REPLACEMENT ITEMS PROGRAM
(RIP)
CORRECTIVE ACTION PROGRAM PLAN

WATTS BAR NUCLEAR PLANT

REVISION 4

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REVISION LOG

Revision Level	Date	Affected Pages	Description of Revision
0	12/01/88		
1	12/12/88	Cover	
2	08/02/89	3, 4, 9	Revised method for evaluation of inventory and maintenance installed items (Sections 4.1.2 and 4.1.3). This included: (1) the addition of seismic sensitive devices, ASME parts, inventory Release Tracking Log, testing review, and commodity justification and sampling, (2) the deletion of Conditional Release Log review and installed item sample, and (3) the temporary suspension of the Quality Release Program. These changes also reflected in Exhibit A and Attachments 2 and 3. TVA organizational changes reflected. Added clarification note to Exhibit B flowchart.
3	07/30/90	3, 9	Revised method for evaluation of inventory and maintenance installed items (Section 4.1.2). This revision identified a change from the inventory release program back to a quality release program for 50.49 and seismic-sensitive electrically active (SSEA) devices. Exhibit A (glossary of terms) was also revised to show this change. Organizational name changes were also made to reflect Materials Application Group (MAG) replaced Contract Engineering Group (CEG).
4		All	General revision to finalize scope of CAP

REPLACEMENT ITEMS PROGRAM
CORRECTIVE ACTION PROGRAM PLAN

1.0 INTRODUCTION

1.1 Introduction

The Replacement Items Program (RIP) Corrective Action Program (CAP) plan describes the program for resolving deficiencies with the procurement of safety-related replacement items. TVA's previous procurement activities for Watts Bar were not sufficient to prevent the installation of unreviewed and potentially unacceptable spare or replacement parts in previously qualified equipment. Some replacement components and parts were purchased as Commercial Grade, without sufficiently assuring that the items were equivalent to the original parts and/or acceptable for use in a safety-related application.

The root cause of the deficiency in replacement item procurement is that previous policies, procedures and practices did not adequately prescribe/control engineering involvement in the procurement process used to purchase replacement items. Documents that illustrate specific or general cases of deficiencies that stem from this root cause and form a basis for this CAP are listed in Attachment 1.

The WBN RIP was originally modeled after the Sequoyah Nuclear Plant's RIP. However, adjustments have been made for the differing conditions at WBN, i.e., the construction items to be included at WBN. Also, the lessons learned from the Sequoyah program have been considered, especially the generic dedication concerns expressed by the NRC (letter: Peter S. Tam to Oliver D. Kingsley, February 11, 1991). The WBN program reduces the number of items being accepted by generic processes, and incorporates the latest inputs from Electrical Power Research Institute (EPRI), Nuclear Utility Management and Resources Committee (NUMARC), and NRC Generic Letters 89-02 and 91-05 into the logic developed for the acceptance.

Attachment 2 provides a Glossary to terms used in this CAP plan.

1.2 Background

The procurement policies, procedures, and practices of TVA were shown to be suspect in the area of commercial grade items (CGI) purchased for installation into safety-related applications. These deficiencies were initially identified by TVA's Nuclear Safety Review Staff (NSRS) in reports R-84-17-NPS, I-83-13-NPS, and R-85-07-NPS. The Nuclear Regulatory Commission (NRC) cited similar deficiencies at Sequoyah Nuclear Plant (SQN) and classified them as a Potential Enforcement Finding (50-327, 328/86-61-01) because of TVA's failure to take corrective action. The NRC also identified similar concerns with control of qualified replacement parts at

Watts Bar Nuclear Plant (WBN) as an Unresolved Item (URI) 50-391/86-21-04. TVA could not confirm that sufficient review and evaluation had been performed to provide proper verification of CGIs suitability for safety-related applications. In many instances, the items were purchased as CGI under a procurement classification that implied an intended safety-related end use, without documented acceptability for dedication to the end use. In other instances, the procurement documents indicated an implied safety-related use but no such end use was intended -- which made the parts available for use in safety-related applications.

