THE BABCOCK AND WILCOX COMPANY

NUCLEAR MATERIALS AND MANUFACTURING DIVISION

PENNSYLVANIA OPERATIONS

APOLLO, PENNSYLVANIA

QUALITY ASSURANCE POLICY AND PROCEDURES MANUAL

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APPROVED:

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INTRODUCTION

This manual contains the general policies and procedures established for the administration of the quality assurance program at the Pennsylvania facilities of the Babcock & Wilcox, Nuclear Materials and Manufacturing Division. Detailed Quality Assurance Outlines and Procedures are prepared for individual contracts as necessary and are available for review by concerned parties. Those outlines and other procedures provide specific direction for implementing the general policies set forth in this manual.

The policies and procedures contained in this manual, as well as other specific procedures shall govern all quality related activities performed by Pennsylvania Operations. These policies and procedures are mandatory and no deviation from their requirements are permitted without written authorization from the Manager, Pennsylvania Operations or the Manager, Quality Assurance.

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i. QUALITY ASSURANCE POLICIES

1. It is the policy of the Pennsylvania Operations management to maintain a Quality Assurance Program that thoroughly monitors quality related operations and provides documented evidence that the required quality levels have been maintained in all phases of contract performance.
2. It is the policy of the Pennsylvania Operations management to employ qualified quality assurance personnel to manage and implement the quality program.
3. It is the policy of the Pennsylvania Operations management to employ sufficient personnel to manage quality assurance operations consistent with an effective and economical quality assurance program.
4. It is the policy of the Pennsylvania Operations management to establish and implement on a regular basis an effective system for internal audits and to provide for prompt correction of all conditions adversely affecting quality.
5. It is the policy of the Pennsylvania Operations management to review Quality Assurance audit findings to assess quality accomplishments and resolve potential quality problems.
6. It is the policy of the Pennsylvania Operations management to maintain a quality assurance function which reports to the top level of Pennsylvania Operations management and which operates independently of manufacturing responsibility.
7. It is the policy of Pennsylvania Operations management to take positive action to correct and record all quality deficiencies noted.
8. It is the policy of Pennsylvania Operations management to procure materials from competent and adequately qualified suppliers.

9. It is the policy of Pennsylvania Operations to review this manual at least every two years and revise it as necessary to insure its applicability to current quality and operating technology and philosophy.

10. The Quality Manual and any revisions thereof shall be approved by the Manager of Quality Assurance and the Manager, Pennsylvania Operations.

11. Each copy of this manual is numbered and registered to individuals receiving a coby. Copies of this manual shall be issued to all Department Managers, to all Quality Assurance Supervisory personnel and to others designated by the managers of each operating department within Pennsylvania Operations.

1.0 ORGANIZATION

1.1 The overall quality policies, goals and objectives are established by Babcock & Wilcox Company and operating group level management as set forth in the Babcock & Wilcox Administrative Manual, Section 1700. The respective Division Heads have the authority and responsibility to issue Division policy, establish procedures and take other actions necessary to implement the requirements of those policies.

1.2 The Babcock & Wilcox Director of Quality is responsible for establishing and effectively disseminating quality policy, systems, and guidelines; determining that such Division systems and policies are in compliance; investigating major quality problems; and recommending appropriate action.

1.3 The organization of the Babcock & Wilcox, Nuclear Materials and Manufacturing Division, Pennsylvania Operations and its Quality Assurance Department is shown in Figures 1.0 and 1.1.

1.3.1 The duties and responsibilities of the various Quality Assurance organizational elements shown in Figure 1.1 are as follows:

1.3.1.1 Quality Assurance Department - Manager, Quality Assurance

a. The Manager, Quality Assurance directs and assumes responsibility for all Quality Assurance activities necessary to plan, monitor, control and document the quality related performance of the Pennsylvania Operations.

b. The Manager, Quality Assurance is a staff position and as such, has direct access to the Manager, Pennsylvania Operations and the Babcock & Wilcox Director of Quality in order to address quality related activities and

problems in an appropriate manner. Routine quality activity reports are submitted monthly to the Manager, Pennsylvania Operations and topical quality reports are provided as necessary to keep management cognizant of significant quality problems.

c. The Quality Assurance Manager and the supervisory and technical personnel reporting to him have the authority and freedom to implement quality programs, identify quality problems; initiate, recommend, provide or concur with corrective actions; to verify the implementation of corrective actions and to control further processing, shipment or use of nonconforming materials, products or services.

d. The qualification requirements for this position include a level of training normally associated with a University degree in an engineering, scientific or industrial management discipline and supplementary training and experience in quality technology and management.

e. Quality functions subordinate to this position include Quality Control, Quality Engineering, Analytical Control, Analytical Development, Calibration, Inspection, Auditing and Document Control.

1.3.1.2 Quality Control Section - Section Supervisor

The Quality Control Section is responsible for the implementation of Quality activities related to inspection, testing, analyses, calibration and process control of materials, equipment and

components purchased, produced or utilized by the Pennsylvania Operations.

1.3.1.3 Quality Engineering Section - Section Supervisor

This section is responsible for the development of quality control programs and the planning and implementation of quality auditing, engineering, certification and document control.

1.3.1.4 Calibration/Inspection - Supervisor

This group is responsible for the calibration and control of measuring, test and control instruments; the physical inspection of materials, equipment and products; and Process Control inspections and analyses.

1.3.1.5 Analytical Control - Supervisor

The Analytical Control group is responsible for the performance of routine chemical analyses necessary for the evaluation of materials and products to determine their conformance to specification.

1.3.1.6 Analytical Development - Chemist

This function provides technical expertise and direction to the Analytical Control and Process Control activities in the development of new or modified analytical methods and the control of existing procedures. The facilities of the B&W Alliance and Lynchburg Research Centers are also available to support this activity as required.

1.3.1.7 Auditing - Audit Coordinator

The audit group is responsible for the performance of formal

Quality Assurance and Reguatory Compliance audits within the Pennsylvania Operations facilities. A full description of the Q.A. audit system is set forth in Section 18 of this manual. The Regulatory Compliance audit system is described in the B&W Administrative Policy NMMD 0103-05.

1.3.1.8 Document Control

The Document Control function is responsible for the issuance of new or revised documents, the retrieval of superseded documents and the control and issuance of contract documents. A description of the Document Control program is contained in Section 6 of this manual.

1.3.1.9 Quality Assurance Engineering - Q.A. Engineer

Quality Assurance Engineering is responsible for the technical support and guidance of quality functions involved in product manufacture, inspection and data evaluation. Q.A. Engineering may assume quality auditing functions to identify nonconforming conditions and to evaluate corrective actions. Quality Assurance Engineers may also be identified by functional titles descriptive of their particular area of responsibility.

BABCOCK & WILCOX CO.

