedures. The concerns raised 15 issues: (1) adequacy of marking and storage of ASTM A-307 bolting material; (2) unapproved paint markers used on stainless steel; (3) uncontrolled removal and replacement of valve identification tags; (4) no heat numbers on structural steel; (5) no heat numbers and data on the steel for hangers; (6) Essential Raw Cooling Water buried pipe at Watts Bar does not have heat numbers stamped on pipe; (7) inadequate storage, issuance and traceability of small code items; (8) heat numbers missing or cut off stainless steel pipe; (9) traceability treated differently for Engineering/Construction Level I and II materials; (10) requisitions being altered; (11) no heat numbers on HVAC duct supports; (12) heat numbers placed on plates attached to the containment vessel at Sequoyah without Quality Assurance's knowledge; (13) loss of material identification after receipt inspection; (14) no identification of Q (Quality-related) material during storage; and (15) heat number on one end of black pipe is cut off when pipe is sectioned.

Subcategory 40600 - Quality of Materials

The Quality of Material subcategory addresses issues concerning the quality of materials received and installed in permanent plant systems. Three issues were raised alleging that: (1) structural steel of poor quality (e.g., laminated, delaminated, cracked, splitting) had been received for use at Watts Bar, (2) carbon steel pipe of poor quality (e.g., lamination cracks, slag pockets, surface slag) had been received for use at Watts Bar and questionable repair practices were used on piping material, and (3) valves at Watts Bar were often reused, pitted, and/or remachined.

Subcategory 40700 - Procedural Control

The Procedural Control subcategory addresses the adequacy of procedures governing material control functions. Twelve issues were evaluated: (1) heat code as used for material control for construction, (2) heat code as used for material control for Nuclear Power, (3) allegedly changed heat numbers, (4) use of non-code material in code systems, (5) material upgrading/reclassification, (6) allegedly unvalidated heat numbers for structural steel, (7) material allegedly received by inappropriate personnel, (8) warehouse access control, (9) verification of a material discrepancy, (10) the adequacy

of a search for defective material, (11) the adequacy of procedures governing storage and tracking of instrumentation materials, and (12) the adequacy of controls for the purchase and handling of nondestructive examination materials.

There was a differing staff opinion as to the adequacy of corrective action plans submitted by line management to address four of the issues in Subcategory 40700. Two evaluators did not agree with the final resolutions of the issues and did not sign the subcategory report. Details of the issues involved and the manner in which each was resolved are included in the overview of this subcategory in Appendix C, Subcategory Report Overviews.

Subcategory 40800 - Training

The Training subcategory addresses issues related to the adequacy of training of personnel engaged in material control activities. Three issues were evaluated concerning training for (1) warehouse personnel, (2) personnel who perform receipt inspections, and (3) persons authorized to sign Nuclear Power Stores Requisition (TVA Form 575).

3.0 CATEGORY ASSESSMENT

3.1 Program Weaknesses and Corrective Actions

The cumulative findings of the seven subcategories were assessed for weaknesses in the TVA Material Control program that caused or contributed to identified deficiencies. Judgments were then made as to the current status of these programmatic areas, i.e., the extent to which the weaknesses had been or were being addressed by the Nuclear Performance Plan and other performance enhancement programs and whether additional corrective action was needed.

The predominant weakness associated with problems identified in the Material Control category was deficient procedural control of key material control functions. Deficiencies were found in procedures governing material identification, storage and handling, documentation, and installation.

The most significant result of these procedure deficiencies was inadequate documentation of some installed pressure boundary material. Governing upper-tier documents, such as industry codes and NRC regulations, require that certain pressure boundary material be marked in a manner that provides traceability to the reports of all tests and examinations performed on the material. Positive controls are required to ensure proper handling and to maintain identification, either by markings on the material or by records traceable to the material, throughout fabrication, erection, installation, and use.

Material control procedures at Watts Bar, Bellefonte, and Sequoyah Nuclear Plants did not ensure full compliance with regulatory requirements relating to verification and traceability of pressure boundary material. The material in question was primarily 2 1/2-inch diameter and smaller piping and fittings received as loose (bulk) material and installed during the construction phase. (Most larger material was received as prefabricated piping spools, clearly marked and designated for specific use. Very little loose material larger than 2 1/2-inch was used.) This problem was one of documentation deficiencies, with the potential for hardware deficiencies.

TVA will use statistical sampling programs at Watts Bar, Bellefonte, and Sequoyah to determine and/or justify the adequacy of installed pressure boundary material. The sample will be of sufficient size to provide a high degree of confidence of the suitability for service of the material. Material in that sample that is not adequately documented will be physically tested, inspected, or otherwise analyzed to determine compliance with requirements. Material that does not meet code, design, or regulatory requirements will be evaluated to determine if it is suitable for service. Unsuitable material will be replaced as appropriate.

3.2 Causes and Corrective Actions

Two causes were identified for deficiencies in procedural control - incomplete guidance contained in design output documentation and deficient site implementation of design requirements.

Design output documents often did not provide sufficient detailed information to the sites. Material requirements were sometimes specified only in terms of the applicable industry standard, or code class, without including the specific methodology for maintaining the degree of control mandated by the relevant codes and regulations. Site implementing procedures were therefore incomplete, i. e., they did not contain sufficient detail to ensure full compliance with applicable requirements, particularly with regard to documentation of material.

Most procedure deficiencies were due to the incomplete design guidance, but others existed because the sites did not fully incorporate specification requirements into site procedures. Also, sites did not always enforce compliance with procedures during the work process.

The Division of Nuclear Engineering has initiated a Specification Improvement Program to upgrade the TVA nuclear engineering specifications. A set of Master Specifications is being developed to incorporate the top level engineering requirements under the control of the DNE discipline branches. Specific site applications of the Master Specifications will be contained in site-specific Engineering Requirements Specifications. The Master Specifications, MS-NEB-001, 'Safety-Related Piping Installation, Modification, and Maintenance,' and MS-NEB-015, 'Procurement, Storage, Installation, Modifications, and Maintenance of Materials,' will document the TVA requirements relative to the Material Control Category CATDs. Development of these specifications will be coordinated with the sites to ensure the resolution of the material control requirements deficiencies identified by Employee Concerns Special Program evaluations.

Implementation of the specifications will be controlled in accordance with the Nuclear Procedures System (NPS) requirements. An NPS standard is being developed to provide interdivisional control of implementation of the specifications throughout the Office of Nuclear Power. The standard will be developed by the Division of Nuclear Engineering and coordinated with all divisions for their review and concurrence. The standard will be applicable to all procedures involved in procurement, fabrication, construction, modification, and maintenance activities at each plant. User organizations will be required by the standard to maintain compliance with Engineering Requirements Specifications as they are revised over time.