These and other concerns, at WBN and within TVA, precipitated the development of RIP. The initial CAP was generated in June 1988. Subsequent revisions were submitted as shown in the CAP revision log. The CAP listed the corrective actions TVA intended to take to resolve the deficiencies identified. As stated in revision 1, there were four areas that would be addressed: (1) current and future procurements, (2) current warehouse inventory, (3) plant-installed items via previous maintenance activities, and (4) plant-installed items via previous construction activities. This breakdown into major areas allowed unique problems of each to be addressed and solved in a effective manner. Each area is addressed below:

Current and Future Procurements

The current and future procurements area was resolved by establishing a dedicated engineering group to review and evaluate each procurement made for safety-related applications. Formed in 1987, this group was originally called the Contract Engineering Group (CEG). The group's name was changed to Materials Application Group (MAG) in 1990. In mid-1991 this group of engineers was merged with another group of engineering personnel who were reviewing and evaluating the procurements for Engineering Change Notices (ECNs) and Design Change Notices (DCNs), and became known as the Procurement Engineering Group (PEG). This group reports directly to Nuclear Engineering and is matrixed to the Material and Procurement group. The PEG is physically located at the warehouse where they can efficiently and effectively interface with the Material and Procurement personnel and with the QA group. PEG has its own series of site procedures, SSP-10.1 through SSP-10.5. The following major activities are performed by PEG:

- Performs technical evaluations
- Provides technical and quality requirements for inclusion in the procurement documents
- Identifies required testing and inspections

- Performs the acceptance of CGIs intended for safety-related applications

- Performs the technical review of bids received

- Performs technical contract administration

- Provides the technical disposition of items received which are identified as non-conforming

Current Warehouse Inventory

The current warehouse inventory addressed in the CAP is intended to mean the inventory of items currently available to support plant maintenance and construction activities. This inventory of items has been the source of spare and replacement items used by maintenance personnel, or modifications personnel doing maintenance work, since system turnovers in the 1983-1984 time period and the subsequent return of systems to the Modifications Group. This inventory material is managed and controlled by the Material Management System (MAMS) and items in this inventory are identified by a TVA Item Identification Code (TIIC).

Evaluating what was known as the "current" inventory has been complicated by the dynamic nature of the inventory. A project was initiated to evaluate the "current" inventory in early 1989 when TVA contracted with the Stone and Webster Engineering Corporation (SWEC) to perform "current inventory" evaluations for 10 CFR 50.49 items, and American Society of Mechanical Engineering (ASME) items; and with Impell Corporation to perform "current inventory" evaluations on the Seismically Sensitive Electrically Active (SSEA) devices. The SWEC and Impell evaluations were performed in accordance with the TVA procedures in force at the time.

In September 1991 TVA Quality Assurance completed an assessment (Section 9.0, Ref 5) of the SWEC and Impell evaluations in the area of commercial grade item evaluation for acceptance. The assessment report indicates the auditors felt that based upon the latest information from industry standards, the dedication packages were weak in key areas.

In May 1991, prior to the September assessment, TVA recognized the potential problems inherent in dealing with a dynamic inventory by trying to use evaluations made in 1989. In response to this recognition, TVA decided to strengthen the Quality Release Program by initiating the Material Improvement Project. This program was fully implemented June 5, 1991. After June 5, 1991, replacement items must have a Materials Improvement Project sanitization package prepared and approved before they can be issued to the plant.

To address the current inventory of material, the Material Improvement Project was chartered to "sanitize" all safety-related material, including spare and replacement parts, in the current inventory, before they could be issued to the plant. The sanitization process involves item verification, technical adequacy, QA receipt inspection, proper storage, etc., rather than administrative reviews. This is now an on-going recurrence control activity.

The Material Improvement Project Sanitization Process operates to site procedures SSP-10.5 and SSP-10.B.

Plant Installed Items via Previous Maintenance Activities

This task was established to review and evaluate spare or replacement parts issued from the Power Stores inventory to personnel performing maintenance work controlled by a Maintenance Request, Work Request, or Work package. The material installed is identified with a TIIC number, and is controlled out of the Power Stores warehouse by a TVA 575N form (TVA Nuclear Power Storeroom Requisition). The 575N forms are noted on the work documents, and the work document number is noted on the 575N, which provides an efficient cross check.

Plant Installed Items via Previous Construction Activities

This task was established to review and evaluate spare or replacement items installed from the construction warehouse inventory by personnel from the construction group. The scope of this review was limited to activities before the previously conducted system turnovers, while construction had control of the system, when construction people were maintaining the plant equipment and components, or repairing a component due to damage caused by construction activities. The Power Stores Unit commenced operation in February 1977, as the construction group turned systems over to plant operations, and has operated continuously since. Between the beginning of construction and February 1977 spare and replacement items were procured by construction personnel and provided through the construction warehouse. As systems were turned over, they came under the control of operations and (operations) maintenance groups. After system turnover, spare and replacement items were procured by maintenance personnel and issued through the Power Stores warehouse inventory. The period between February 1977 and the last system turnover in 1984, therefore, would have both construction and maintenance personnel obtaining materials. It has not been clearly established where construction installed replacement parts were drawn from, since construction could, and often did, go to the Power Stores warehouse for parts. Procedural controls in effect prevented maintenance personnel from obtaining spare or replacement parts from the construction warehouse without a documented and traceable transfer, typically on a 575N, into Power Stores.