Nuclear Materials & Manufacturing Division
Pennsylvania Operations

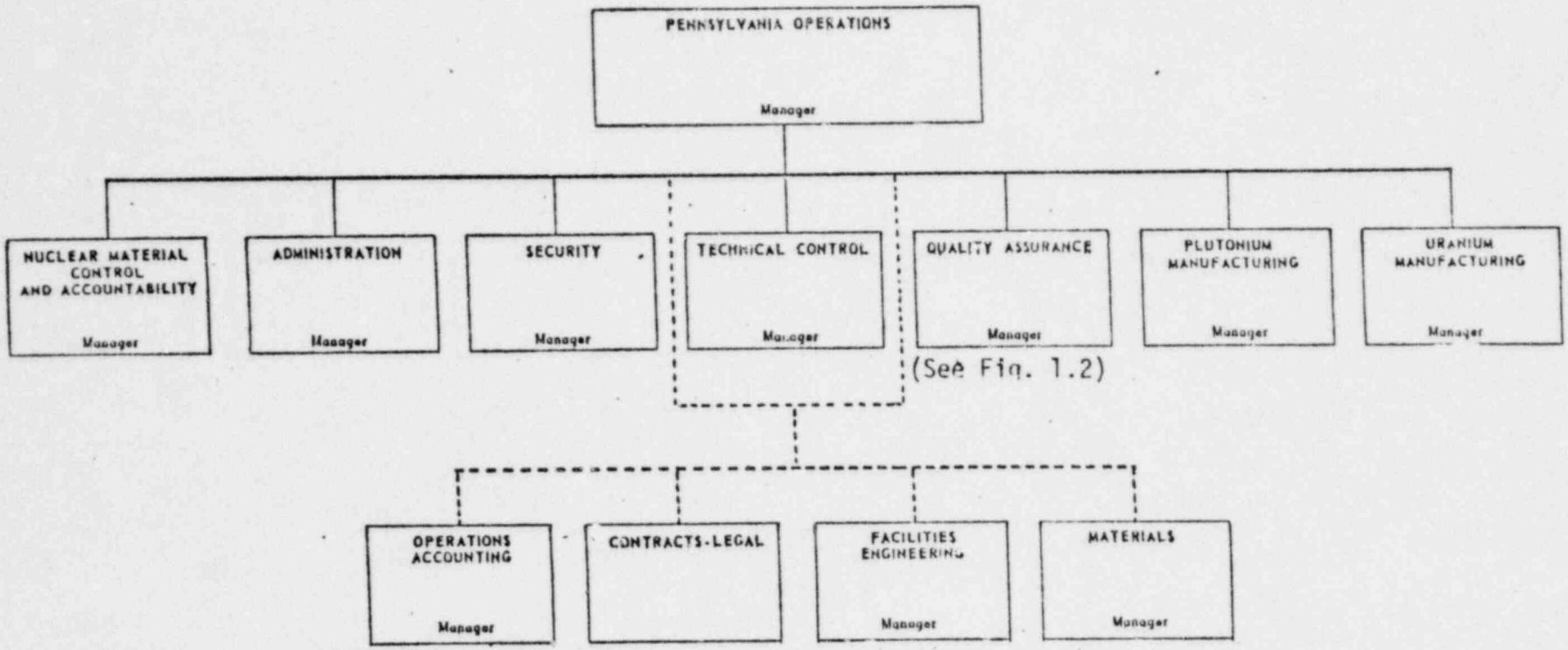

FIG. 1.0

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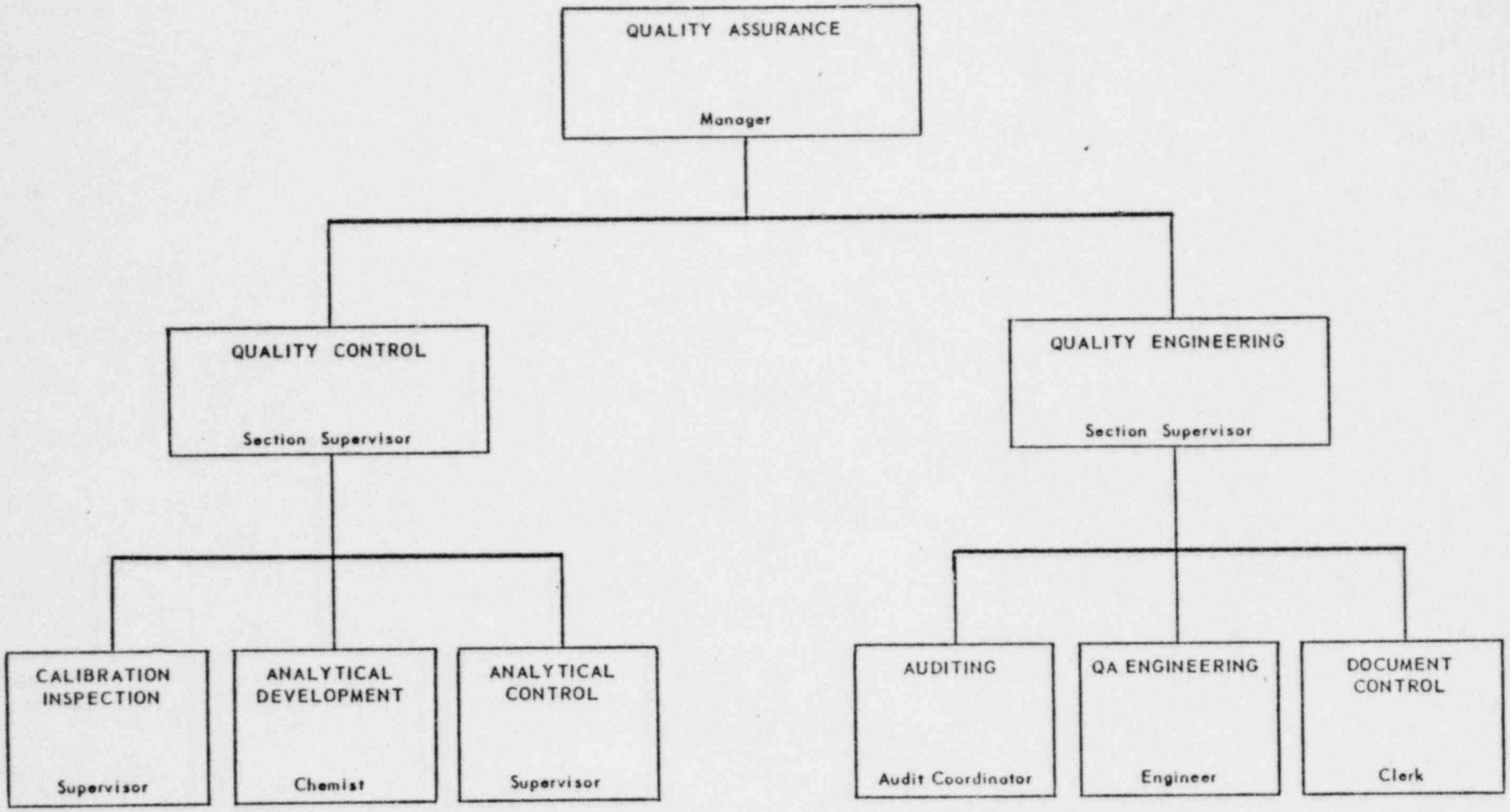
QUALITY ASSURANCE
Manager
QUALITY CONTROL
Section Supervisor
QUALITY ENGINEERING
Section Supervisor
CALIBRATION INSPECTION
Supervisor
ANALYTICAL DEVELOPMENT
Chemist
ANALYTICAL CONTROL
Supervisor
AUDITING
Audit Coordinator
QA ENGINEERING
Engineer
DOCUMENT CONTROL
Clerk

FIG. 1.1

2.0 QUALITY ASSURANCE PROGRAM

2.1 Scope

This section describes the program established to monitor, evaluate and control the quality conformance of materials, processes, equipment and components to the requirements of contract documents, internal specifications, and the regulations of government agencies.

2.2 Requirements

The Quality Assurance Department is responsible for the program outlined in this manual and implemented by additional written policies, outlines, procedures or instructions. The program provides for the performance of those activities required to insure that the manufacturing processes, products and associated activities conform to all quality related contractual and regulatory requirements. Any disputes involving quality related matters arising within the Pennsylvania Operations organization shall be resolved by the Manager, Pennsylvania Operations.

2.3 Modifications and Revisions to Quality Assurance Manual

2.3.1 When necessary, minor revisions of this manual or its Appendices may be effected through the issuance of individual page revisions. Pages so revised shall continue to bear the current manual revision number, but that number will be followed by the letter "R" designating a page revision. In addition, the page date will be changed to indicate the date the page revision was made.

2.3.2 All revisions to this manual, whether in part or total must be approved by the Manager, Pennsylvania Operations and the Manager, Quality Assurance. Approval of page revisions shall be documented by signature following the revision number indicated at the bottom of each page

2.3.3 Where required by contract or regulation, all revisions to this manual or its individual pages shall be submitted to the customer and to the appropriate regulatory agency for review and approval prior to the implementation of the changes set forth in the revision.

2.4 Material Review Board

2.4.1 A Material Review Board (MRB) has been instituted for the purpose of reviewing, advising and concurring in decisions on quality matters affecting Pennsylvania Operations performance. Routine decisions on product quality, including production releases, are made by the cognizant Quality Supervisor and/or Engineer. Decisions on the disposition of deviated materials will normally be made by the Manufacturing Manager with the approval of the Manager, Quality Assurance. Where necessary, questions involving the disposition of deviated materials will be referred to the MRB. The following describes the function and activities of the Material Review Board.

2.4.2 The MRB is a standing board consisting of the following permanent members:

2.4.2.1 Manager, Pennsylvania Operations

2.4.2.2 Manager, Quality Assurance (Chairman)

2.4.2.3 Manager of Manufacturing area involved

Pennsylvania Operations Management Staff members are Ad Hoc members of the Material Review Board; however, their attendance at MRB meetings is not mandatory. The Chairman of the MRB will from time to time, as dictated by the nature of the matter being considered, appoint temporary members to the MRB.

2.4.3 The MRB shall meet as frequently as necessary to transact business under this policy.

2.4.4 The Material Review Board shall have the following authority:

2.4.4.1 To review and advise on corrective action programs for preventing and correcting quality deficiencies in products.

2.4.2.2 To review and advise line managers on quality related matters.

2.4.4.3 To recommend changes in quality assurance and operational policies, procedures, and controls.

2.4.5 A MRB will be convened as quickly as practicable to discuss quality issues. The procedure for convening a MRB shall be as follows:

Responsibility	Activity
Any NM&MD Manager	1. Contacts the Manager, Quality Assurance to request a date and time for a MRB meeting.
Manager, Quality Assurance	1. Selects time and place for MRB and sets agenda (including the assignment of responsibilities). 2. Notifies permanent and Ad Hoc members. 3. Determines and notifies temporary Board members, if any.
Manager, Manufacturing and/or Quality Assurance Manager	1. Completes the necessary analysis and preparation for the MRB, including as appropriate: (a) A review of the past history or deficiency, including previous corrective action programs.

(b) An assessment of the probable cause(s) for the quality deviation.

(c) An analysis of alternative solutions for solving the quality problem.

(d) A recommendation for the corrective action program(s).

(e) A schedule for corrective action.

(f) The assignment of responsibility for performing corrective action.

2.4.6 The following procedure will be observed during the operation of MRB meetings:

(1) The MRB will be chaired by the Manager, Quality Assurance. In his absence, an alternate may be selected.

(2) A quorum for a MRB shall consist of two permanent members.

(3) Detailed minutes of the meeting will be taken and distributed to permanent and Ad Hoc members within five working days of the MRB meeting.

(4) The topics covered in the MRB shall be left to the discretion of the Chairman. However, as a matter of practice the meeting shall include items (a) through (f) under Section 2.4.5.

(5) Where appropriate, the recommendations of the MRB may be reached in a closed meeting of the permanent members of the MRB at the discretion of the Chairman.

2.4.7 Implementation of the Material Review Board recommendations shall be the responsibility of the cognizant Manager. Any disagreement with MRB recommendations shall be resolved by the Manager, Pennsylvania Operations.

The Quality Assurance Manager shall review the implementation of the recommendations and determine the need for further action.

2.5 Malpractice Prevention Program

2.5.1 Programs for prevention of deliberate or unintentional malpractice require constant vigilance and systematic procedures, which can detect and deter malpractice actions in a timely manner.

2.5.2 Preventive actions relating to management of Pennsylvania Operations:

2.5.2.1 A properly managed and well planned internal audit program as outlined in Section 18.0 is the major thrust of Pennsylvania Operations effort to prevent malpractice.

2.5.2.2 Regular meetings of Quality Assurance and Pennsylvania Operations management provide opportunities to review Quality Assurance programs and policies. These meetings also involve presentations of current Quality Assurance and Manufacturing activities, which allow review of areas conducive to malpractice.

2.5.2.3 As noted in Section 1.0 of the Quality Assurance Manual, the Quality Assurance organization is separate from the Manufacturing organization, thus allowing independent checks on product quality.

2.5.2.4 Internal audit procedures and checklists allow for:

(a) Surveillance of back shift operations by management and auditors.

(b) Follow-up of discrepancies reported by internal and external audits.

2.5.2.5 Corrective action required for deficiencies detected during inspection activities are governed by Section 16.0 of this manual. Those deficiencies detected through the implementation of the audit program will be addressed by the procedure set forth in Section 18.0.

2.5.3 Preventive action relating to personnel policies:

2.5.3.1 Section 2.6 outlines general guidelines for personnel training and certification which require minimum levels of competence to be reached and documented for tests and inspections requiring specialized skills.

2.5.4 Preventive action relating to procedures and equipment:

2.5.4.1 The audit program in Section 18.0 provides for crosschecks of equipment, personnel and procedures to detect potential deviations or inconsistencies.

2.6 Personnel Training and Certification

2.6.1 Tests, inspections and quality related activities which require special skills or special operator judgment shall be conducted only by personnel qualified in such duties.

2.6.1.1 Qualification requirements and qualifying procedures shall be defined in the appropriate operating procedures.

2.6.2 All personnel performing quality related activities shall be familiar with the procedures governing those activities.

2.6.3 Written evidence of personnel experience and qualifications to perform specific duties shall be maintained on file in the area of concern and in the Training Section.