3.3 Root Causes

An important objective throughout the evaluation process has been to identify causes of weaknesses so that action could be taken to eliminate the weaknesses and improve overall performance. At the element level, the proximate, or nearest causes of specific problems were identified and actions were initiated to correct and prevent recurrence of the specific problems.

Root cause analysis at the subcategory level searched for underlying causes that brought about or helped bring about undesirable results. Causative conditions identified through subcategory root cause analysis were referred to responsible line managers for corrective action.

At the category level, the perceived root causes derived from subcategory evaluations were collectively assessed for higher level root causes. The root causes identified through category level analysis are those underlying conditions, events, or circumstances that ultimately caused programmatic weaknesses to occur or permitted them to remain undetected, and therefore uncorrected.

The weaknesses previously discussed were judged to have resulted from a set of underlying conditions that existed prior to 1985. Since 1985, changes in the TVA nuclear program, as outlined in the Nuclear Performance Plan, have greatly reduced or eliminated the root causes of deficiencies in the material control program.

TVA's nuclear construction program paralleled a period of rapidly evolving technology in the nuclear power industry. Nuclear codes and standards were constantly changing, as were regulatory requirements. The seven plants initially planned by TVA were governed by five different Codes of Record. Each of the current four plants was designed and/or constructed to a different set of codes and regulatory commitments, which mandated progressively more complex requirements for the use and control of nuclear grade materials.

The evolutionary nature of material control requirements and the rapid influx of new personnel to accommodate the expanding construction program dictated the need for intensive and continuous material control function training at each site. As personnel were reassigned to a different site, they needed to be trained in the unique requirements for that site. TVA was slow to recognize the need and did not provide sufficient or timely training. Consequently, TVA nuclear personnel did not keep pace with the changing material control requirements or with state-of-the-art techniques for maintaining the required degree of material identification and control.

A major contributor to past material control difficulties was the decentralized organizational structure. Material Control responsibilities were not clearly defined, nor were they assigned to functional groups. There was no centralized management control to ensure interdepartmental coordination. The degree of material control and traceability required by upper-tier criteria dictated close cooperation and coordination among the design, construction, and operating groups. Policies and procedures used by the various groups with material control responsibilities needed to be compatible with one another and directed toward the same objective. This objective probably could have been more effectively accomplished with a centralized nuclear organization, given the evolutionary state of material control requirements and practices. The overall level of nuclear expertise within TVA has been improved, and continues to improve, through a combination of hiring, training, and retention of experienced personnel. Additionally, the nuclear organization has been restructured to centralize responsibility and define clear lines of authority under the Manager of Nuclear Power. Organizational responsibilities have been clearly defined and managers are being held accountable for the technical adequacy of activities within their respective functional areas. Today's environment is much more conducive to the type of organizational teamwork needed to avoid problems of the type encountered in material control.

4.0 CONCLUSION

The Material Control Category Evaluation Group evaluated 62 issues raised by 97 employee concerns. These issues pertained to a wide range of functional areas that impact the overall material control process. Collectively, the issues concerned the adequacy of material installed in TVA nuclear plants as it relates to plant safety.

Of the 62 issues evaluated, 33 did not identify problems requiring corrective action. Seven of the remaining 29 issues cited problems that had been identified and corrected through existing programs prior to the Employee Concerns Special Program. Fifteen issues were found to be factual, either fully or in part, and identified problems requiring action. The remaining seven issues were not factual. In the course of the evaluations, other problems requiring action were discovered.

The results of the evaluations of material control issues do not indicate that plant safety has been compromised by installation of unsuitable material. However, some installed pressure boundary piping material was not adequately identified and documented and is undergoing evaluation to confirm that it is suitable for service. This problem is primarily one of documentation deficiencies, with some potential for hardware deficiencies. Construction inspection combined with preoperational, startup, and surveillance testing provides a high degree of assurance that appropriate material has been installed. The testing and evaluation programs now underway, or planned, will identify and correct any hardware deficiencies and ensure that installed material meets design requirements.

The Material Control Category Evaluation Group initiated 81 recommendations that resulted in corrective action plans. Most of these actions were designed to bring about program improvements necessary to control future work or to confirm the adequacy of previous work. The remainder addressed the specific discrepancies found at each site and the programmatic weaknesses and causes identified by the overall category assessment.

Actions resulting from the statistical sampling programs previously described will ensure the adequacy of installed pressure boundary piping material, while the Specification Improvement Program and the controls provided by the Nuclear Procedures System will eliminate the causes of deficiencies in the material control program. These and other actions brought about by the Employee Concerns Special Program, along with the program improvements outlined in the Nuclear Performance Plan, should significantly enhance performance, not only in material control activities, but throughout the nuclear program.

APPENDIX A
MATERIAL CONTROL CATEGORY TABLE OF REPORTS

Reports in the Material Control Category comprise Volume 4 of the Employee Concerns Special Program Report of Findings and Conclusions. Each of the 20 reports within this volume is identified with a Part Number corresponding to its Employee Concerns Special Program report number.

PART	REPORT TYPE AND NUMBER	TITLE
40000	Category Report 40000	Category Summary and Conclusions
40200	Subcategory Report 40200	Purchasing and Requisitioning
40201	Element Report 40201-SQN	Instruments, Materials, Equipment As It Relates To Purchasing And Requisitions
40206	Element Report 40206-SQN	Material As It Relates To Purchasing And Requisitions
40300	Subcategory Report 40300	Material Control-Installation
40301	Element Report 40301-SQN	Valve Substitution As Related To Material Control
40302	Element Report 40302-SQN	Valve (Cracked) As Related To Material Control
40307	Element Report 40307-SQN	Scrapped Material As Related To Material Control
40400	Subcategory Report 40400	Storage and Handling
40401	Element Report 40401-SQN	Storage and Handling As Related To Material Control
40500	Subcategory Report 40500	Material Identification
40503	Element Report 40503-SQN	Valves (Test 70)
40510	Element Report 40510-SQN	Requisitions
40512	Element Report 40512-SQN	Containment Vessel Plate
40600	Subcategory Report 40600	Quality Of Materials
40700	Subcategory Report 40700	Procedural Control
40703	Element Report 40703-SQN	Heat Code as Related To Material Control
40705	Element Report 40705-SQN	Quality Receiving Unit
40709	Element Report 40709-SQN	Material Personnel-Search For Defective Material
40800	Subcategory Report 40800	Training

APPENDIX B EVALUATOR PROFILES

The following is a brief professional profile of the evaluators and other key personnel who assisted in the evaluation of the employee concerns within the Material Control Category.