RIP Activities That Are Complete

As of December 1991, several activities presented in previous CAP revisions, and some that are new, have been completed as follows.

- Creation of the Procurement Engineering Group (PEG) as the long-term recurrence control.

- The compilation of the Maintenance History Data Base (MHDB) which records the work documents, issue documents, procurement documents, and related test documents for maintenance work performed on system components and equipment since original system turnover.

- The implementation of the Materials Improvement Project (MIP) in 1991 to perform the evaluation of the current inventory necessary for construction to resume and continue.

- Review of the QA Level I and QA Level III packages for installed 10 CFR 50.49 replacement items.

The work left to be done is described in Section 3.0.

2.0 OBJECTIVE

The primary objective of the WBN RIP is to ensure that replacement piece parts, especially commercial grade items installed into safety-related basic components, are consistent with the previously validated environmental or seismic qualifications, and the safety-related basic component's capability to perform its intended safety functions. The WBN RIP is charged with implementing and completing a thorough and accurate evaluation of the piece parts to the above criteria and as described in this document.

In order to achieve this objective, RIP will review the information and recommendations in the NRC communications issued with regard to this subject, as well as review the results of NRC audits of other sites at other utilities.

3.0 SCOPE

The scope of the RIP has been redefined due to a better knowledge of the number and type of piece parts involved, and the activities that have been completed. The scope has been refined for more effective coverage and to enhance the level of confidence derived from the RIP activities.

Recurrence Control

Two major areas of recurrence control in the CAP have been fully implemented.

- Current and future procurements are reviewed for technical and quality requirements by PEG engineers in the procurement process.

- Current warehouse inventory is being reviewed and evaluated by the MIP engineers who prepare acceptance packages for material prior to its being made available for issue to the plant.

These areas were found to be acceptable in the September 1991 QA Assessment. Together these activities are sufficient to ensure future piece part replacements will meet all TVA and regulatory requirements.

Evaluation of Installed Items

Within the original major areas, therefore, there are two areas remaining to be addressed:

- Replacement items (piece parts) installed in the plant by previous Maintenance activities.

- Replacement items (piece parts) installed in the plant by previous Construction activities.

Within these major areas, emphasis will be placed upon the review and evaluation of commercial grade items (CGIs) installed into safety-related applications, and replacement items (QA Level I, II, and III) installed in 10 CFR 50.49 components.

Also within the scope of RIP is a task to perform a review and evaluation, on a generic basis, of the bulk commodity items found during the Maintenance Installed 10 CFR 50.49 Review task performed by a TVA contractor (Digital Engineering) in 1991. These bulk commodities meet the definitions of "commodity items" in EPRI NP-5652, "Guidelines for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications," (Reference 6) and represent the greases, thread lubricants, packing material, gasket material, miscellaneous nuts, bolts and washers, etc., used on a commodity basis in 10 CFR 50.49 maintenance activities. The evaluation of these items for acceptance and dedication to safety-related applications on a bulk basis will be in accordance with guidance found in EPRI NP-5652. Generic testing may be required for some of these dedications of bulk commodity items.

4.0 DESCRIPTION OF PROGRAM

4.1 Program Activities

As discussed in Section 1.2, Background, previous revisions of the RIP CAP have identified four distinct work activities as comprising the CAP as follows:

4.1.1 Current and Future Procurements

Current and future procurements are being addressed by PEG as an independent program which will be actively involved during the balance of construction and startup phases, and for the life of the plant operation. This activity was established for recurrence control. As indicated in Section 3.0 above, this activity is in place.

4.1.2 Current Warehouse Inventory

Recurrence controls are in place in the Materials Improvement Project to ensure only qualified materials are issued as replacement parts.

Materials received prior to June 5, 1991, must have a Materials Improvement Program sanitization package prepared prior to their release. Materials received after June 5, 1991, may be released to the plant before completion of receipt procedural processes upon authorization and approval by the Site Vice President or his designee.

4.1.3 Replacement Items Installed by Previous Maintenance Activities

4.1.3.1 Maintenance Installed 10 CFR 50.49 Items

To address the major area of "Replacement items installed by previous maintenance activities," WBN developed the Maintenance History Data Base (MHDB). This data base was developed by reviewing some 91,000 work control documents, Surveillance Instructions, and Operating Instructions. The work control documents were generated to control:

° Corrective Maintenance

° Preventive Maintenance

° Maintenance performed during surveillance testing

° Maintenance performed during plant modifications

These work control documents were issued in the time period between original system(s) turnover and January 1989, the date when the Quality Release program was implemented. The review of the work control documents was performed to determine:

1. Did the maintenance activity install parts?

2. Was the host equipment safety-related?

3. Was the host equipment subject to 10 CFR 50.49 requirements?

A "YES" answer to questions number 1 and 2 meant the work document would be added to the data base, along with other information that made several cross references possible, for example:

° MR number

° Contract number

° TIIC number

° 575N number

° Quality classification

A "YES" answer to question number 3 allowed the grouping of the 10 CFR 50.49 equipment subset for later use.