2.6.4 The existing qualification status of QA personnel shall be updated annually, or as noted in the applicable qualification procedure, by complete requalification or audit of past performance. Personnel failing a retest shall be removed from the particular operations until requalified. In addition, work performed by those personnel shall be evaluated to determine if corrective action is required.

2.6.5 Special skills which may require qualification of personnel include metallography, radiography, penetrant testing, welding, weld evaluation, ultrasonic testing and other NDT processes, as well as other special skills specified in particular contracts. NDT certification shall be done in accordance with SNT-TC-1A when required.

2.6.6 When applicable and necessary to the requirements of a particular operation, personnel shall be given periodic eye examinations.

2.6.7 All Pennsylvania Operations personnel who perform surveillance and inspection of vendor processes or products shall be certified in accordance with detailed Pennsylvania Operations procedures appropriate for the inspection requirements.

2.7 Subcontractor Qualification

2.7.1 Subcontractor testing shall be performed by laboratories approved by Quality Assurance and, where applicable, approved by the customer.

2.8 Inspection Procedures and Results

2.8.1 All inspection and test results shall be evaluated for conformance to contractual specification and drawing requirements by the Quality Assurance Section.

2.8.2 All physical and chemical test methods used in product evaluation shall

be described in Pennsylvania Operations Test Procedures (Section 17.0). Test methods shall be approved by the customer where required by contract.

2.8.3 Detailed inspection and test procedures shall be kept current and revised when necessary utilizing the procedures described in Section 6.0, Document Control.

2.9 Quality Assurance Activities Related to Compliance With Government Regulations

2.9.1 Various regulatory agencies have imposed certain requirements on organizations involved in the manufacture, utilization, handling, shipment or receipt of nuclear materials. The involvement of Quality Assurance in activities governed by those regulations may be specifically imposed by the particular regulation or may be self imposed by the regulated organization.

2.9.2 Specific requirements for Quality Assurance programs are set forth in the Nuclear Regulatory Commission regulations, Title 10 CFR Parts 70 (70.22f) and 71 (71.51). This manual is designed to address the QA program requirements of those regulations.

2.9.2.1 Appendix I to this manual provides a matrix of procedures cross referenced to the sections of this manual applicable to the above regulations.

2.9.2.2 Appendix II provides a general listing of safety related structures, systems. components and materials which are controlled by the Quality Assurance program described in this manual.

2.9.3 Other regulations impose requirements for which Quality Assurance has assumed implementing or auditing responsibilities:

(a) Quality Assurance has prime responsibility in implementing the program established for compliance with Title 10 CFR Part 21 (Reporting of Defects and Noncompliance). The implementing procedure is identified as GP-34.

(b) Quality Assurance performs routine audits to verify compliance with the requirements of Title 10 CFR Parts 20, 70 and 73; and with Title 49 CFR Parts 171 through 178. A description of the audit procedure is contained in B&W Policy, NMMD 0103-05.

2.10 Audits and Reviews of the Quality Assurance Program

2.10.1 Verification that the Quality Assurance program is adequately designed, implemented and effective in assuring that the quality objectives of the company and the quality requirements of our customers are achieved is made through routine audits of the QA program by customer and company representatives.

2.10.2 In addition, the adequacy, implementation and effectiveness of the Quality Assurance program components applicable to compliance with regulatory agency requirements will be periodically evaluated by the Pennsylvania Operations Safety Advisory Board. This Board is comprised of staff level managers representing Facility Engineering, Technical Control, Administration, Quality Assurance, and the Manager, Pennsylvania Operations.

2.11 Recording of Data

Unless it has been determined by the cognizant product engineer or contract requirements that the recording of more exact parameters is essential to uniform product quality, the following guidelines will govern the recording of process data:

2.11.1 Time - to the nearest five minute division.

2.11.2 Temperature, pressure, flows - to the nearest legible instrument graduation.

2.11.3 Weight - to the nearest instrument graduation.

3.0 DESIGN CONTROL

3.1 Scope

The design specifications and drawings of the components and materials manufactured or utilized at the Pennsylvania Operations are provided by our customers or by the manufacturer or designer, and design control is not an applicable part of our Quality Assurance Program. However, the selection of commercial grade materials, parts or components for safety related systems will be reviewed for suitability by Quality Assurance through their review and approval of purchase requisitions.

Inasmuch as certain of the facility designs are unique to the nature of our activities, Pennsylvania Operations has an active Design Review Board that is involved in evaluation of facility design. The Quality Assurance Manager is a member of this board and it is this Manager's responsibility to insure that all customer or regulatory agency quality requirements are addressed in the design phase of facility modifications.

4.0 PROCUREMENT DOCUMENT CONTROL

4.1 Scope

This section describes the procurement control procedures in use at Pennsylvania Operations.

Procurement is the responsibility of the Materials Manager. In establishing procurement procedures, the Materials Manager works closely with Contracts/Legal, Quality Assurance and Manufacturing to assure that the requirements of those organizations are reflected in the procurement procedures.

4.2 Procurement Document Preparation and Approval

4.2.1 When required by contractual provisions, Pennsylvania Operations will request customer approval of subvendor Quality Assurance documents applicable to materials and components purchased for use in contract performance.

4.2.2 Customer approval, when required, will be obtained prior to procurement action.

4.2.3 Responsibilities for the preparation, review, approval, and release of procurement documents are defined in the Purchasing Manual.

4.2.4 The Manager, Quality Assurance shall establish and implement procedures to assure that Quality Assurance personnel review procurement documents related to product quality or regulatory requirements prior to issuance by Purchasing.

4.2.5 Requisition review by Quality Assurance personnel shall assure that the following provisions are considered and incorporated, when required, into the purchase order:

4.2.5.1 Customer ordering requirements.

4.2.5.2 Pennsylvania Operations and customer requirements and specifications defining the supplier's quality assurance and inspection requirements.

4.2.5.3 Applicable Regulatory Agency requirements. (e.g., Title 10 CFR 21, 10 CFR 70.22(f) and 10 CFR 71, Appendix E.)

4.2.5.4 Pennsylvania Operations qualification requirements, if any, and approval provisions.

4.2.5.5 Applicable codes and standards, including general quality assurance program requirements.

4.2.5.6 Required quality levels.

4.2.5.7 Requirements for the generation, control, maintenance and submittal of supplier documentation to the purchaser for review and approval.

4.2.5.8 Specification and drawing definition.

4.2.5.9 Requirements for preoperational review and approval of manufacturing processes and Quality Assurance programs.

4.2.5.10 Statement providing for purchasers right of access to the suppliers facilities and records for the purpose of source inspection and audit.

4.2.5.11 Pennsylvania Operations inspection, surveillance and release requirements.

4.2.5.12 Hold requirements for overinspection and release.

4.2.5.13 Requirements for supplier control of welding electrodes and filler wire on welded components.

4.2.5.14 Pennsylvania Operations approval and inspection requirements for subvendors.

4.2.6 Procurement documents for Special Nuclear Material (SNM) shall be submitted to the Manager, Nuclear Materials Control and Accountability for review prior to procurement action.

4.2.7 As evidence of Quality Assurance review and approval of purchase requisitions, the QA reviewer shall sign and date the requisition.

4.2.8 Contract related purchase requisitions shall not be processed by Purchasing unless they have been approved by the Quality Assurance Section.

4.3 Control of Configuration

4.3.1 Changes in contract drawings, specifications and procedures originated by the customer shall be distributed to QA by the Contracts/Legal Department for distribution to cognizant personnel.

4.3.2 Q.A. and Manufacturing will review all customer originated changes and determine inspection and/or manufacturing modifications required. Purchasing will notify vendors of any such changes identified so that vendors can determine any necessary price changes and/or manufacturing or process changes.

4.3.3 Where required all vendor manufacturing, process or inspection changes and associated documents will be reviewed by Q.A. and Manufacturing. Approval of, or suggested changes to, vendor change documents shall be communicated to the vendor by Purchasing.

4.3.4 Re-identification of drawings and specifications will be done by Q.A. This is described in Section 6.0 of the Q.A. Manual.

4.3.5 Purchasing will draft a change notice to the original purchase order detailing approved reidentification of drawings, specifications, and vendor manufacturing and Q.A. changes. The change notice will be reviewed by Q.A. and Manufacturing and must be approved as evidenced by the signature of the appropriate Q.A. representative before release by Purchasing to the vendor.

4.3.6 Purchasing will distribute copies of the approved change notice to Contracts/Legal, Q.A., and Manufacturing. The change notice will include an acknowledgement copy which when signed and returned by the vendor will be included as part of Purchasing's vendor files.

4.3.7 Changes to contract drawings, specifications and procedures initiated by Pennsylvania Operations or its subcontractors shall be processed in the same manner as those initiated by the customer except for the following actions:

4.3.7.1 Specific and complete documentation of Pennsylvania Operations and/or subcontractor initiated changes will be furnished to the Contracts/Legal for submittal to the customer.

4.3.7.2 Contracts/Legal shall receive customer disposition of such changes before distributing the changes for Purchasing, Q.A. and Manufacturing action.

5.0 INSTRUCTIONS, PROCEDURES AND DRAWINGS

5.1 Scope

This section describes the Quality Assurance requirements imposed during plant operations to assure that all activities conform to contractual and regulatory requirements, and to internal Pennsylvania Operations procedures.

5.2 Requirements

The Document Control Section is responsible for maintenance, issuance, retrieval, and initiating the periodic review of documentation.

Quality systems are built around but not limited to the following types of documentation:

5.2.1 Process Outline (PO) - Defines the manufacturing process, including product definition, materials, and processing operations. Broad parameter ranges are included for operational limits on variables, and control spans within the larger ranges are also specified when necessary. Submittal to customer for approval is required. Internal approvals: Manufacturing, Quality Assurance, Health and Safety, Nuclear Material Control.

5.2.2 Manufacturing Instructions (MI) - Defines the operation and safety aspects of each piece of equipment. Specific operating parameters, dimensions, tolerances and, where appropriate, acceptance criteria are included. Where necessary, drawings and flow diagrams are provided. Submittal to the customer is not required. Internal approvals: at a minimum, Manufacturing and Quality Assurance.

5.2.3 Process Data Sheets - Accompanies material sublots, lots, and batches and provides the appropriate outline for data collection. Examples of forms are attached to Manufacturing Instructions.

Data are available for Quality Assurance use. Internal aporoval: at a minimum, Manufacturing and Quality Assurance.

5.2.4 Quality Assurance Release Form 1013E - Documents QA release of material at each QA hold point to Manufacturing and Production Control.