Jack L. Howard, Category Group Head (From July 20, 1987 through Present)

B.S., Civil Engineering, University of Kentucky. Over 17 years experience as a Civil Construction Engineer and manager, including nine years as an engineer or manager in TVA's nuclear construction organization.

Joseph R. Inger, Category Group Head. (Through July 19, 1987)

B. S., Mechanical Engineering, Tennessee Technological University. Over 15 years experience with the TVA nuclear organization. Presently Supervisor of Codes and Standards Section at Watts Bar, with previous experience in mechanical and instrumentation systems checkout and preoperational testing, Quality Assurance/Quality Control functions, material control programs, project engineering, and other similar functions.

Roy E. Grimes, Sr. Evaluator

B.S., Mechanical Engineering, University of Tennessee. Over 16 years experience as a Mechanical Engineer in TVA's nuclear organization. Has worked on Sequoyah, Hartsville, Phipps Bend, and Watts Bar Nuclear Plants. Experience includes piping and equipment design, material specification, bid evaluation, material inspection, system maintenance, outage repairs, and preoperational testing.

Billy J. Hensley, Evaluator

B.S., Electrical Engineering, University of Tennessee at Chattanooga. Over 17 years as an Electrical Engineer and manager in TVA's nuclear organization. Performed preoperational testing of systems at Watts Bar and monitored construction activities for proper equipment and installation. Performed field test work for Power Systems Operations at Browns Ferry involving protective relays and circuit breakers and worked on the environmental qualification program at TVA Nuclear Power. He was responsible for installation and maintenance of certain electrical equipment at Sequoyah, including requisitioning and verification of materials and equipment.

Charles W. Hutzler, Assistant Category Group Head, Evaluator, Peer Reviewer

B. S., Civil Engineering, West Virginia Institute of Technology. Registered Professional Engineer, Tennessee. Over 12 years experience with TVA's nuclear organization, with specialized experience in material control, quality assurance and NRC audit deficiency resolution, quality records program implementation, and quality installation of seismic pipe supports. He was previously assigned to the Watts Bar Compliance Licensing Unit.

Joseph P. Nieman, Evaluator

B.S., Civil Engineering, University of Cincinnati. Six years experience in the TVA nuclear construction organization, primarily engaged in field engineering of pipe support installations. His responsibilities have included review and revision of procedures, verification and traceability of installed material, field redesign of pipe supports, and coordination of seismic pipe support installation criteria with other functional groups.

Donald R. Owen, Evaluator

Over 17 years experience in fabrication and construction activities as a sheetmetal craftsman and engineering associate. Served as an engineering associate in the hanger engineering unit at two TVA nuclear sites during the past nine years.

Richard A. Proffitt, Evaluator

Mechanical Engineering undergraduate studies at Tennessee Technological University (1 year) and Roane State Community College (2 years), and two years of Mechanical Design training at State Area Vocational Technical School. Presently an Engineering Associate with over 11 years experience in TVA's nuclear organization. His experience includes mechanical maintenance inspection, piping design, application of nuclear codes and standards, procurement specifications, and contract administration for a variety of equipment purchase contracts.

Reynolds H. Riddle, Evaluator

Assistant Steamfitter Superintendent for the past seven years and a certified welder since 1971. He has 14 years experience in TVA's construction organization. His experience includes rigging, pipefitting, pipe welding, and material expediting as well as supervision of those functions.

Fredrick K. Smith, Evaluator

Business courses, Steed College, Kingsport, Tennessee (1 year). Over 10 years TVA service, with eight years as a Material Inspector in Construction Quality Control. His experience includes receipt, issue, and preventive maintenance functions of quality material; review of procurement contracts to ensure vendor compliance; and inspection of material to ensure proper identification, handling, and storage.

Michael P. Waycaster, Evaluator

B.S., Environmental Health, East Tennessee State University. Certified by TVA Division of Nuclear Construction Quality Assurance Program in Warehouse Receiving, Storage Inspection, Preventive Maintenance, and Mechanical Quality Control Inspector. Over seven years TVA experience, serving as a Health Physics Technician at Watts Bar and Sequoyah since 1983. He was previously an Engineering Aide and gained three years experience in Material Control, including receiving inspections, preventive maintenance, and storage inspections of permanent plant material and equipment at Phipps Bend Nuclear Plant and Mechanical Quality Control Inspections at Bellefonte. His inspection responsibilities at Bellefonte included material storage, traceability, installation, and testing.

John U. Weishaupt Jr., Evaluator

Technical and welding training, Knoxville Area Vocational School (1 year). Assistant Steamfitter Superintendent with 11 years in the Watts Bar construction organization and over 16 years with TVA. His primary experience is in fabrication, welding, and erection of piping systems and hangers; installation of underground piping; material requisitioning; and planning, scheduling, and coordination functions.

Mark Wiley, Evaluator

A.S., Mechanical Engineering, State Technical Institute, Memphis, Tennessee. Presently pursuing B.S. in Mechanical Engineering at the University of Tennessee at Knoxville. Over seven years experience in TVA's nuclear organization, with five years as an Engineering Associate. His experience includes work in nuclear codes, standards, and materials; design and drafting of mechanical systems such as piping, sleeves, and hangers; preparation of bills of material; revisions of general construction specifications; and verification of material usage in accordance with material specifications.

James E. Workman, Evaluator

A.S., Electrical Engineering, Bluefield State College, Bluefield, West Virginia. He is a Nuclear Engineering Associate with experience in electrical systems design, project control coordination, scheduling, and cost estimating. He has been with TVA for 13 years.

APPENDIX C

SUBCATEGORY REPORT OVERVIEWS

This appendix is an overview of the seven subcategory reports published by the Material Control Category Evaluation Group. The discussions of each subcategory include the issues raised by the concerns, and primarily address findings on issues that identified a problem or led to the identification of a problem, and corrective action plans for the identified problems. Issues not discussed individually in this appendix did not identify problems requiring action as a result of Employee Concerns Special Program evaluations.

Of the 62 issues evaluated, 33 did not identify problems requiring action. Seven of the remaining 29 issues cited problems that had been identified and corrected through existing programs prior to the Employee Concerns Special Program. Fifteen issues were found to be factual, either fully or in part, and identified problems requiring action. The remaining seven issues were not factual. In the course of the evaluations, other problems requiring action were discovered.