The advantage of the data base information being available up front to the installed items evaluations is that the process starts with the specific "end use," the Unique Identifier number for the host equipment, and works backward via the work document and issue document (575N) to the procurement documents. Work control or 575Ns referencing unclassified equipment, or equipment designated by a temporary identification number, would precipitate a PRO-TIIC designation in the Maintenance History Data Base (see 4.1.3.3).

This process was used to initiate the Maintenance Installed 10 CFR 50.49 Item evaluations, using the Maintenance History Data Base as the resource to identify replacement parts that were installed into host components whose Unique Identification Number indicated that they were under the requirements of 10 CFR 50.49. This evaluation program was nearly complete when the September 1991 QA Assessment was conducted. That assessment determined that the commercial grade item dedication packages prepared needed to be reworked to meet industry standards. In the area of installed replacement parts, one of the major recommendations that resulted from the September 1991 QA Assessment Report was that the WBN procedures used for commercial grade item dedications in the past by SWEC, Impell, Digital Engineering (DE), and TVA personnel, did not fully meet current industry standards. RIP management responded to this assessment recommendation by generating a totally rewritten procedure that provides the guidance necessary to prepare commercial grade item acceptances and dedications that conform to the current industry standards. This procedure is WBN SSP-10.C, "Evaluation of Installed Safety-Related Replacement Items. It was written to agree as much as possible with the site procedure SSP-10.5 used by PEG for current procurements, but with the differences necessary to perform the look-back type evaluation RIP has been chartered to perform. The procedure was reviewed and commented on by two of the co-authors of EPRI NP-5652 (Reference 6), and their comments incorporated. The procedure has been issued and is currently in use. A comprehensive training program that presents the current EPRI commercial grade item dedication philosophy and how it interfaces with WBN SSP-10.C, using SSP-10.C forms, was also developed by the co-authors of EPRI NP-5652. Engineers who will perform RIP evaluations are required to complete this two-day training program prior to doing RIP related work.

A second procedure is being generated as a desk top instruction to address the rework of the packages prepared to evaluate the Maintenance Installed 10 CFR 50.49 Items. This desk top instruction will be WBN Procedure SSP-10.D, "Reevaluation of QA Level III PPSP Packages." It provides the guidance necessary to bring the commercial grade item dedication evaluations previously prepared into conformance with industry standards and provides special assistance for the 10 CFR 50.49 review effort. The engineers assigned to prepare the revised packages for the 10 CFR 50.49 evaluations receive training to this procedure. The Maintenance Installed 10 CFR 50.49 Item evaluation packages are currently being revised in accordance with new site procedures SSP-10.D and SSP-10.C.

4.1.3.2 Release Tracking Log Items

The evaluation of a second population of "maintenance installed" replacement parts has been added by this revision to the RIP CAP. In 1989 WBN instituted a Quality Release Program that required all material to have a CEG evaluation package prepared before the material could be issued to the plant. Previously, in late 1988, WBN had contracted with SWEC to evaluate the "current inventory" at WBN. In order to deal with a developing backlog of quality release packages, a decision was made that since SWEC was evaluating the material, it would be acceptable to track the issuance of the material to the plant in a Release Tracking Log, and issue the material without a package. The possibility of rework was understood if SWEC should subsequently find the material unacceptable. The tracking log provided a means to locate the material so it could be removed and replaced in the plant. Eventually, however, SWEC's scope of work was reduced to evaluating only the 10 CFR 50.49 and ASME items in the inventory, and most of the 5516 line items in the Release Tracking Log still require evaluation. This population was identified in the September 1991 QA Assessment Report. WBN management recognized that this population must be evaluated and added it to the scope of RIP. RIP will be evaluating these 5516 line items in accordance with site procedure SSP-10.C.

4.1.3.3 TIIC Inconsistencies

A third population of maintenance installed items that will be reviewed are approximately 1000 incomplete TIIC items listed in the Maintenance History Data Base and called PRO TIICs. These items identify inconsistencies with the correlation of TIIC number on the Maintenance Request number and/or 575N number. These items resulted from in-process reviews of data by the clerks reviewing the document for inclusion into the data base. They were inconsistencies that required some investigative work by an engineer knowledgeable in the process to resolve exactly what the TIIC number is, or what the material really is. Many involve the simple transposition of the alpha-numeric elements of the TIIC number so that what shows up on the MR or 575N or contract is an invalid TIIC number, or a TIIC number associated with material obviously incompatible with the description and other data on the MR. Other examples of difficulties were that the TIIC number was not legible, not complete, or missing.