5.2.5 Engineering Release and Change Notice Form 293-201A - Documents the release of materials for production by Process Engineering. Also used to modify process parameters incorporated in Manufacturing Instructions which may vary from lot to lot, such as batch make-up composition or pressing pressure.

5.2.6 Quality Assurance Outlines and Procedures

The various types of Quality Assurance procedures are discussed in Section 17 of this manual. Those procedures provide comprehensive instructions for the performance of Quality Assurance related activities. Where appropriate, the procedures shall include qualitative and quantitative acceptance criteria.

5.2.7 Shipping Receiving Instructions (SRI)

These procedures describe the routine activities required in the handling of nuclear materials shipments and receipts including the inspection of shipping containers, performance of radiological surveys and the preparation of shipping papers and container labels. Internal approvals: at a minimum, Manufacturing, Quality Assurance, Health and Safety, Nuclear Material Control.

5.3 Copies of applicable and necessary procedures, instructions and drawings shall be available in the appropriate work area prior to the performance of any activity described in those procedures. The Document Control Procedure which insures the currency of operating documents is described in Section 6.0 of this manual.

6.0 DOCUMENT CONTROL

6.1 Scope

6.1.1 The control of designated instructions, procedures, and drawings shall be the responsibility of the Document Control Group.

6.1.2 The distribution of, maintenance of, issuance of, retrieval of, causing periodic review of, and issuing plan lists of documents shall be the responsibility of Document Control.

6.2 Requirements

Outgoing Document Flow:

6.2.1 The originator in conjunction with the Q.A. Engineer and/or Process Engineer determines if the revision or the newly developed procedure requires (a) control, and (b) customer submittal for approval or information.

6.2.1.1 The originator transmits the procedure to Document Control.

6.2.1.2 The originator notifies Document Control if the procedure requires submittal to the customer for approval or information.

6.2.1.3 If submittal to the customer is required, Document Control completes the submittal form and forwards the form with the required number of copies of the procedure to Contracts/Legal Department.

6.2.1.4 Copies of applicable Q.A. forms may be included with procedures for information only. Such forms are not considered as part of the procedure and are not subject to customer approval unless required by contract.

6.2.2 Document Control is responsible for acquiring internal signatures. If customer approval is not required, it will determine product

applicability, obtain necessary internal approvals, stamp document with the Q.C. Acceptance Stamp and record the necessary data.

6.2.2.1 Document Control shall reproduce the document in accordance with a predetermined distribution list developed by Q.A. and the originator.

6.2.2.2 The original and/or copy shall be maintained in the Document Control Library.

6.2.2.3 Document Control will apply a control number to each document issued. Personnel will then be notified that the document is ready for distribution, via Document and Drawing Control Form ITC-009.

6.2.2.4 Document Control will not issue a document to an individual unless one of the following conditions has been met:

a) Obsolete or superseded documents are returned to the Document Control Representative when newly revised documents are issued.

b) The individual cannot account for the obsolete or superseded documents after a thorough search has been conducted.

6.2.2.6 The signed Document and Drawing Control Form shall be maintained as a receipt by Document Control.

6.2.3 Upon receipt it becomes the responsibility of the document recipient to distribute the new or revised document to the appropriate work station.

6.3 Incoming Document Flow:

6.3.1 Contracts/Legal receives the document from the customer, notes the

disposition, makes predetermined copies and transmits to Document Control.

6.3.2 Document Control shall record the disposition, maintain a copy for their file and take the action necessary as indicated below.

6.3.3 If the document is approved, follow the procedure as outlined in 6.2.2.2 through 6.2.3.

6.3.4 If the document is conditionally approved or approved with comment, Document Control shall follow the procedure as outlined in 6.2.2.1 through 6.2.3, and attach a copy of the comments to the document.

6.3.4.1 The originator is responsible for revising the document within the specified time period and forwarding the revision to Document Control.

6.3.4.2 Document Control shall be responsible for follow-up. The originator has final responsibility to insure the document has been resubmitted within the allowed time period.

6.3.5 If the document is disapproved, Document Control will attach a copy of the document to the submittal form and send it to the originator for correction. The revised procedure shall follow the normal outgoing document flow.

6.3.6 As determined by the Quality Assurance Manager, Document Control shall be responsible for the distribution and recording of all documents relating to testing, inspection, and manufacturing plus such other ancillary documents that are necessary in fulfillment of contract requirements.

6.3.7 The Document Control Section shall be responsible for the distribution of contract requirements and specification. The Contracts/Legal

Department shall assume the responsibility of assuring that all contract documents are available well in advance of starting a new contract so that proper review and distribution can be made.

6.3.8 The Quality Engineering Section, in its performance of audits, shall ascertain that selected documents are current (See Section 18.0, Audits).

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

7.1 Scope

To assure that purchased material, equipment and services conform to purchasing specifications, and regulatory requirements such as Title 10 CFR 70.22(f), 10 CFR 71.51, and 10 CFR 71, Appendix 'E', evaluations of vendor capabilities are made consistent with the importance, complexity, contractual and regulatory requirements related to the product or services. This is accomplished through an evaluation and approval of the vendor's quality program, review of vendor certifications and inspection of the product received. Such reviews and approvals shall be documented and the documentation retained in QA files.

7.2 Evaluation and Selection of Vendors

7.2.1 Purchasing shall select procurement sources primarily on the basis of demonstrated quality, price, and delivery.

7.2.2 Where a vendor's price is based on exceptions to specifications or ordering data, the Managers of Quality Assurance, Manufacturing and Engineering shall evaluate and prepare a recommendation concerning approval of the vendor.

7.2.3 When adequate records or performance history are not available to indicate manufacturing and quality capability, the Managers of Quality Assurance, Manufacturing and Engineering may designate representatives to conduct a vendor survey to verify the existence of processes, systems, equipment, and procedures adequate to meet Pennsylvania Operations, customer and regulatory agency standards and specifications. When appropriate, surveys shall include subvendors.

7.2.4 When appropriate, and necessary, the Quality Assurance Department shall initiate and maintain a Rating System to evaluate vendor quality capability.

7.2.5 In the evaluation of vendor performance and in the assignment of ratings, Quality Assurance engineers shall collaborate with cognizant Purchasing, Manufacturing and Engineering personnel to prepare a knowledgeable and accurate evaluation.

7.2.6 The Quality Assurance Section shall update Vendor Ratings at the request of the Purchasing Supervisor.

7.2.7 Facility surveys, certifications, or receival inspection may be waived by Quality Assurance when the vendor has a record of satisfactory performance in delivering similar products to contract requirements over a substantial period of time.

7.2.8 Vendors receiving unsatisfactory or marginal ratings shall not be used unless the product or service required is not available elsewhere on a practical basis. In the event vendors with these ratings are used, the Quality Assurance Section shall exercise special surveillance precautions including:

7.2.8.1 More frequent overchecking of vendor work in progress.

7.2.8.2 More frequent surveillance of vendor administrative procedures.

7.2.8.3 More frequent submittal of reports from vendors.

7.2.8.4 More stringent control and inspection of received items.

7.2.9 Prior to purchase of products or services, Purchasing shall consider the results of vendor ratings, and previous performance together with price and delivery considerations, in selecting vendors.

7.2.10 Where appropriate and available, Purchasing shall use customer-supplied source-capability information and the Babcock and Wilcox corporate "List of Approved Suppliers" when considering the placement of purchase orders.

7.3 Submittal of Purchase Orders

7.3.1 Prior to issuing purchase orders, the Manager of the Materials Department shall request the Contracts/Legal Department to obtain customer approval of major vendors if required by the contract.

7.3.2 Customer approval of vendors normally will not be required where the vendor supplies standard commercial articles or raw materials. Approval of raw material vendors will be handled on a case-by-case basis.

7.4 Control of Vendor Measuring Equipment

7.4.1 Each vendor, or subvendor, where appropriate, shall submit as part of his QA plan a description of his test equipment including limits of accuracy, methods, and frequency of calibration, and control standards employed. Procedures for calibration of measuring and test equipment shall meet the requirements of customer and Pennsylvania Operations specifications.

7.4.2 Where appropriate, source inspectors shall be responsible for determining whether vendor measuring and test equipment meets contractual requirements.

7.5 Source Inspection

7.5.1 Where appropriate, the Manager, Quality Assurance shall establish procedures for maintaining QA surveillance of procured materials at the source of manufacture. This may be done when the quality of an

item cannot be verified by review of certified test reports or receipt inspection. This may also be required when the items procured are extremely complex, relatively important, or of sufficient quantity to merit source surveillance or require special tests or processes.

7.5.2 Procedures for source inspection shall be established in accordance with the relative importance, complexity, and required quality of items being procured.

7.5.3 Source inspection shall normally be required when any of the following considerations apply:

7.5.3.1 Inspection at any other point would require uneconomical disassembly or destructive testing.

7.5.3.2 Inspection at any other point would destroy or require the replacement of costly packaging materials and/or containers.

7.5.3.3 Special instruments, gages, equipment or facilities required for inspection or testing are available only at the vendor's facility.

7.5.3.4 Loss of time due to unacceptable shipments cannot be tolerated because of schedule requirements.

7.5.3.5 Inspection is necessary to verify that specific processes, tests, or inspections required of the supplier were adequately accomplished and that certificates of conformance to requirements are valid.

7.5.3.6 Items are to be shipped directly from a supplier's facility to a site other than Pennsylvania Operations.

7.5.4 The inspector shall be provided with a detailed inspection plan. The plan shall define the inspector's responsibility, authority, and lines of communication both at the vendor's plant and at Pennsylvania Operations.

7.5.5 Source inspectors will routinely review the following points with the vendor:

7.5.5.1 Inspection hold points.

7.5.5.2 Measurement accuracy of instruments and equipment.

7.5.5.3 Control of welding electrodes and filler wire (if required).

7.5.5.4 Inspection records and reports.

7.5.5.5 Identification of shipments.

7.5.5.6 Records of Pennsylvania Operations audits performed to ensure that appropriate action has taken place to correct the noted discrepancies.

7.5.6 Source inspectors shall be familiar with the work program of the vendor. A training period shall be instituted for inspectors not certified previously. Records of certification shall be maintained in the Quality Assurance and Training Section files.

7.5.7 The frequency of surveillance at vendor or subvendor plants shall be determined by the importance of the work and its effect on product quality.

7.5.8 The results of inspections and surveillance activities shall be documented and retained on file in the Quality Assurance Section. Records shall be available for review by authorized customer and regulatory agency representatives.