Subcategory 40200 - Purchasing and Requisitioning

The Purchasing and Requisitioning subcategory evaluated eight issues alleging that: (1) components and materials procured for a specific plant, unit, system, etc., were being used (transferred) elsewhere without proper documentation; (2) code material was supplied by an uncertified vendor; (3) material requisitions were improperly prepared; (4) vendor (Westinghouse) items were removed from the Watts Bar site and altered without documentation; (5) materials of questionable quality were being purchased; (6) materials are transferred from other TVA sites to Watts Bar, but these other sites are not on the Watts Bar approved vendor list; (7) nondestructive examination materials were not being procured as safety-related items at Bellefonte; and (8) fire protection equipment was furnished without a Certificate of Compliance.

Issue (1) - Evaluation of the issue regarding transfer of material to a different location led to identification of a documentation deficiency at Sequoyah. A Corrective Action Report had been written to deal with documentation retrievability. Of thirty-four transfer requisitions evaluated for materials transferred to Sequoyah from Watts Bar, 13 were missing some documentation. However, all except two missing documents were retrievable at Watts Bar, and Sequoyah had adequate procedures for receipt inspection to ensure that documentation is properly completed. Sequoyah had initiated a search for all missing transfer documents, including those listed on the Corrective Action Report. Any material for which documentation was not found was to be evaluated to ensure plant integrity. Procedures were revised to disallow transfer of any Quality Assurance Level material that is not fully traceable to its original procurement document.

Issue (2) - The uncertified vendor issue was factual at Watts Bar in that a lower-tier supplier to the vendor was not certified to provide code material. However, the issue had been identified and resolved before the employee concern evaluation. In 1983, the NRC issued Inspection and Enforcement Bulletin (IEB) 83-06 to inform utilities that "nonconformities" existed in material obtained from Tube-line (vendor name). In response to IEB 83-06, TVA identified that the material in question came from Tube-line through Capitol Pipe and Steel Products Company and was supplied only to Watts Bar Nuclear Plant. This material was for use in the Steam Generator Blowdown System and the Essential Raw Cooling Water System. The material installed in the Steam Generator Blowdown System was replaced. The material installed in the Essential Raw Cooling Water System was tested at 10 times design pressure with no failure and was determined to be acceptable for that system. The test was performed on the material in the Watts Bar fabrication shop. (This issue was also addressed in Subcategory 40300, Installation.)

Issue (7) - All nondestructive examination materials at Bellefonte had been procured as safety-related except in one case. However, the supplier had fulfilled the Quality Assurance requirements of the procurement. Additionally, the governing Quality Assurance Program Procedure had been revised, prior to this evaluation, to require future procurement of nondestructive examination materials to meet safety-related criteria.

Subcategory 40300 - Installation

The Installation subcategory addresses 10 issues concerning installed materials. The issues alleged that: (1) valves are substituted without revising drawings; (2) a valve on unit 1 pressurizer is cracked; (3) pipe fittings have low tensile strength; (4) pipe fittings do not have nondestructive examination reports; (5) material from an uncertified vendor is installed in the steam generator blowdown system; (6) electrical cable was issued from the warehouse without vendor certification documentation; (7) previously scrapped material has been retrieved from the scrapyard and installed in the plant; (8) Westinghouse material was received at Watts Bar without proper documentation; (9) two different pipe sizes have the same heat number; and (10) poor quality structural steel beam containing laminations (cracks and splits) was found in a non-code system and all of it may not have been identified and removed.

Issue (1) - At Watts Bar, valves had been substituted for those specified on drawings without the required document changes. A Significant Condition Report was initiated to document this condition and ensure corrective action. Unit 1 safety-related valves were to be evaluated to ensure they satisfy design requirements and are correctly identified in design and as-constructed documents. Engineering was to provide requirements for implementation into design, construction, and maintenance procedures to control valve replacements and substitutions to maintain the design baseline.

Issue (3) - Fittings with Heat Code M-157 have a tensile strength, as recorded on the Certified Material Test Report, that is below minimum requirements, and some of these fittings are installed at Watts Bar. A retest had been performed on this material and the

retest showed that the material meets requirements. However, documentation of the retest was not available at Watts Bar. A Nonconformance Report was issued to require acquisition of a corrected Certified Material Test Report from the manufacturer. This action was completed.

Issue (5) - The uncertified vendor issue was factual at Watts Bar in that a lower-tier supplier to the vendor was not certified to provide code material. However, the issue had been identified and resolved before the employee concern evaluation. In 1983, the NRC issued Inspection and Enforcement Bulletin (IEB) 83-06 to inform utilities that "nonconformities" existed in material obtained from Tube-line (vendor name). In response to IEB 83-06, TVA identified material that came from Tube-line through Capitol Pipe and Steel Products Company. This material was for use in the Steam Generator Blowdown System and the Essential Raw Cooling Water System. The material installed in the Steam Generator Blowdown System was replaced. The material installed in the Essential Raw Cooling Water System was tested at 10 times design pressure with no failure and was determined to be acceptable for that system. The test was performed on the material in the Watts Bar fabrication shop. (This issue was also addressed in Subcategory 40200, Purchasing and Requisitioning.)

Issue (7) - Evaluation of the scrapped material issue at Watts Bar found that there is a lack of control of material sent to the scrapyard and no mechanism is in place to prevent this material from being used in the plant. This could result in material being installed in the plant that had not been stored in accordance with requirements. Nonconformance reports have been initiated at Watts Bar requiring engineering evaluation of items retrieved from the scrapyard and installed in the plant. Watts Bar and Sequoyah are revising procedures to control material. They are purging field storage areas to minimize the availability of questionable material. Procedures will be put in place to adequately control material. A corporate corrective action plan that will further strengthen controls at all four plants has been developed. ONP Standard 1.2.28, 'Saleable Scrap - Identification, Segregation, Storage, Control, and Sale,' which will supersede the present procedure, DPM N72A14, section II, part II, 'Saleable Scrap - Sale, Grading, Segregating, Storage, and Control,' will be written to define the requirements and responsibilities for the control of scrapped material at all TVA nuclear facilities. The standard will regulate the handling of scrap or retired material from the work area through the removal from the site.

Issue (10) - A section of steel beam containing laminations was found at Watts Bar, and some material with the same heat number was allowed to remain installed. However, when this section of beam was found, a Nonconformance Report was issued to identify and correct the condition. Engineering performed an evaluation and determined that the material was acceptable except where the lamination interfered with constructability.