The actual TIIC number for these PRO TIICs must first be identified before any further review for inclusion is possible. Those that are actually 10 CFR 50.49 or commercial grade items installed into safety-related components will be added to the scope of RIP. They will be evaluated in accordance with site procedure WBN SSP-10.C.

4.1.3.4 Quality Level Determinations

In the populations of maintenance installed replacement items issued through the Power Stores inventory (TIIC items) a major part of the evaluation is to determine the correct quality level. During the 1984-1988 time period, there are instances where material was procured as

QA Level II (see definitions) if it was considered that there were any "Safety-related" use possibilities. In other cases material was procured as QA Level II for economic reasons. The result of these actions was that nearly 60 percent of the procurements in that time frame were made as QA Level II and dedication processes for the QA Level II items were not acceptable.

As the evaluations are performed, there are expected to be a significant number of upgrades (QA Level II [CGI] to QA Level I) and downgrades (QA Level II [CGI] to QA Level III).

The first determination of an evaluation is normally the "Safety Classification" of the host component, and then the impact of the replacement item in a failure mode analysis. For replacement items that are not 10 CFR 50.49, if the evaluation determines that the failure of the replacement part will not impede or degrade the host component's capability to perform its intended safety function, then the replacement item will be declared QA Level III and will be acceptable based upon part number and receipt inspection. The Material Management System data base, and all other documentation related to the item will be downgraded to reflect the new QA Level III classification. The only QA Level III replacement items that will be fully evaluated under the RIP program are those that in addition to being safety-related are also 10 CFR 50.49. There will be a 100 percent evaluation of the 10 CFR 50.49 replacement items installed by previous maintenance activities. Therefore, even if a 10 CFR 50.49 part is downgraded to QA level III, that part will still be evaluated in accordance with SSP-10.C.

Some safety-related items procured as QA Level II were supplied with sufficient documentation to be qualified as QA Level I. The QA programs of vendors on TVA's Approved Suppliers List (ASL) were normally audited by TVA's Procurement Quality Assurance group (PQA). If the vendor supplied material with a Certificate of Conformance and/or Certified Material Test Report (CMTR), or other appropriate documentation, which included indication that the vendor understood and accepted the responsibilities of 10 CFR 21, then the material supplied is considered acceptable as QA Level I. The TIIC number will be upgraded to QA Level I in the Materials Management System, and parts installed in the plant will be treated as QA Level I.

The experience of TVA at Sequoyah Nuclear Plant (SQN) was that 50 percent of the QA Level II items evaluated were downgraded to QA Level III; and 15 percent were upgraded to QA Level I. To date WBN evaluations have resulted in very nearly the same proportions when the SWEC and Digital Engineering evaluations are reviewed together.

4.1.4 Replacement Items Installed by Previous Construction Activities

To address "Replacement items installed by previous construction activities," WBN RIP has developed a plan to generically verify their acceptance. During a period of several years, WBN maintained three distinct warehouse inventories (from a tracking standpoint, as well as physical standpoint in most cases):

° Unit 1 construction warehouse

° Unit 2 construction warehouse

° Power Stores warehouse inventory

The Unit 1 construction warehouse began when construction on Unit 1 began. The Unit 2 construction warehouse was started at the same time that Unit 2 was started. The Power Stores inventory was initiated in February 1977 in conjunction with the start of system(s) turnover. All three inventories were in use continuously through 1984. During 1984 the last Unit 1 systems were turned over to operations, and the use of the Unit 1 construction warehouse declined. All material for maintenance in Unit 1 was now being provided by the Power Stores inventory. The Unit 2 construction warehouse continued to support the construction of Unit 2.

4.1.4.1 Unit 1 Construction Warehouse

During 1990, WBN Materials and Procurement group, in conjunction with Nuclear Engineering, did a correlation study that compared material and items remaining in the Unit 1 construction warehouse to the entries in the Material Management System data base by manufacturer and part number. The result was that items left in the Unit 1 warehouse that were the same part as a TIIC item in the Power Stores inventory, and had documentation traceability, were tagged and transferred to the Power Stores warehouse inventory. Items in the Unit 1 construction warehouse that could not be correlated to a TIIC item in Power Stores were transferred to the Unit 2 construction warehouse.

4.1.4.2 Unit 2 Construction Warehouse

Procurement for this warehouse was accomplished by contract or by Field Purchase Order. For all major plant equipment and nuclear unique components, there were engineering prepared contracts with specifications and drawings. A set of General Construction Specifications was used to procure bulk items to federal and/or industry standards.