7.5.9 When nuclear material accountability analyses are performed for PA Operations through contract with outside services, those service organizations will be audited no less frequently than once each year during which the service is obtained. The initial audit will be performed before the contract is issued. The audit will determine the organizations' capability and performance with respect to Procedures, Calibration, Training, and Qualification. The Nuclear Regulatory Commission will be advised through the NMC&A Department in advance of contracting outside services for NMC analyses.

7.6 Vendor Certification and Test Results

7.6.1 Where appropriate, the vendor shall be required to provide documented certification and/or test data to verify that the product or services conform to all specifications and regulatory requirements set forth in the procurement document.

7.6.2 If the purchased item or service is subject to the requirements of Title 10 CFR 21 or 10 CFR 70.22(f) or 10 CFR 71.51, the vendor shall be required to notify the purchaser if any of the procurement specifications have not been met.

7.6.3 All vendor certifications, test reports and notices of nonconformances will be reviewed and evaluated by the cognizant Quality Assurance Supervisor or Engineer.

7.6.3.1 If the certifications and test results are found to be satisfactory, Quality Assurance shall release the procured materials as described in Section 8 (8.2.2) of this manual.

7.6.3.2 Where notice of nonconformance has been received from the

the vendor, the nonconforming items are segregated and placed on hold pending disposition. Disposition shall be accomplished as outlined in Section 8 (8.2.3) of this manual.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

8.1 Scope

This section describes the techniques used to identify and control materials, parts and components to assure that only acceptable materials and components are utilized in fabrication.

8.2 Requirements

8.2.1 Identification

8.2.1.1 Where appropriate, identification requirements shall be specified in procurement documents, and internal procedures and drawings.

8.2.1.2 The identification of materials shall be maintained through the use of permanent markings where appropriate, or by documents which provide traceability of the item or material to specific inspection, process or procurement data. Where identification markings are placed on the item, the location and form of such marking shall not adversely affect the fit, function or quality of the item.

8.2.1.3 The identification of materials and parts which are important to the function of safety related structures, systems or components will provide traceability to the appropriate drawings, specifications, manufacturing and inspection documents.

8.2.2 Receiving Inspection

8.2.2.1 Plans shall be prepared for the receipt, inspection, test, storage, release and distribution of procured items where deemed appropriate or required by contract. The inspection plan shall be used to verify characteristics of the items in conformance with the appropriate specifications and ensure no shipping damage has occurred.

8.2.2.2 The following basic inspections shall be performed at the point of receiving inspection:

(a) An identity check (materials shall be identified with the purchase order, drawing number, specification number, heat number, and material type designation) as appropriate.

(b) A damage check.

(c) Review of supplied inspection data for acceptable completeness and conformance with contract requirements.

(d) Verification that applicable drawings and specifications reflect the configuration of items received.

8.2.2.3 Inspection plans will specify what action is required during the actual inspection of the item (i.e., inspect, measure, test, confirm documentation, or other). Requirements for recording measurements will be noted and data sheets for this purpose will be included.

8.2.2.4 The use of sampling inspection will be considered in the receiving inspection plan. Individual characteristics may be classified as critical, major, or minor, and appropriate acceptable quality levels (AQL's) will be included in the QA Outline where appropriate.

8.2.2.5 When an item requires an acceptance test, the quality assurance plan shall include an adequate test procedure. Where the applicable specification does not reference a test procedure or does not contain sufficient acceptance test detail, the Manager, Quality Assurance shall supply the needed information.

8.2.2.6 When required, revisions to the receiving inspection plan will be made by the Quality Assurance Department. Each revision will be serialized and dated.

8.2.2.7 Whenever possible, the number of inspections and tests shall be established on the basis of proven statistical techniques. Composite samples shall be used to provide greater coverage of the material where feasible.

8.2.2.8 Procured items shall be maintained in a "hold" category until all required inspections have been completed. "Hold" tags shall be used. The items awaiting processing or inspection should be stored in an area where they are protected from damage from handling or environmental exposure.

8.2.2.9 Acceptable items shall be released for further processing using Material Release Certificates.

8.2.2.10 The inspection records shall be analyzed frequently to determine if the sampling plans are adequate to assure product compatibility with requirements. Overchecks may be instituted at any time at the discretion of the Manager, Quality Assurance. Where required by the appropriate contract, only customer approved sampling plans will be used.

8.2.3 Release of Procured Materials

8.2.3.1 Procedures shall be prepared where necessary to control the movement and use of procured materials.

8.2.3.2 Acceptable materials shall be released for processing using the Material Release Certificate.

8.2.3.3 Unacceptable materials shall be processed according to Section 15.0. Material awaiting inspection shall be withheld from further processing and placed in a hold category. Hold tags shall be used to control further movement or use of these materials.

8.2.3.4 Copies of all Material Release Certificates issued shall be maintained in Quality Assurance files to provide traceability of materials throughout all subsequent handling stages.

8.2.4 Control of Nonconforming Items

8.2.4.1 In addition to internal procedures, the customer may require completion of customer designed forms to report nonconforming items. If such is the case, the procedure listed in 8.2.4.9 will be followed using customer forms in addition to the regular deviation requests.

8.2.4.2 If the nonconforming condition is not considered detrimental to product quality and the nonconformance does not violate contractual or regulatory requirements, the material may be released to Production on "manufacturing risk". Release shall be made by Quality Assurance via the Material Release Certificate, Form Q.A. 1013-B which shall indicate the extent of nonconformance and any special instructions required to assure proper processing and subsequent inspection of the material.

8.2.4.3 Customer approval shall be required for items not conforming to contract requirements.

8.2.4.4 While awaiting final disposition, nonconforming materials shall be under the control of the Quality Assurance Department. Where

practicable, nonconforming items shall be immediately segregated from acceptable items, properly identified and processed to designated hold areas. Except in certain cases these hold areas must be physically segregated from other incoming or process areas.

8.2.4.5 Quality Assurance rejected materials shall be removed from the hold area and scrapped or returned to the vendor as soon as practicable. The vendor shall be notified of the rejection immediately. The Manager, Quality Assurance shall take necessary corrective action to prevent continuing nonconformance.

8.2.4.6 If disposition of nonconforming materials calls for repair/rework, the material records shall clearly designate the causes for original rejection. Material shall not be reclassified until repair/rework and reinspection, with proven conformance, is completed. Customer approval of repair/rework action shall be verified prior to reclassification.

8.2.4.7 Materials, parts or components which have been reworked or repaired will be reinspected by the same or equal methods as were employed in the original inspection. All rework and repair actions shall be documented. All reinspections and tests shall be performed in accordance with written procedures.

8.2.4.8 All records relating to nonconforming materials and their disposition shall be on file and available for review by authorized customer representatives.

8.2.4.9 Corrective action may be required of the vendor. The following procedure shall be followed:

(a) A Nonconformance Report and Notice of Nonconformance will be submitted to the vendor requesting a corrective action plan. The plan shall address the probable cause of nonconformance and suggested disposition of the material.

(b) The vendor corrective action plan and suggested material disposition will be reviewed by the Pennsylvania Operations Quality Assurance.

(c) Quality Assurance will evaluate the resubmitted material and the returned nonconformance report. The nonconformance report shall identify that the items are resubmittals of previous nonconforming items and reference the previous documentation.

8.2.4.10 A more detailed description of corrective action procedure is contained in Section 16.0 of this manual.

9.0 CONTROL OF SPECIAL PROCESSES

9.1 Scope

This section sets forth the measures taken to assure that certain processes that cannot be controlled by product inspection alone are accomplished with qualified personnel and procedures. Quality Assurance or Manufacturing shall be responsible for process qualification and personnel training. Where required by contract or regulation, all special process procedures, equipment and personnel shall be qualified in accordance with applicable codes, standards and specifications.

9.2 Requirements

9.2.1 During the review of contract requirements, Quality Assurance and Manufacturing shall determine which operations shall be considered as special process and require special training. Some of those previously determined are:

9.2.1.1 Non-destructive examination by radiography, ultrasonic testing, and liquid penetrant.

9.2.1.2 Cleaning procedures that are defined by contract.

9.2.1.3 Certain welding operations.

9.2.1.4 Heat treating.

9.2.2 Special process shall be performed in accordance with procedures which have been reviewed and approved by the Managers of Quality Assurance and Manufacturing.

9.2.3 Records of procedure and personnel qualification shall be maintained by the cognizant organization; i.e., Quality Assurance or Manufacturing, to which the qualification is applicable.

9.2.4 Records of special process operations and inspections shall be maintained by QA or Manufacturing as appropriate. Those records shall describe the activity performed and provide data regarding the process parameters and the identification of the material or item involved.

10.0 INSPECTION

10.1 Scope

The inspection program is conducted in accordance with standards and procedures which incorporate the quality requirements defined in applicable specifications and drawings. The procedures encompass receiving, in-process and final inspection, setting forth minimum requirements for acceptance. It is the responsibility of Quality Assurance to assure that these requirements are fulfilled.

10.2 Requirements

10.2.1 Inspection Provisions

10.2.1.1 A detailed Quality Control Outline describing the sequence of quality assurance activities during manufacturing is prepared as required for each contract.

10.2.1.2 Quality Assurance shall define the necessary inspection and test points from receipt of raw materials through fabrication and shipping of final product. The Quality Control Outline indicates typical characteristics to be measured, the method of examination, number of samples to be taken, type of plan to be used and the applicable acceptance criteria.

10.2.1.3 A Quality Control Outline shall be submitted for customer approval when required.

10.2.1.4 Inspection and test procedures and/or checklists shall be available at the inspection station. Those procedures and lists shall provide all information necessary to

to perform the inspection task and shall include, where required, drawings, specifications and acceptance criteria.

10.2.1.5 Inspection and test personnel shall be trained and qualified in a manner appropriate for the inspection task as provided for in Section 2(2.6) of this manual.

10.2.1.6 Where materials, components or parts have been modified, repaired or replaced; the conformance of the item shall be verified by inspection in accordance with the original design and inspection requirements where applicable. If the original inspection requirements are not applicable, a revised inspection procedure shall be prepared.

10.2.2 Source or Receiving Inspection

Purchased items which significantly affect quality of the final product shall be either source or receipt inspected by Quality Assurance.

10.2.2.1 Vendor certification and test reports, where required, will be reviewed to ascertain conformance to the purchase order requirements.

10.2.2.2 Sampling will be performed in accordance with an approved sampling plan designed in a manner consistent with the product quality requirement.

10.2.2.3 Any lot containing components with nonconforming conditions shall be processed per Section 15.0 of this manual, "Nonconforming Materials, Parts, or Components." Nonconforming lot(s) shall not be released for production until the defective condition is either corrected or the deviation is accepted in the manner outlined in Section 15.