Subcategory Report 40400 - Storage and Handling

The Storage and Handling subcategory addresses issues pertaining to the storage and handling of material from receipt until installation. Eleven issues alleged that: (1) storage facilities do not provide adequate storage environments, (2) instruments, hanger material, snubbers, junction boxes and thermo lag insulation material are not stored in appropriate nuclear storage areas, (3) protective covers and seals are not maintained on conduit and pipe ends, (4) austenitic stainless steel is stored and transported in contact with carbon steel, (5) safety-related and nonsafety-related materials are not adequately separated to prevent inadvertent mixing and installation of incorrect material, (6) heat numbers marked with ink on half-inch stainless steel instrumentation pipe sometimes rub off, (7) handling practices result in damaging material and equipment, (8) material in storage is not correctly listed on warehouse ledger records, (9) material is issued to the field before receiving proper receipt inspection, (10) warehouses at all four nuclear plants do not have adequate fire protection, and (11) maintenance and storage practices were inadequate before 1984.

Issue (1) - Overall, storage facilities at the sites were generally acceptable, although occasional deviations were identified at all sites. Browns Ferry had a significant number of inadequate storage facilities but the Power Stores Unit was engaged in a major storage facilities upgrading program. At Watts Bar, occasional deviations have been noted and corrected by Housekeeping Inspections. The most notable deviation was a previous practice of storing instruments in gang boxes (large metal toolboxes utilized in the field) and in a mini-warehouse that was not a designated storage area. Construction agreed with a recommendation to upgrade the conditions in the mini-warehouse sufficiently to designate it as a Level B storage area. At Sequoyah, Hut 11, an indoor storage building, had several leaks in the roof and storage yards were only partially covered with gravel, were not well drained, and had high weed growth. Hut 21, used for storage of flammable paints and materials, was found in poor condition. A Corrective Action Report had been initiated to establish minimum storage requirements for paint materials and determine if Hut 21 meets the minimum requirements. The Hut 11 roof and storage yard conditions were corrected in response to these findings. At Bellefonte, some storage yards were not well drained or adequately covered with gravel or pavement. Also, a Level C storage shed had a leaking roof and was open at one end. In response to these findings, site management committed to rework some storage yards and stated that repairs had been made to the leaking shed roof.

Issue (2) - Most stored items were in the appropriate storage areas with only a few exceptions at Watts Bar. Problems with improper storage of instruments had been previously identified and corrected. Snubbers had been properly stored, but since a large number of snubbers had been damaged, it was determined that a Quality Control Instruction should be developed at Watts Bar to delineate the requirements for handling and installation of snubbers.

Issue (3) - Although several cases of missing protective covers and seals were found during walkdowns of storage facilities at all sites, most items with sensitive internal surfaces were appropriately protected. The most notable exceptions were austenitic stainless steel fittings.

Most of the missing covers and seals had originally existed but had popped off due to conditions such as ambient temperature changes and deterioration of the covers. Corrective action for this issue varies among the sites, depending on the specific nature and extent of the problem at each site. However, the actions specified by each site will ensure that caps and seals are replaced where required and other appropriate action will be taken to comply with cleanliness standards. The current acceptance standards for cleanliness of both internal and external surfaces are defined in TVA General Construction Specifications G-39 and G-29.

Issue (4) - Isolated cases were found where austenitic stainless steel was stored in contact with carbon steel; however, it was not a common practice. Additionally, an evaluation of the consequences of such contact, conducted at Browns Ferry, concluded that no significant effects were expected over the lifetime of the plant.

Issue (5) - After issue from the warehouse, material was not always kept in proper storage environments nor segregated sufficiently to prevent inadvertent installation of nonsafety-related material in safety-related systems. This problem was found at all sites. Some organizations have compounded this problem by retaining excess, surplus, and cannibalized material for possible future use without any control. The Manager of Nuclear Power has directed that safety-related material be returned to warehouse or Power Stores control and that controls be established for nonsafety-related material to prevent its use in safety-related applications.

At the storage facilities observed, segregation of safety-related (primarily loose pressure boundary piping material) and nonsafety-related material was not always maintained in compliance with procedures (all sites). Also, safety-related and nonsafety-related piping material had been received at Watts Bar with the same identification markings and heat numbers. Procedures governing segregation of material appeared to be adequate at each site: the occasional deviations stemmed from noncompliance with procedure requirements. Corrective actions varied among the sites, but all were directed toward improving identification of shelves and bins and labeling of materials. Additional discussions of this issue can be found in Subcategory 40500, Material Identification, and Subcategory 40700, Procedural Control, which also describe corrective action plans initiated to address potential problems with installed pressure boundary piping material.

Subcategory 40500 - Material Identification

The Material Identification subcategory addresses issues regarding material marking as required by upper-tier documents and site procedures. The concerns raised 15 issues: (1) adequacy of marking and storage of ASTM A-307 bolting material; (2) unapproved paint markers used on stainless steel; (3) uncontrolled removal and replacement of valve identification tags; (4) no heat numbers on structural steel; (5) no heat numbers and data on the steel for hangers; (6) Essential Raw Cooling Water buried pipe at Watts Bar does not have heat numbers stamped on pipe; (7) inadequate storage, issuance and traceability of small code items; (8) heat numbers missing or cut off stainless steel pipe; (9) traceability

treated differently for Engineering/Construction Level I and II materials; (10) requisitions being altered; (11) no heat numbers on HVAC duct supports; (12) heat numbers placed on plates attached to the containment vessel at Sequoyah without Quality Assurance's knowledge; (13) loss of material identification after receipt inspection; (14) no identification of Q (Quality-Related) material during storage; and (15) heat number on one end of black pipe is cut off when pipe is sectioned.

Issue (1) - Some ASTM A-307 bolting material without manufacturer's identification markings had been installed at Watts Bar. However, it had been tested and found to meet ASTM A-307 requirements prior to the Employee Concerns Special Program. Problems involving bolting identification markings had been documented by four Nonconforming Condition Reports, which resulted in the testing cited above. Several of these problems had also been identified through NRC and Institute for Nuclear Power Operations findings. Consequently, TVA had revised the applicable site procedures to prevent acceptance of unmarked bolting material and had updated the related Quality Control training programs. Storage and marking of ASTM A-307 material in warehouse and field storage areas were found to be adequate.

Issue (2) - Unapproved temporary paint markers had been used on stainless steel material at Watts Bar. This discrepancy was being corrected by removing temporary markings from stainless steel, retraining personnel on use of the correct material, removing unapproved markers to the warehouse nonconforming storage area, and revising procurement procedures to clearly specify the proper marking materials.

Issue (7) - At Watts Bar, some small code items (3/4-inch and smaller fittings) issued to craftsmen in the field were not identified adequately to determine whether they were procured for Quality Assurance or non-Quality Assurance applications. Both types of material had the same heat code numbers. Corrective action was initiated to secure the field storage trailer and eliminate field storage and issuance of such material. The material in the trailer was to be evaluated and appropriately dispositioned. Also, non-certified material in Quality Assurance systems was to be evaluated for acceptability.