TVA procedures also allowed the use of Field Purchase Orders. Field Purchase Orders could be issued by only certain levels of management, were limited in dollar amount, and were usable at only certain pre-arranged vendor companies at which TVA had established accounts.

Approximately 50,000 Field Purchase Orders have been located by the project. This population represents nearly all of the field purchase orders issued for WBN. Reviews done to date of this population indicate that they were most often used to procure a multitude of non-plant, non-safety-related material and parts, such as car and truck parts to maintain site vehicles, crane parts to maintain construction cranes, building materials for wood sheds, etc.

In the majority of cases, material purchased on a Field Purchase Order was recorded onto a warehouse "Ledger card" either from the receipt inspection or from a copy of the Field Purchase Order. RIP has the inactive ledger cards from the Unit 2 construction warehouse. The active cards for material still in the warehouse, are maintained by the construction warehouse group, but are available for review at any time. RIP has developed and implemented a plan to sort the ledger cards, active and inactive, into three subsets as follows:

4.1.4.2.1 Possible Piece Parts

Any ledger card item that could have been used as a replacement piece part, whether intended at the time of procurement or not, will be included in the first subset.

Once the possible piece parts subset has been determined a subdividing process will be performed to break the total population down into as few homogeneous groups as possible, but that will allow testing or inspections sufficient to verify the critical characteristics necessary to ensure the items are as specified. For each item identified in the subset, the functional critical characteristics necessary to verify acceptability will be determined using guidance from EPRI NP-5652 and other sources. These functional attributes will be loaded into a working data base. The attribute fields for functional critical characteristics can be sorted into various homogeneous subgroups together for further subdivision where possible. Based upon past experience with general population of items at WBN and SQN, and preliminary studies of the 47,000 ledger cards, it is predicted that approximately 5900 items will be included in this program. Further study indicates that the 5900 items will be from 42 commodity codes, and that between 75 to 80 "test groups" will result.

Each test group will have a test/inspection plan and procedure prepared in accordance with SSP-10.C. Sample lot sizes will be determined by EPRI document NP-7218, "Guidelines for the Utilization on Sampling Plans for Commercial Grade Item Acceptance (NCIG-19)." Lot information and samples selection will be in accordance with NP-7218. Samples from the test population will be obtained using the parameters for vendor representation within the sample lot. The sample lot for each test group will be tested, or sent to a lab for testing. The test results will be received, and analyzed for acceptance or rejection. The results will be documented on the forms included in SSP-10.C, Appendix D, and included in the documentation package for the test group acceptance. CGI dedication will be prepared for those test groups that successfully pass the test plan/procedure prepared to verify their critical characteristics.

4.1.4.2.2 Bulk Commodity Items

The initial phase of the Bulk Item Procurement Review will be to generically evaluate those bulk commodity items used during maintenance activities on 50.49 or other safety-related equipment, i.e., greases, lubricants, etc.

The technical and quality evaluations performed by the Bulk Item Procurement Review task will be documented in output packages prepared using the same procedural guidance as for the Previous Procurement Substantiation Process packages in accordance with SSP-10.C and other appropriate site procedures.

4.1.4.2.3 Obvious Non-plant Items

Obviously non-plant items will be items that by their description can be determined not to be usable in a plant safety-related application. Desks, chairs, telephone poles, fence posts, pens and pencils, etc. are examples that obviously would not be safety-related piece parts. No further action will be taken on these items.

4.1.4.3 Power Stores Warehouse

Disposition of piece parts issued to construction personnel from the Power Stores Warehouse will be dispositioned as discussed in Section 4.1.3, above.

4.2 Remaining Work Summary

4.2.1 Evaluate Maintenance installed items prior to June 5, 1991

- (Quality Release) Release Track Log (5561 line items) per SSP-10.C
- Maintenance History Database Pro-TIICs (approximately 1026) per SSP-10.C

4.2.2 Evaluate Construction Installed Items

- Review Field Purchase Orders for possible safety-related applications.
- Sort ledger cards from construction warehouse tracking systems (active and inactive) for possible safety-related application.
- Perform TIIC correlation to Power Stores inventory by vendor name and part numbers.
- Group items to be generically evaluated into subgroups (baskets) (approximately 78 baskets are anticipated).
- Develop and perform testing/inspections for the baskets determined.

4.2.3 Quality Level III Investigation

- Review QA III items in Material Management System (January 23, 1989 to June 5, 1991) for possible safety-related application

- Review QA III items in Maintenance History Data Base (January 23, 1989 back to system turnover) for possible safety-related applications.

4.2.4 Bulk Commodity Item Review

Prepare generic evaluations and/or CGI dedications for the bulk commodity items used during maintenance work on safety-related components.