10.2.2.4 Components shall be inspected for shipping damage upon receipt. Such damage shall be confirmed by Quality Control and the carrier shall be notified by the Materials Department. Quality Control may inspect any or all parts for conformance to specification or drawing.

10.2.2.5 Purchased materials and components shall also be inspected for proper identification, and other purchase order requirements.

10.2.2.6 Following the receipt and satisfactory review of all necessary reports, and subsequent verification that the material or parts are acceptable, formal acceptance shall be made by Quality Assurance.

10.2.3 In-Process Inspection

In-process inspections shall be performed as necessary to assure conformance to all requirements.

10.2.3.1 Each shop foreman is responsible for instructing personnel under his supervision, in the proper use of applicable process procedures. Each foreman is also responsible for the quality of the product insofar as the contribution of the operations under his control are concerned.

10.2.3.2 Each operator is accountable for following established procedures.

10.2.3.3 All inspection sampling shall be performed in accordance with the approved Quality Control Outline or an alternate plan prepared and approved consistent with product quality requirements.

10.2.4 Final Inspection

Final inspection shall be performed on completed materials and inspection data reviewed by Quality Assurance prior to storage or shipment.

10.2.4.1 Materials shall be inspected according to detailed inspection procedures prepared to insure the verification of all specified quality requirements.

10.2.4.2 All deviated components shall be treated in accordance with Section 16.0 of this manual.

10.2.4.3 All final inspection data shall be maintained and stored as defined in Section 17.0 of this manual.

10.2.5 If mandatory hold points are imposed by our customer such hold points will be designated in the manufacturing and Quality Assurance documents.

10.2.6 In addition to product inspection, a system of process audits shall be implemented to determine the continuing adherence of Manufacturing and service operations to procedures, process parameters and regulatory requirements. These audits are performed by Quality Assurance personnel on both a formal and informal basis. Formal audits are conducted as described in Section 18 of this manual.

10.2.7 Statistical Methods

10.2.7.1 The Quality Assurance Section shall be responsible for preparing necessary statistical Quality Control analyses, sampling plans, and control charts. Where required by contract, sampling plans and revisions will be submitted to the purchaser for approval.

10.2.7.2 Statistical approaches shall be based on applicable contract documents and shall use established statistical methodology as defined by government publications or standard textbooks such as those listed below:

(a) NBS Handbook 91 - Experimental Statistics

(b) Dixon and Massey - Introduction to Statistical Analysis

(c) Dodge and Romig - Sampling Inspection Tables

(d) MIL-STD-105-D - Inspection by Attributes

(e) MIL-STD-414 - Inspection by Variables

10.2.7.3 Control charts may be employed at principal processing steps that have a significant effect on product quality.

10.2.7.4 Statistical data records and control charts shall be available for review by authorized customer and regulatory agency representatives.

11.0 TEST CONTROL

11.1 Scope

The components manufactured at Pennsylvania Operations are inspected for compliance with specifications and drawings by the following techniques:

11.1.1 Various methods of metrology to meet dimensional requirements.

11.1.2 Examination with radiography, helium leak check and metallographic examination to meet integrity requirements.

11.1.3 Verification of physical properties and chemical properties and composition to meet material requirements.

Proof of qualification testing under ambient and environmental conditions to evaluate service performance is not carried out at the Pennsylvania Operations. Accordingly, a program for test control to demonstrate service reliability is not considered to be a part of the Pennsylvania Operations Quality Program.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

12.1 Scope

This section sets forth measures in effect to assure that all measuring and test equipment used in activities affecting quality are properly controlled, calibrated and adjusted to maintain accuracy within necessary limits. It is the responsibility of Quality Assurance to assure that proper procedures are followed for the calibration of in-service gages, measuring devices, and inspection fixtures.

12.2 Equipment Calibration and Control Standards

12.2.1 The Quality Assurance Department shall establish and maintain a program for the calibration of instruments and gages used to determine the conformance of materials or processes to specifications and regulatory requirements.

12.2.2 Calibrations shall be accomplished by comparing instrument readings against known values of standards under controlled conditions of temperature and humidity where these factors significantly influence the accuracy of calibration. Standard accuracy shall be traceable via certifications to NBS Standards or to other recognized standards as described in the specific calibration procedures.

12.2.3 Standards shall be calibrated at periodic intervals established on the basis of stability, purpose, and degree of usage.

12.2.4 The accuracy of standards shall have a tolerance no greater than 10 percent of the allowable tolerance for the equipment being

calibrated. Any greater tolerance must be approved by the Manager, Quality Assurance and the customer if required by contract.

Calibration Procedures

12.2.5 Calibration procedures shall cover, but not be limited to, the following typical measurement tools or devices:

(a) Balances

(b) Temperature Controllers

(c) Micrometers

(d) Timers

(e) Recorders

(f) Optical Measuring Equipment

(g) Radiation Measurement Devices

12.2.6 Calibration procedures shall include the following considerations:

(a) Technique for calibration

(b) Standard description

(c) Method for recording calibration results

(d) Limits of accuracy

12.2.7 Each item of measuring equipment and all standards shall be identified in a recall index maintained in the Q.C. Calibration Laboratory and/or a computer master file. Identity shall be by item serial or code number. Such identity number shall be affixed directly to the measuring tool, when practical, or alternately to its carrying case.

The following additional information shall be contained either with

the index or in another location such as the work area. (In the latter instance, the location of records will be referenced in the index):

12.2.7.1 Dates of the last and next scheduled calibration for each item.

12.2.7.2 Status of the condition of each item.

12.2.7.3 Dates of corrections and/or repairs to the item.

12.2.8 Limits of accuracy shall be established to determine the serviceability of measuring tools. Single primary limits shall be employed wherever possible. Nonconforming tools shall be removed from service by appropriate tags. In some instances, as defined in specific calibration procedures, secondary limits may also be established, such that an item failing to meet primary limits may be continued in service for specified non-critical or restricted use. In these cases the index shall be modified accordingly. These items shall be appropriately labeled.

12.2.9 Where a tool or other measuring device has a highly specialized function or is used only for uncommon and very specific applications at infrequent intervals, the device will be calibrated only as required for a current application. During prolonged out-of-service periods calibration will be allowed to lapse and be so noted by the use of the appropriate label.

12.2.10 Calibration frequency for measuring tools shall be dependent on usage and drift characteristics. Calibration results will be reviewed annually and frequency levels adjusted where necessary.

12.2.11 All measuring and test equipment shall carry a tag indicating

the date of the last and next scheduled calibration and identity of the calibrator. Where tool size or configuration precludes attaching the tag directly to the tool, it may be attached to the storage or carrying case. Standard color tags shall signify compliance of the item within primary limits of accuracy. If the item has limited use, based on secondary limits of accuracy, a special color tag shall be used and the use limitations clearly marked.

12.2.12 Calibration data records shall be maintained in the Calibration file or, alternately, on file or on display in the area of item usage.

12.3.13 Calibrations shall be performed by Quality Assurance or in certain instances by other qualified personnel. Calibrations may also be performed by outside agencies.

12.2.14 Vendors of measuring/test equipment shall furnish accuracy and calibration data. Newly purchased measuring/test equipment shall be checked to verify vendor stated accuracy before being placed in service.

12.2.15 Instrumentation used to measure process parameters such as temperature or pressure may be subject to calibration control by Quality Assurance when the control limits defined in process procedures are restrictive. The extent of process instrument calibration shall be defined at the time of contract where appropriate.

12.2.16 When calibration of process instrumentation is required, instruments will be identified, tagged and entered on a recall index under the

cognizance of the Quality Control Calibration group. Procedures shall include the considerations of paragraph 12.2.6.

12.2.17 The Calibration group shall maintain a schedule for calibrations and will update the recall index on a weekly basis.

12.2.18 When significant errors in inspection and testing equipment are found during calibration, the Cognizant Supervisor/Engineer shall be notified via Form 252-610A and an investigation must be made to determine whether items previously inspected do, in fact, meet specifications. If the investigation indicates that the items were inspected with discrepant equipment, appropriate corrective action will be taken to reinspect the items or to notify the customer in the event product shipment has occurred.

13.0 HANDLING, STORAGE AND SHIPPING

13.1 Scope

This section provides a general outline of the program established to control the handling, cleanliness, preservation, packaging, shipping and storage of customer supplied materials and manufactured product to prevent damage, loss or deterioration. Where appropriate, procedures shall be prepared and personnel qualified in the performance of these tasks.

13.2 Requirements

13.2.1 Handling - Cranes, hoists, slings and industrial trucks used in the transfer and movement of nuclear fuel materials and finished products shall be operated by qualified personnel in accordance with written procedures. Procedures shall also be prepared for the inspection of such equipment at specified intervals.

13.2.2 Cleanliness - To reduce the probability of product contamination, procedures shall be developed for the cleaning and inspection of the chemical processing equipment. Reuseable product containers shall be cleaned prior to use and finished components will be cleaned to the extent necessary to achieve conformance to applicable specifications.

13.2.3 Packaging - Nuclear materials shall be packaged in authorized containers under conditions established to prevent subsequent deterioration or contamination. Packaging methods, materials and identification requirements shall be specified by written procedure.

13.2.4 Preservation and Storage - Customer supplied materials and finished products shall be protected from damage and degradation while awaiting final use or shipment. Nuclear materials are "tamper-safed" and stored in designated areas as described in applicable procedures.

13.2.5 Shipping - Written procedures shall be followed for the inspection of containers, load securement, proper labeling and consignee notification to assure full compliance with regulatory requirements and customer specifications.

14.0 INSPECTION, TEST AND OPERATING STATUS

14.1 Scope

This section sets forth measures in effect to indicate the status of inspections and tests performed on individual purchased or manufactured items.

14.2 Requirements

14.2.1 The status of manufacturing and inspection operations shall be documented in accord with the applicable Quality Control Outline or other applicable procedures.

14.2.1.1 Each operator shall sign off by signature and date on the Data Sheet for the operation performed as verification that the operation has been completed as planned.

14.2.1.2 The performance of all inspections, tests and analyses specified in the applicable Quality Assurance and Contract documents shall be monitored through a thorough review of test, inspection and analytical reports by the cognizant QA Engineer or Supervisor.

If circumstances prevent the performance of a particular inspection or test, the item or material affected shall be considered to be in nonconformance and disposition will be made as described in Section 8 (8.2.4) and Section 15 of this manual.