Issue (12) - The allegation that heat numbers had been placed on containment vessel steel plates at Sequoyah in violation of Quality Assurance procedures was not verified; however, it was found that incorrect material had been used to fabricate one of the plates in question. Corrective action consisted of initiation of a Deviation Report to track the potential problem, metallurgical testing to verify the type of material, and initiation of a workplan to replace the plate, if required.

Subcategory 40600 - Quality of Materials

The Quality of Material subcategory addresses issues concerning the quality of materials received and installed in permanent plant systems. Three issues were raised alleging that: (1) structural steel of poor quality (e.g., laminated, delaminated, cracked, splitting) had been received for use at Watts Bar, (2) carbon steel pipe of poor quality (e.g., lamination cracks,

slag pockets, surface slag) had been received for use at Watts Bar and questionable repair practices were used on piping material, and (3) valves at Watts Bar were often reused, pitted, and/or remachined.

Issue (1) - Some structural steel shapes with material imperfections had been received for use at Watts Bar. The manufacturing processes used to produce steel shapes introduce imperfections that are manifested on the surface as indentations and/or linear indications and internally as inclusions and/or laminations. Industry standards have been established to minimize these imperfections via examination and/or repair. Acceptable imperfections (maximum allowable by industry standards) were considered and addressed by the design engineer in the material selection and specification process. Material was inspected upon receipt to ensure it met contract specifications: noncomplying material was documented and repaired, salvaged for other acceptable use, destroyed, returned, or otherwise dispositioned according to procedure.

Issue (2) - Carbon steel pipe is subject to the same controls as structural steel. Material is specified by the design engineer and inspected upon receipt for compliance. A review of the Watts Bar Nonconformance Report log revealed that linear indications on the Steam Generator Blowdown System pipe had been identified in late 1981. The system piping was subsequently replaced.

Issue (3) - No problems were identified concerning the quality of valves at Watts Bar. Procurements were according to specifications and materials were properly inspected upon receipt. Nonconformance Report records indicate that two valves had been remachined to remove defects and one valve had been replaced due to a crack in the body. This work represented appropriate resolution of nonconforming conditions as they were identified.

Subcategory 40700 - Procedural Control

The Procedural Control subcategory addresses the adequacy of procedures governing material control functions. Twelve issues were evaluated: (1) heat code as used for material control for construction, (2) heat code as used for material control for Nuclear Power, (3) allegedly changed heat numbers, (4) use of non-code material in code systems, (5) material upgrading/reclassification, (6) allegedly unvalidated heat numbers for structural steel, (7) material allegedly received by inappropriate personnel, (8) warehouse access control, (9) verification of a material discrepancy, (10) the adequacy of a search for defective material, (11) the adequacy of procedures governing storage and tracking of instrumentation materials, and (12) the adequacy of controls for the purchase and handling of nondestructive examination materials.

Issue (10) - The issue concerning a search for defective material was related to actions taken by TVA in response to NRC Inspection and Enforcement Bulletin (IEB) 83-07, "Apparently Fraudulent Products Sold By Ray Miller, Inc." IEB 83-07 was concerned with Ray Miller, Inc. materials received during the period January 1975 through December 1979. TVA was required by the bulletin to report any such material installed in a safety-related system.

along with an evaluation of its safety-related significance, and the disposition of any Ray Miller, Inc. material that remained in stock. The concerned individuals who raised this issue contended that "... materials personnel at Sequoyah were not given an opportunity to verify whether or not defective material had been received on site, from a certain manufacturer (Ray Miller, Incorporated)..." and that "... a report to Knoxville that the material was not on site was made without input from materials personnel."

No evidence was found to support the allegation that materials personnel were impeded in their search for Ray Miller, Inc. material, either at Watts Bar, where it was evaluated for generic applicability, or at Sequoyah, where the issue was raised. The allegation that a report was made to Knoxville without input from materials personnel also was not verified as factual. However, the evaluation identified inconsistencies among several documents associated with TVA's response to IEB 83-07. Separate memoranda prepared by the Director of Nuclear Power and the Nuclear Engineering Support Branch in response to IEB 83-07 differed in the amount of Ray Miller, Inc. material reported for Sequoyah. Consequently, the adequacy of TVA's past actions in response to IEB 83-07 requirements was uncertain and needed to be evaluated.

In response to this finding, TVA line management initiated a Condition Adverse to Quality Report (CAQR) that requires the Nuclear Safety and Licensing Staff to perform a thoroughly documented evaluation of TVA's past actions relative to IEB 83-07. The evaluation will determine the adequacy of TVA activities at all plants, including cancelled plants, in regard to IEB 83-07 requirements and the accuracy and completeness of the past TVA response to the NRC. If deficiencies are identified, TVA will notify the NRC that the previous IEB 83-07 response was in error and that a revised response will be submitted.

There was a differing staff opinion on the adequacy of the corrective action plan described above. The two evaluators involved with this issue wanted TVA to reperform all activities associated with IEB 83-07 requirements and submit a new, rather than revised, report to the NRC for approval. Line management's position was that this was neither necessary nor required.

In accordance with the procedures outlined in the Employee Concerns Special Program (ECSP) Program Manual, the issue was referred to the Program Manager for resolution. The ECSP Program Manager met with the parties involved to discuss the findings and the corrective action plan. Upon consideration of the issues and differing opinions, the Program Manager accepted the corrective action plan as submitted by line management.

Issue (12) - The issue alleging inadequate controls on the purchase and handling of nondestructive examination materials at Bellefonte was found to have been factual but corrective actions had been completed prior to this evaluation. Site procedures had been revised to require that nondestructive examination materials be procured as "safety-related" and construction procurement forms had been changed to require indication of the intended use of the material.

Heat Code Traceability Issues

The six issues described below were found to be factual at the sites indicated. They are presented here as a group because of their close relationship to one another in terms of causes and required corrective actions. These issues are discussed collectively following the individual issue discussions.