4.2.5 RIP CAP Closure Activities

- Close CAQRs, CATDs, SCARs, and other action items related to RIP

- Develop training for lessons learned

4.3 Recurrence Control

Recurrence control is performed by PEG (formerly CEG and MAG). PEG is a permanent group of engineering procurement personnel assigned to the WBN site at the warehouse in close proximity to the procurement group, materials group, and QA group. Formation of PEG and procedural control of their work provides recurrence control for the identified root cause of RIP. Quality indicators, audits and assessments are used to measure the effectiveness of PEG.

The Materials Improvement Project sanitization process ensures only qualified material is issued for piece part use from the current inventory.

4.4 Licensing Assessment

This CAP assures that replacement part procurements are consistent with previously qualified equipment.

5.0 PROGRAM INTERFACES

RIP maintains interfaces with the following WBN groups or programs:

- PEG - as discussed above in Section 3.0

- Material Improvement Project - as discussed above in Section 3.0

- Bulk Item Procurement Review - as discussed above in Section 4.1.4.2.3

- Design Baseline and Verification Program (DBVP) corrective action programs - the design basis document (DBD) of the DBVP provides design commitments and licensing and Code requirements for use as input by RIP in determining a component's function and design basis requirements.

- Q-List Corrective Action Program - the existing Q-List provides item identification and functional (safety) classification to RIP. Any deviations in the equipment identifiers or classifications that result from the updated Q-List will be corrected on the RIP evaluation records.

- Environmental Qualification (EQ) Special Project - RIP will evaluate installed replacement parts of components covered by the EQ program.

6.0 PROGRAM IMPLEMENTATION

In the past revisions of this CAP, there were five distinct groups identified as implementing the RIP. This revision revises the previous list and identifies following groups responsible for assuring the adequacy of past or current procurements.

RIP - Provides engineering review and evaluation of previously procured and installed, commercial grade, replacement piece parts intended for safety-related equipment.

Material Improvement Project - Provides services to "sanitize" current inventory and provides engineering support to assure acceptable material and equipment is available for issue to the plant.

PEG - Provides recurrence control for current and future procurement and will eventually provide engineering support for Quality Release of equipment from inventory.

The site RIP Project Manager provides coordination, and specific program direction for the RIP-related activities of these groups. The site RIP Project Manager also provides review and approval of completed RIP activities.

TVA's QA organization provides oversight of RIP activities by performing technical audits and review of procedures. The QA organization also reviews the program's output packages to verify the appropriate quality assurance requirements are specified.

7.0 PROGRAM DOCUMENTATION

The work of the RIP implementing groups will be performed in accordance with approved site procedures and maintained as QA records.

- The technical and quality requirements provided by PEG will be documented by PEG output packages and dedication packages for commercial grade items prepared in accordance with SSPs-10.01, 10.02, 10.03, 10.04, and 10.05.

- The compilation of previous maintenance activities will be documented in a computer data base. RIP MS data base is currently on disk and active.

- The technical and quality requirements used by the Material Improvement Project (MIP) group will be documented in Material Improvement Project output documents called "Sanitization" packages per SSP-10.5 and SSP-10.B. All safety-related material is subject to the Quality Release Program before issuance to the plant. The Material Improvement Project "Sanitization" package documents the evaluation to satisfy the material release programs.

- The technical and quality evaluations performed on installed safety-related items by the RIP team activities will be documented in Previous Procurement Substantiation Process packages in accordance with SSP-10.C.

- The technical and quality evaluations performed by the Bulk Item Procurement Review task will be documented in output packages prepared using the same procedural guidance as for the Previous Procurement Substantiation Process packages in accordance with SSP-10.C and other appropriate site procedures.

- Other reviews will be documented in task summary reports.

- A CAP Final Report will serve as the program closure document for the RIP-CAP as directed by site procedure SAI-10.02, "Preparation, Review, adn Approval of Corrective Action Programs."

8.0 CONCLUSIONS

The WBN RIP will evaluate installed replacement piece parts to provide a high level of assurance that the parts are consistent with the host component's seismic or environmental qualifications and the host component's capability to perform its safety function(s).

9.0 REFERENCES

1. Stone & Webster Engineering Corporation (SWEC) letter to TVA, WBSW-89-0366, dated July 12, 1989.

2. TVA Design Criteria WB-DC-40-31.2, "Seismic Qualification of Category I Fluid System Components and Electrical or Mechanical Equipment."

3. TVA Design Criteria WB-DC-40-54, "Environmental Qualification to 10 CFR 50.49."

4. TVA General Construction Specification G-62, "Material Documentation and Acceptability Requirements for ASME Section III Applications."