14.2.2 Receiving Inspection

14.2.2.1 Receiving inspection on incoming material shall be performed as specified in the applicable QA document.

14.2.2.2 Any items determined to be nonconforming shall have a "Hold" tag attached to the item. Only Quality Assurance shall remove any "Hold" tag from an item.

14.2.2.3 Any item deemed to be unacceptable shall have a "Reject" tag attached to it and shall be segregated from conforming material where possible.

14.2.3 In-Process Inspection

14.2.3.1 Where in-process inspection is specified in the applicable QA Document, any item or component found to be nonconforming shall have a "Hold" tag attached to it indicating a deviation which may require a repair or rework, reject, or use as is disposition. Certain intermediate product may be reworked on Manufacturing cognizance without formal QA "Hold" action. Such rework shall be approved by QA through approval of an "Engineering Release".

(a) Where a "Hold" tag has been affixed, the tag shall remain with the material until the material has been reworked and found acceptable.

(b) Any component classified as reject shall have a "Reject" tag attached to it and shall not be further processed.

14.2.4 Final Inspection

14.2.4.1 Material or components which have completed the final inspection operation shall be moved to an appropriate storage area.

14.2.4.2 Under no circumstances shall a nonconforming component which

has been processed through final inspection be shipped to a customer or utilized internally, until the discrepant condition has been properly evaluated and dispositioned as described in Section 15.0 of this manual.

15.0 NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

15.1 Scope

This section sets forth the measures taken to control materials, parts, or components which do not conform to requirements in order to prevent their subsequent use. It is the responsibility of Quality Assurance to assure that the following requirements are fulfilled on nonconforming components.

15.2 Control of Nonconforming Items

15.2.1 Section 8, "Identification and Control of Material, Parts and Components" discusses receipt inspection and control of nonconforming procured items. Similar policies shall apply to material found to be nonconforming at in-process and final inspection stages with the following exception:

15.2.1.1 Where feasible, "Hold" areas for the storage of in-process nonconforming materials shall be separate from those used for incoming materials. If the same hold area is used, materials will be identified as to status.

15.2.1.2 The Manufacturing Supervisor shall be notified of all nonconforming materials by the cognizant Quality Control Section.

15.2.1.3 Customer approved repair action may be performed internally rather than at sub-vendors plants. Materials, parts or components which have been reworked or repaired (either by vendor or in-house) will be reinspected by

the same or equal methods as were employed in the original inspection. All rework or repair inspections and tests shall be performed in accordance with written procedures.

15.2.2 All records (IDR's, nonconformance reports, deviation requests, etc.) relating to nonconforming materials and their disposition at in-process and final inspection stages shall be on file and available for review by authorized customer representatives.

16.0 CORRECTIVE ACTION

16.1 Scope

This section describes a corrective action program to assure that conditions adverse to quality such as defective material, nonconformances to specifications, deficiencies, and noncompliances to approved Manufacturing or Quality Assurance procedures are promptly identified and corrected. It shall be the responsibility of the Quality Assurance Department to bring to the attention of Pennsylvania Operations Management, any situation adverse to quality and to verify that the appropriate corrective action has been taken to preclude its repetition.

16.2 Corrective Action Procedures

16.2.1 Quality deficiencies detected during inspection or audit activities will be documented by the issuance of an Internal Deficiency Report (IDR).

16.2.2 The IDR procedure requires that a prompt response be made by the responsible individual as to the corrective action to be taken for the cause and specific deficiency.

16.2.3 Review of the completed IDR by the appropriate Quality Assurance personnel and the other responsible persons shall consider the following:

(a) The date corrective action will be taken and the responsible individual.

(b) Other items which could be affected by similar deficiencies but not detected. This includes previous shipments and in-process material.

(c) Previous IDR's which are related to this item which could point to a more serious problem.

16.2.4 The Quality Assurance Engineer or Supervisor is required to follow-up each IDR to ensure that the action was taken and is sufficient. In addition, the items may be added to the audit checklist for subsequent follow-up during internal audits.

16.2.5 All IDR's shall be charted for each major contract on a monthly basis. The use of the chart will point out areas where additional effort is necessary to reduce the number of deficiencies related to specific deviations.

16.2.6 Purchased item IDR's will also be maintained on file in Purchasing by contract and vendor. This will aid in evaluation of vendor quality performance.

16.2.7 Analysis of the trend data noted in 16.2.5 above, will provide insight into the effectiveness of the corrective action which has been taken. This can lead to more emphasis on problem areas and re-analysis of the underlying causes of noted deficiencies.

16.2.8 In addition, an open action file should be maintained by each Quality Assurance Engineer/Supervisor on all major contracts. This file should include all IDR's, which have not been closed-out or completed.

16.2.9 When updating audit checklists, consideration should be given to the deficiency charts. Those items which appear with regularity should be included on checklists for special monitoring purposes.

16.2.10 The data generated in the corrective action program will be reviewed routinely by Pennsylvania Operations Management and provide data for reports to customers.

16.3 Internal Deficiency Procedures

16.3.1 Internal Deficiency Reports (IDR's) shall be used on all applicable contracts.

16.3.2 The purpose of the internal deficiency report is to inform responsible personnel of deficiencies so that the proper corrective action can be taken for the following items:

16.3.2.1 Deviations from regulatory requirements related to quality.

16.3.2.2 Deviations from customer approved procedures.

16.3.2.3 Deviations from internal in-process specifications.

16.3.2.4 Deviations from final inspection and test limits.

16.3.2.5 Warning of approaching out of specification conditions of any of the items listed above.

16.3.3 Copies of the IDR shall be sent immediately to the responsible Process Engineer, Manufacturing Manager, QA Supervisor/Engineer and the Quality Assurance Manager.

16.3.4 When appropriate (e.g., contract requirements have been violated) the affected material shall be properly segregated from the production material and appropriately tagged.

16.3.5 The Manager of Quality Assurance shall routinely review the deficiency items and the action taken. If deemed appropriate, the following actions may be taken.

16.3.5.1 Convene the Material Review Board.

16.3.5.2 Immediately stop production in the affected area.

16.3.5.3 Take other appropriate action (NOTE: If immediate curtailment of production is necessary to protect product quality,

the cognizant Quality Assurance Engineer or Supervisor should stop production and immediately notify higher level management).

16.3.6 The individual to whom the IDR is addressed must reply within 48 hours or within the time specified on the IDR. The necessary responses are categorized below:

16.3.6.1 Immediate corrective action for specific deficiency - this is used to indicate the action required to disposition material.

16.3.6.2 Long term corrective action for cause - the corrective action noted here should be appropriate to prevent recurrence of similar deviations. This can include changes to operating procedures, instructions, re-qualification of personnel and processes, etc.

(a) There are certain production anomolies for which no immediate or long term corrective action can be determined and in many cases, the frequency is too small to justify a concentrated investigation into the cause.

16.3.6.3 When the cause of the deficiency is unknown, the IDR should be answered stating this. At this time, the program for determining the cause and the corrective action of the deficiency should be outlined with a target date noted for completion of this study. Upon determining the cause and corrective action, a supplemental answer to the IDR should be issued to the Quality Assurance Engineer or Supervisor noting the corrective action to be taken.

16.3.7 The completed IDR form is returned to the Quality Assurance Engineer or Supervisor for review and approval. If the answer to the IDR is considered unsatisfactory, a new IDR may be issued or the original IDR returned to the recipient for further action.

16.3.8 There must be mutual agreement between the Manufacturing and Quality organizations as to product disposition in order to use deviated material. Where appropriate, the Material Review Board will convene to determine the product disposition. If the material violates contractual requirement and the internal agreement is to accept the material, then the appropriate action will be taken to inform the customer and request his acceptance.

16.3.9 The cognizant QA Supervisor or Engineer will close out the IDR when the proposed corrective action has been evaluated and approved. The performance of corrective actions shall be reviewed by the responsible QA Supervisor or Engineer to insure that all corrective action commitments are implemented as stated.

17.0 QUALITY ASSURANCE RECORDS

17.1 Scope

This section describes measures for the preparation and maintenance of Quality Assurance records. It is the responsibility of Quality Assurance to assure that adequate test and inspection records are maintained to meet all contractual and quality related regulatory requirements and any additional requirements which may be considered appropriate.

17.2 Records and Reports

17.2.1 Records shall be maintained to furnish documentary evidence of the performance of production and inspection activities affecting product quality. The format of all inspection, test and certification data forms shall be reviewed and approved by Quality Assurance prior to issue. Review shall be performed by the Quality Assurance Manager or his designated representative. Revision of forms currently used shall require similar review and approval before issuance.

17.2.2 Records shall be held in the Quality Assurance files during the course of the contract and will be available for review by management personnel and by authorized customer or regulatory agency representatives.

17.2.3 When a contract is officially completed, records shall be transferred to the company archives where they are held for a period specified by contract.

17.2.4 Archive record storage areas are selected and maintained to provide adequate security and protection from loss due to fire, theft, flooding and deterioration.

17.2.5 A test procedure numbering system shall be maintained by Quality Assurance. Quality Assurance test, inspection and operating procedures shall be categorized in the following series:

12.2.5.1	Physical Test	PT Series
17.2.5.2	Chemical, Spectrographic and Metallographic Analysis	UAS or PAS Series
17.2.5.3	Detailed Inspection Procedures	DIP Series
17.2.5.4	Calibration Procedures	CP Series
17.2.5.5	General Procedures	GP Series
17.2.5.6	Q.C. Outlines	QCO Series

17.2.6 Data resulting from the various test and inspection operations shall be recorded on appropriate forms.

17.2.7 Certifications are provided on various forms depending on the complexity of the requirements. Examples are:

17.2.7.1 Certificate of Test Results

17.2.7.2 Certificate of Conformance

17.2.7.3 Product Certification Record

17.2.8 In all instances data recorded shall include:

17.2.8.1 Specific part identification including drawing number and revision, when applicable.

17.2.8.2 Specification number and revision applicable to definition of characteristics measured.

17.2.8.3 Test, inspection, or manufacturing procedure number, when applicable.

17.2.8.4 Date inspections were made and signature of inspector.

17.2.8.5 Acceptance criteria, if not defined and identical to that listed in the reference drawing or specification, where applicable.

17.2.9 Records shall be maintained by Quality Assurance which can be used to analyze trends at critical inspection points and to analyze the results of corrective action taken on nonconforming items.

17.2.10 Records and/or forms (contractor forms or approved substitutes) will be completed and supplied to customers as required by contract.

18.0 AUDITS

18.1 Scope

This section describes the Quality Assurance Audit Program. The procedure applies to both internal and vendor audits, and provides procedural guidelines for the performance of formal audits.