- Issue (1) - Heat code as used for material control by Construction (Watts Bar, Sequoyah, and Bellefonte) – The concerned individuals contended that there was a lack of credibility in the use of the Heat Number Sort Printout for verification of properly certified pressure boundary material at installation during the Construction Program.
- Issue (2) - Heat code as used for material control by Nuclear Power (Watts Bar, Sequoyah, and Browns Ferry) – The concerned individuals contended that there was a lack of credibility in the use of the Heat Number Sort Printout for verification of properly certified pressure boundary material at installation by Nuclear Power (post-construction maintenance, modifications, and additions).
- Issue (4) - Use of non-code material in code systems (Bellefonte, Sequoyah, and Watts Bar) – The concerned individuals alleged that some non-code material was used in certain areas of Watts Bar Nuclear Plant. This issue was found to be valid at the sites indicated based on the findings from evaluation of the heat code issues noted above and the material upgrading/reclassification issue that follows.
- Issue (5) - Material upgrading/reclassification (Watts Bar and Bellefonte) – The concerned individuals contended that there was a lack of credibility in the methods used for upgrading and reclassifying pressure boundary material.
- Issue (6) - Unvalidated heat numbers for structural steel (Watts Bar and Sequoyah) – The concerned individuals alleged that heat numbers for structural steel may be entered into the "log book" without the required Certified Material Test Reports being in the records storage vault. This issue was verified in the course of evaluation of the heat code issues described above.
- Issue (11) - Adequacy of procedures governing storage and tracking of instrumentation materials (Watts Bar) -- The concerned individual alleged that parts stored in the Turbine Building Storage Area are not controlled by a procedure and that no tracking/documentation of instruments and/or associated parts exists. This concern had been previously addressed by the Nuclear Power Instrumentation Maintenance Section supervisor and corrective action had been completed prior to this evaluation.

In the course of evaluation of this issue, evaluators found that some tubing with incorrect materials certification documentation had been received and installed. Further investigation revealed additional problem areas where the correct material identification markings were not transcribed onto the material tags and storeroom requisitions by the Power Stores clerk. A review of site procedures indicated that the Power Stores clerk is the designated individual responsible for transcribing the markings. The procedures do not specifically require that a Quality Assurance inspector verify material identification at the time of issuance or at the point of installation.

Collectively, the evaluations of the above six issues identified an overall deficiency in procedural control of functions related to traceability of pressure boundary material. In general, material control procedures at Watts Bar, Bellefonte, and Sequoyah Nuclear Plants did not ensure full compliance with regulatory requirements regarding verification and traceability of pressure boundary material. The material in question was primarily 2 1/2-inch diameter and smaller piping and fittings received by TVA as loose material and installed during the construction phase. (Most larger material was received as prefabricated piping spools or subassemblies, clearly marked and designated for specific use. Very little loose material larger than 2 1/2-inch was used.) Basically, the overall problem is one of documentation deficiencies, with the potential for hardware deficiencies.

Governing upper-tier documents require that certain pressure boundary material be marked in such a manner as to provide traceability to the reports of all tests and examinations performed on the material. Positive controls are required to ensure proper handling and to maintain identification, either by markings on the material or by records traceable to the material, throughout fabrication, erection, installation, and use. The intent of material identification and control measures is to prevent the use of incorrect or defective material, parts, and components in ASME code systems.

Watts Bar, Bellefonte, and Sequoyah have generally used the "heat" number (or heat code) to verify the identification of material (the heat number is the "lot" or batch number assigned by the manufacturer to identify material produced by a specific manufacturing "run"). However, material from the same heat is often supplied for different code classes: the difference between classes of material is the extent of tests and examinations required for certification. Therefore, the heat number does not, by itself, verify the code class of material.

The Final Safety Analysis Reports (FSAR) for Watts Bar, Sequoyah, and Bellefonte did not clearly define the applicable Code of Record for nuclear class piping systems. Site procedures did not provide adequate methods for the required verification of properly certified pressure boundary material and traceability to the Certified Material Test Reports (CMTR) throughout fabrication, erection, installation, and use. Personnel at Watts Bar and Sequoyah were relying on heat numbers; however, heat numbers are not unique to a specific nuclear class material and do not provide positive material identification and traceability. At Bellefonte, the mark number system in use did not ensure the proper material was installed and did not provide traceability to the CMTR. Additionally, Quality Assurance

requirements for material identification and storage were not adequately defined in the general/plant construction specifications; and therefore, requirements and commitments were not being met.

Browns Ferry was generally in compliance with material control requirements for the duration of the construction phase. However, site procedures were deficient in some areas of material control and identification during post-construction modifications and maintenance until 1980. Since 1980, most procedures have been adequate to ensure compliance with requirements. In response to these findings, Browns Ferry reviewed some of their post-construction material control documentation. The review found that, even though site procedures had been inadequate during the period, personnel had maintained proper material identification and control throughout receipt, storage, and installation. The few discrepancies found were isolated instances for which corrective actions have been assigned.

The absence of some traceability does not necessarily mean that unsuitable material has been installed. Potential impact on plant safety is minimized by construction, preoperational, and startup tests and by ongoing surveillance and inspection programs during plant operation. Nevertheless, corrective action is needed to ensure the adequacy of installed pressure boundary material.

A total of 45 corrective actions were initiated to address deficiencies identified by evaluations reported in this subcategory. Corrective actions for specific deficiencies vary according to the requirements of each site's Code of Record. Generally, Watts Bar, Bellefonte, and Sequoyah will review upper-tier criteria and revise their Final Safety Analysis Reports as necessary to ensure commitments are accurately specified.

The Division of Nuclear Engineering has initiated a Specification Improvement Program to upgrade the TVA nuclear engineering specifications. A set of Master Specifications is being developed to incorporate the top level engineering requirements under the control of the DNE discipline branches. Specific site applications of the Master Specifications will be contained in site-specific Engineering Requirements Specifications. The Master Specifications, MS-NEB-001, 'Safety-Related Piping Installation, Modification, and Maintenance,' and MS-NEB-15 'Procurement, Storage, Installation, Modification, and Maintenance of Materials,' will document the TVA requirements relative to the Material Control Category CATDs. Development of these specifications will be coordinated with the sites to ensure the resolution of the material control requirements deficiencies identified by Employee Concerns Special Program Evaluations.

Implementation of the specifications will be controlled in accordance with the Nuclear Procedures System (NPS) requirements. An NPS standard is being developed to provide interdivisional control of implementation of the specifications throughout the Office of Nuclear Power. The standard will be developed by the Division of Nuclear Engineering and coordinated with all divisions for their review and concurrence. The standard will govern all procedures involved in procurement, fabrication, construction, modification, and

maintenance activities at each plant. User organizations will be required by the standard to maintain compliance with Engineering Requirements Specifications as they are revised over time.

TVA will use statistical sampling programs at Watts Bar, Bellefonte, and Sequoyah to demonstrate the adequacy of presently installed pressure boundary material. The sample will be of sufficient size to provide a high degree of confidence of the suitability for service of the material. Material in that sample that is not adequately traceable will be physically tested, inspected, or otherwise analyzed to determine compliance with requirements. Material that does not meet code, design, or regulatory requirements may be further analyzed or tested to determine if it is suitable for service. Unsuitable material will be replaced as appropriate.