5. Assessment Report WBA91110. "Nuclear Quality Audit and Evaluation: Assessment of the Replacement Items Program (RIP)" November 12, 1991 (RIMS L17 911113 800); as amended by J. A. Crittenden letter to J. H. Garrity on November 27, 1991 (RIMS T34 911127 875).

6. EPRI NP-5652 "Guideline for the Utilization of Commercial Grade Items in Nuclear Safety Related Applications (NCIG-07)." June 1988

7. EPRI NP-7218 "Guidelines for the Utilization of Sampling Plans for Commercial Grade Items Acceptance (NCIG-19)." July 1991

ATTACHMENT 1

BASIS OF CAP

The following Watts Bar documents form a basis for this CAP and illustrate deficiencies that stem from the root cause of a lack of programmatic requirements for an engineering evaluation of replacement part procurements.

CAQR WBP871258 - WBN lacked program for engineering evaluation of purchases and dedication of commercial-grade items for use as basic components.

CAQR WBP870981 - Procurement of replacement parts by Nuclear Construction does not comply with requirements.

CAQR WBF870069 - Some Nuclear Construction procurements were made by part number only and lack technical and quality assurance requirements.

CAQR CHS870105 - Upper-tier procedures allow possible alteration of environmental and seismic qualification without design organization review.

CAQR WBE880302801- Engineering has not implemented a process to identify and verify critical characteristics for commercial-grade items for use as basic components.

URI 391/86-21-04- NRC inspector unresolved item concerning control of qualified replacement parts.

GLOSSARY OF TERMS

Basic Component - As defined in 10 CFR 21, "'Basic component,' when applied to nuclear power reactors means a plant structure, system, component or part thereof necessary to assure (a) the integrity of the reactor coolant pressure boundary, (b) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (c) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in 100.11 of this chapter." In the RIP CAP and other documents basic component is interchangeable with safety-related equipment or material.

Commercial Grade Item - As defined in 10 CFR 21, "'Commercial grade item,' means an item that is (a) not subject to design or specification requirements that are unique to facilities or activities licensed pursuant to Parts 30, 40, 50, 60, 61, 70, 71, or 72 of this chapter and (b) used in applications other than facilities or activities licensed pursuant to Parts 30, 40, 50, 60, 61, 70, 71, or 72 of this chapter and (c) to be ordered from the manufacturer/supplier on the basis of specifications set forth in the manufacturer's published product description (for example a catalog)."

Dedication - As defined in 10 CFR 21, "'Dedication' of a commercial grade item occurs after receipt when that item is designated for use as a basic component." As used in this CAP, dedication includes acceptance.

QA Level I - Those materials, components, and spare parts that are supplied to TVA as qualified (by associated documentation) for use in basic components.

QA level II - A category defined to be those materials, components, and spare parts that are basic components and are also commercial grade.

QA Level III - Those materials, components, and spare parts related to basic components, that do not affect the safety-related functions of the basic components.

Quality Release Program and Inventory Release Tracking Log - The Quality Release Program is a program established within Power Stores Unit and governed by plant procedures (now SSP-10.4) to assure proper qualification prior to issue from inventory of parts for 10 CFR 50.49 component application and parts procured as commercial-grade for basic components. However, the program will allow procedurally controlled release of items with follow-up evaluation for special cases when individually authorized by senior plant management. The Quality Release Program was in effect from January 23, 1989 until June 8, 1989. On June 8, 1989, the Inventory Release Tracking Log (also now governed by SSP-10.4) was initiated. This log identified unreviewed parts and materials released for installation in safety-related applications to allow for their subsequent replacement should the inventory evaluation indicate unacceptability.

GLOSSARY OF TERMS

The purpose of the Quality Release Program is to provide confidence in the acceptable qualification of parts before their release for installation in safety-related components. Prior to the review of the Nuclear Stores inventory the Quality Release Program included parts for 10 CFR 50.49 component applications and parts procured as commercial-grade for basic components. This is the same scope as that of the inventory review activity of the RIP. Based on the results of the inventory review, the Quality Release Program was reinstituted and adjusted to reflect those results.

Replacement Item (Piece Part) - An item which replaces and original or installed item (either identical or alternate) for which an equivalency evaluation is performed to assure that interfaces, interchangeability, safety, fit and function are not adversely affected or contrary to regulatory requirements. Generally, the item is the smallest subcomponent that can be replaced to repair or maintain the host component. There are instances where a replacement item is an assembly of subcomponents, but it is more economical, or safer, to replace the entire component, such as a Barton transmitter. A replacement item is that configuration of entity that is most often replaced in a standard maintenance or repair operation.

Sanitization Process - The Materials Improvement Project has been chartered to ascertain that the inventory of material and components currently available for issuance to the plant are fully acceptable and adequately documented. The "sanitization" process involves documentation reviews and evaluations.