18.2 Definitions

18.2.1 Finding - a portion of an audit where a deviation from a standard exists (a deficiency). Each finding requires completion of an ACAR Form (ITC-042).

18.2.2 Recommendation - a suggestion or proposal which might improve the performance of the area or operation audited. A recommendation does not require completing any separate additional form or follow-up as with a finding but requires listing the item in the body of the report, when applicable.

18.3 Procedure

Responsibility	Action
Audit Coordinator (Functional title of individual responsible for auditing activity)	1. Responsible for the administration and scheduling of the audit program. 2. He shall select one of the following options: (a) He shall select auditors from the list of personnel who have experience and/or training to perform audits. (b) He shall conduct audits and may

Responsibility	Action
	select personnel from the list described in 2(a) to assist in performing these audits.
	3. The team make-up shall be such that no team member is asked to audit his own area of responsibility.
	4. Prior to the audit, audit plans and/or appropriate data will be generated, maintained and revised by the audit coordinator; however, the prime responsibility for Class I audits* lies with the cognizant engineer or supervisor. The audit coordinator may provide audit data as deemed necessary.
Audit Team Pre-Audit	5. In preparation for each audit, the audit team shall review findings of previous audits and/or checklists for that area. This can be accomplished by checking with the audit coordinator. A follow-up audit shall be made to verify that corrective action has been taken on previous findings.
Audit Team-Audit	6. Perform the audit according to the audit plan(s) and/or checklist assigned. Interviews with cognizant supervisory

* The types of audits (Class I-V) performed are described in paragraph 18.6 of this Section.

Responsibility	Action

personnel and review of records and other documents shall be made as team functions.

7. An objective evaluation of quality related practices, procedures and instructions and the effectiveness of implementation shall be made of processes and/or products as applicable.

8. For Class II, and V Audits, each finding shall be recorded on a separate form "Notification of Audit Finding", Form No. ITC-043 and brought to the attention of cognizant personnel.

9. At the conclusion of the Class II and V Audits, a closeout meeting shall be held between the audit team and the cognizant area representative(s). The Manager of the audited area or his designee shall attend the closeout meeting.

   (a) At the meeting, all audit findings and recommendations shall be discussed.

10. At the conclusion of a Class III and IV Audit the auditor shall

    (a) Issue an audit report to the Manager

Responsibility	Action
	of the section being audited. The report shall include the following: 1) Cover Memo 2) Audit Checklist (optional) 3) ACAR's (when applicable)
	(b) Send additional copies as deemed necessary to 1) Auditee 2) Audit Coordinator 3) Other Concerned Personnel
Audit Team Leader	11. Within ten (10) working days after completing the Class II or V Audit, prepare a final report of the findings using the Audit Corrective Action Record (ACAR) Form No. ITC-042. Prepare the form as follows:
	(a) Use a separate form for each different type of finding.
	(b) Address the ACAR to the cognizant manager.
	(c) Indicate the Area being evaluated, the reply by date and the ACAR number as follows:
	(1) Class I Audits Since the frequency of this audit

Responsibility	Action
	is determined by the auditor, the numbering system will also be at his discretion. An example that may be used is as follows: CL 1 L-80-1-1 This follows the format: Class of Audit (CL1), letter designation of area audited (L-Low Enriched), etc. Last two digits of the year, next consecutive number of audit performed, each finding per audit separately numbered, i.e., CL1-L-80-1-1, CL1-L-80-1-2, CL1-L-80-1-3.
	(2) Class II, III, IV, V Audits The ACAR number will be identical to the audit number. It will be supplied by the Audit Coordinator and designate the area audited (e.g., L-Low Enriched), the last 2 digits of the year, the next consecutive number of audit performed, with each finding per audit separately numbered.

Responsibility	Action

i.e., Audit scheduled - L-80-2

First finding - L-80-2-1

2nd finding - L-80-2-2

(d) List the finding with supporting information and (where possible) recommend corrective action to prevent recurrence.

(e) Sign and date the form.

12. Within the ten (10) working days after completing the Class II or V audit, prepare and submit the typed final report to the Manager of the section audited. Additional copies of the audit report shall be sent to the following:

1) Auditee

2) Audit Coordinator

3) Other concerned personnel

This report shall include the following:

(a) A brief summary including sections of the specification audited along with a description of the findings and recommendations resulting from the audit.

(b) The Quality Program Audit Plans and/or applicable checklist for the section audited.

Responsibility	Action
	(c) A detailed discussion of the area audited. This will include a listing of recommendations, if any.
	(d) A copy of the Audit Corrective Action Record (ACAR) as prepared in Step 11, if any.
	13. When follow-up is made on corrective actions taken as a result of a previous audit, Section IV of the ACAR Form shall be completed.
Auditee	14. If there are findings resulting from the audit each responsible manager shall respond by completing Section II of the ACAR within the specified time period (Reply by Date).
	(a) Return ACAR(s) to the auditor for his/her review.
Auditor	15. Review corrective action taken on each ACAR. Note that corrective action is satisfactory or unsatisfactory by completion Section III of the ACAR.
	(a) If response is not acceptable to the auditor, both parties should meet for a resolution. If parties cannot reach agreement the Audit Coordinator shall be notified and all parties shall meet to

Responsibility		Action
		discuss alternate solutions. When corrective action cannot be agreed to, upper management shall be advised and a resolution shall be given.
		(b) Return ACAR's to the Audit Coordinator.
Audit Coordinator	16.	Review corrective action taken on each ACAR and file with the audit report.
		(a) Assure follow-up audits are conducted in a timely manner to verify implementation of corrective action and minimize recurrence of similar deficiencies

18.4 Audit Areas

In all classification of audits, the activity or process to be audited will be at the following location:

Area		Location
LWR Activities	1.	Apollo-Uranium Plant and Decontamination Facility.

18.5 Management Review

Responsibility		Action
Audit Coordinator and/or Designee	1.	Periodically submit a status report to management which includes:
		a) The number of audits conducted during the period.
		b) The highlights of the audit findings.

18.6 Classification of Audits

Responsibility	Class	Action
Q.A. Representative and/or Designee	I (Process Audits)	1. Conduct audits of specific individual processes and/or operations of an activity such as a test, sintering, shipping & receiving, etc. a) The frequency of Class I audits will be determined by the complexity of the operations involved. Critical processes shall be audited a minimum of once each year.
Assigned Auditors	II (Product Quality, Systems, Audits)	2. Audits are performed to verify compliance with all aspects of the QA program. The specific audit points within an area are indicated by the audit checklist. a) The frequency of Class II audits will be approximately every six (6) months. b) Where feasible, all criteria of the quality system shall be audited within a three year period.

Responsibility	Class	Action
Managerial Team and/or Assigned Auditors	III (Off-Shift Mal-Practice Audit)	3. These audits are unannounced. The specific audit points within an area are indicated by the audit checklist. a) The frequency of Class III audits will be approximately every three (3) months.
Assigned Auditors	IV (Special Audits)	4. These audits may be performed to serve various management purposes such as: 1) Deficiency and noncompliance reports may be selected to ensure Pennsylvania Operations has taken the corrective action as stated. 2) Special audits suggested by management to review problems and/or potential problem areas. 3) Follow-up commitments to assure corrective action has been implemented. a) The frequency of Class IV audits is dependent upon need.
Assigned Auditors	V (Vendor Audits)	5. The vendor will usually be given approximately three weeks notice of a proposed audit.

Responsibility	Action
	a) Repeat steps 5 through 16. (18.3)
	b) The frequency of Class V audits is dependent upon need.

APPENDIX I

CROSS REFERENCE OF QUALITY ASSURANCE POLICY AND PROCEDURE MANUAL SECTIONS TO IMPLEMENTING PROCEDURES

Section	Subject	B&W Policies	PA Operations Quality Assurance Procedures	PA Operations Misc. Procedures
1	Organization	1703-70	-	-
2	Quality Assurance Program	1703-A1	QCO-608-15050-551 PAS/UAS-01-M GP-14, GP-15	- -
3	Design Control	1704-70	-	0405-01
4	Procurement Document Control	1705-70	GP-11	Purchasing Manual
5	Instructions, Procedures and Drawings	1706-70	GP-4, GP-25, GP-32 ITC-XX Series	GP-1.0
6	Document Control	1707-70	GP-11, GP-41	-
7	Control of Purchased Material, Equipment and Services	1708-70	GP-29, GP-40, GP-42 GP-43	NPS-XXX Series
8	Identification and Control of Materials, Parts and Components	1709-70	GP-40, GP-42 QCO-608-15050-551	MI 16.0 (CP-1)
9	Control of Special Processes	1710-70	GP-24	-
10	Inspection	1711-70	PAS/UAS-01-M PAS/UAS-02-M UAS-XX-X Series GP-12, GP-16, GP-38 GP-39, GP-40, GP-42 QC-DIP-XXX Series PT-XX Series QCO-608-15050-551	MI 3.0 (CF-1)
11	Test Control	1712-70	PT-5, PT-6, PT-70 QCO-608-15050-551	-
12	Control of Measuring and Test Equipment	1713-70	QC-CP-00-001 QC-CP-00-002 QC-CP-XX-XXX Series	-
13	Handling, Storage and Shipping	1714-70	ITC-XXX Series GP-35	MI 7.0, (CP-1) MI 8.0 (CP-1) MI 13.0 (CRP-1) MI 200 (Pu) SRI-XX Series

Section	Subject	B&W Policies	PA Operations Quality Assurance Procedures	PA Operations Misc. Procedures
13	Handling, Storage and Shipping (continued from page 84)			MI 7.10 (Pu) MI 7.11 (Pu)
14	Inspection, Test and Operating Status	1715-70	GP-20, GP-41	-
15	Nonconforming Materials, Parts or Components	1716-A1 1716-70	GP-26, GP-34, GP-37	-
16	Corrective Action	1717-70	GP-26	-
17	Quality Assurance Records	1718-70	GP-18, GP-22, GP-41	1311-01
18	Audits	1719-70	GP-19	0103-04 0103-05

APPENDIX II

Safety Related Structures, Systems, Materials and Components

Subject to the Quality Assurance Program

1. Criticality detectors and alarms
2. Criticality control materials
3. Radiation detectors and counters
4. Process control instruments used in nuclear processing applications
5. Gloveboxes and gloves
6. Reactor fuel materials
7. Reactor components
8. Fire detection and suppression equipment
9. HEPA filters
10. Shipping containers and parts designed for nuclear materials transport

The above list is not necessarily all inclusive and additional items may be subject to the Quality Assurance program as determined by future regulatory or company requirements.