Two of the evaluators involved in this subcategory did not concur with certain elements of line management's corrective action plans that responded to four issues at Sequoyah and Watts Bar. One of those areas of disagreement (concerning Ray Miller, Inc. material) was discussed earlier in this overview. The remaining three areas are briefly discussed below.

A deficiency had been identified at Sequoyah with regard to the adequacy and reliability of TVA's Heat Code Traceability Program. The proposed corrective action included a statistical sampling program, as previously discussed, to demonstrate the adequacy of installed pressure boundary material. The evaluators wanted TVA to commit to review all nuclear class piping components and notify the NRC in writing that installed pressure boundary material does not comply with code and regulatory requirements. They would not accept the proposed corrective action, i.e., statistical sampling and suitability for service evaluations, unless TVA committed to obtain prior approval for the corrective action plan from the NRC.

The Division of Nuclear Engineering at Sequoyah felt that prior NRC approval of the corrective action plan was neither necessary nor required, nor was it consistent with standard accepted practices. Normal procedure is to inform the NRC of the existence of a significant reportable condition and of TVA's plans for correcting the condition. The evaluators still would not accept the corrective action plan and the matter was subsequently referred to the Manager of Nuclear Power for resolution.

To resolve the issue, the Manager of Nuclear Power contracted with two nationally recognized experts in quality assurance and code material application for nuclear power plant construction to evaluate the issue and make recommendations. Richard B. Kelly, Vice President and Director of Quality Assurance, Stone and Webster Engineering Services, and Don F. Landers, President, Teledyne Engineering Services, provided an independent assessment of the heat code traceability issue at Sequoyah. Their findings and conclusions, which were in agreement with TVA's original plan to use statistical sampling, are described in the Executive Report on Heat Code Traceability Issues at Sequoyah Nuclear Plant by R. B. Kelly and D. F. Landers, dated April 21, 1987. The Manager of Nuclear Power accepted

the Kelly-Landers conclusions and concurred with line management's proposed corrective actions. However, the evaluators did not agree with the use of Kelly and Landers, the Executive Report findings, or the corrective action plans.

Watts Bar Nuclear Plant also had deficiencies with regard to the adequacy and reliability of the Heat Code Traceability Program. The deficiencies were similar to those found at Sequoyah; thus, the proposed corrective actions were essentially the same. The two evaluators (noted above) would not accept the Watts Bar corrective action plan for the same reasons they would not accept the Sequoyah corrective actions. The evaluators again wanted TVA to perform a 100-percent review of installed pressure boundary material and inform the NRC in writing that installed material does not comply with code and regulatory requirements. Alternatively, they wanted TVA to obtain NRC approval of the corrective action plan before performing less than a total review.

Employee Concerns Special Program management concluded that the corrective action plan for Watts Bar was adequate based on the similarity of the corrective action plan for this issue at Sequoyah. Also, the Condition Adverse to Quality Reports initiated for Watts Bar and Sequoyah were designated "significant" and will be forwarded to the NRC, as will the Employee Concerns Special Program reports. Therefore, the corrective action plan was accepted by the Employee Concerns Special Program without the concurrence of the two noted evaluators.

At Sequoyah, the issue that heat numbers for structural steel may be entered into the Sequoyah "log book" (Heat Number Sort Printout) without Certified Material Test Reports being in the record vault had been verified as factual. The evaluation found that the Heat Number Sort Printout and the heat number validation process used for heat number documentation accountability and retrievability were not sufficiently controlled by Quality Assurance procedures. The evaluation identified heat numbers in the printout for which Certified Material Test Reports were not readily retrievable. Sequoyah line management responded, in a Corrective Action Plan, that the situation did exist at Sequoyah but that it was not a problem requiring corrective action. Line management explained that the Heat Number Sort Printout is not used for installation verification of civil items, structural shapes, or plates. Additionally, the Certified Material Test Reports previously reported as missing had since been located. The Corrective Action Plan cited the Kelly-Landers Executive Report and the Heat Code Traceability Task Group final report as the basis for part of the corrective action response.

The two previously noted evaluators did not agree with the line management response for this issue. Their primary reason for disagreement was that the Kelly-Landers Executive Report and the Heat Code Traceability Task Group final report, both of which had been generated in response to the heat code traceability issue at Sequoyah, had been used as the basis for parts of the corrective action response. The evaluators felt that since they had not agreed with the findings of those two reports, they could not accept a corrective action plan based on those findings.

Employee Concerns Special Program management accepted line management's corrective action response. The Sequoyah element report for this item was issued without the signatures of two evaluators.

As a result of additional information being provided to the Sequoyah Employee Concerns Program after the Employee Concerns Task Group evaluation, subjects related to the structural steel validation issue are being evaluated and reported on by the Employee Concerns Program. Any additional findings on these related subjects will be addressed at that time.

All three of the Sequoyah element reports for these issues have been reviewed and approved by the NRC, who was aware of the evaluators' positions on each issue. The NRC did not request any changes to the reports or to the corrective action plans. Employee Concerns Special Program management is confident that all issues in this subcategory have been addressed. Therefore, the subcategory report, with respect to these issues, was approved by Employee Concerns Special Program management and issued without the signatures of the two evaluators.

Subcategory 40800 - Training

The Training subcategory addresses issues related to the adequacy of training of personnel engaged in material control activities. Three issues were evaluated concerning training for (1) warehouse personnel, (2) personnel who perform receipt inspections, and (3) persons authorized to sign Nuclear Power Stores Requisition (TVA Form 575). These issues were applicable only to Watts Bar and none were verified as factual.

Issue (1) - Warehouse personnel were given on-the-job training before 1982 in accordance with a memorandum dated March 16, 1971. The training was informal and was recorded only on Personnel Service Reviews (TVA Form 3031). Formal training records documented after 1982 reflect procedural training. There were no requirements for personnel to be certified on procedures. Watts Bar construction, in a previous response to an employee concern, recognized that the training program could be strengthened and committed to a formal program with written exams, subject to approval by the Division of Personnel.

Issue (2) - Persons performing receipt inspections at the Watts Bar construction warehouse before the receiving unit was established in 1982 were required to be trained and certified. Formal certification began in early 1975. There is also a training and certification program for Nuclear Power personnel who perform receipt inspections at Watts Bar Power Stores.

Issue (3) - The approval of Nuclear Power Stores Requisition (TVA Form 575) does not require special training. Power Stores personnel who issue material are required to be trained and certified. Their responsibilities include verifying that the requisitions contain the correct Quality Assurance level of material and that the correct material is issued.