71-0483

WESTON CONTROLS DIVISION
Fairchild Weston Systems Inc.


# Quality Assurance Program Outline

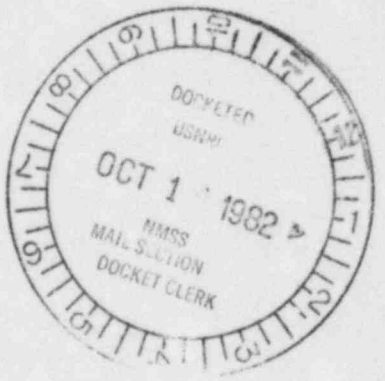
for

Contracts Invoking

10 CFR 50, Appendix B

and

10 CFR 71, Appendix E




Prepared by _____ 9/24/82
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WESTON CONTROLS
Archbald, Pennsylvania 18403

# INTRODUCTION

The Quality Assurance Program requirements for Nuclear production and utilization facilities are contained in 10 CFR 50, Appendix B. The Quality Assurance Program requirements for the use and fabrication of packagings for Type B quantities of radioactive material are contained in 10 CFR 71, Appendix E. With the exception of contract specific items, both of these sets of requirements are enveloped by the provisions of American National Standard ANSI N 45.2-1971.

Weston has an established history of involvement in Defense, Aerospace, Naval Nuclear, and Nuclear Power Development programs. Consequently, it has an established Quality Program in conformance with many government and industry standards. The purpose of this document is to outline a Quality Program in conformance with ANSI N 45.2-1971 by identification, clarification, or amendment of existing procedures. Thus, for any contract invoking ANSI N 45.2-1971, the applicable Quality Program would be that outlined in this document plus any program document written to satisfy contract specific provisions. Any user of this document should also be made aware of the probable applicability of the provisions for reporting of defects and noncompliance of 10 CFR 21.

In the following, section numbers refer to those of ANSI N 45.2-1971 and letters following section numbers label successive use in that standard of the verb "shall."

WESTON CONTROLS
Archbald, Pennsylvania 18403

# QUALITY ASSURANCE PROGRAM MATRIX

| ANSI N45.2 Paragraph | Program Requirement | Quality Assurance Program Procedure No. | Section/Paragraph |
|---|---|---|---|
| 2 | QA Program | QC 114 and all other referenced procedures | |
| 3 | Organization | Organization Chart | |
| | | General Manager's Policy Statement | |
| | | QC 800 | All |
| 4 | Design Control | 77-15 | All |
| | | MEP #1 | All |
| | | MEP #2 | All |
| | | MEP #4 | All |
| | | MEP #5 | 10.0 |
| 5 | Procurement Document Control | QC 524 | I, II App. I |
| 6 | Instructions, Procedures, & Drawings | MEP #2 | All |
| | | MEP #9 | All |
| | | MEP #11 | All |
| | | 77-15 | |
| 7 | Document Control | 77-17 | |
| | | MEP #1 | All |
| | | MEP #4 | All |
| | | MEP #5 | All |
| 8 | Control of Purchased Material, Equipment, & Services | QC 100 | All |
| | | QC 114 | 2.4.13 |
| | | QC 524 | All |
| 9 | Identification & Control of Material, Parts and Components | QC 101 | Add. I |
| | | QC 102 | Add. I |
| | | MEP #2 | All |
| | | MEP #9 | All |
| | | MEP #11 | All |

| ANSI N45.2 Paragraph | Program Requirement | Quality Assurance Program Procedure No. | Section/Paragraph |
|---|---|---|---|
| 10 | Control of Special Processes | QC 106 | All |
| | | QC 114 | 1.2.1; 2.4.2 |
| | | QC 529 | 5.0 |
| | | MEP #2 | All |
| 11 | Inspection | QC 100 | 2.0 |
| | | QC 101 | 1.0, 2.0 |
| | | QC 102 | All |
| | | QC 114 | 2.4.8 thru 11 |
| | | QC 803 | All |
| | | QC 804 | All |
| 12 | Test Control | QC 104 | 1.0, 2.0 |
| | | 77-15 | |
| | | MEP #10 | 3.0 |
| 13 | Control of Measuring and Test Equipment | QC 113 | 1.0, 4.0, 6.0, 8.0, 9.0, 10.0 |
| | | QC 115 | 4.0 thru 10.0 |
| 14 | Handling, Storage, and Shipping | 55-9-1 | 6 |
| | | QC 105 | All |
| 15 | Inspection, Test, and Operating Status | QC 101 | All |
| | | QC 102 | All |
| | | MEP #10 | 7.0 |
| 16 | Nonconforming Items | QC 101 | Add. I |
| | | QC 102 | Add. I |
| | | SPI 100.2 | 1.0, 2.0 |
| 17 | Corrective Action | QC 800 | All |
| | | SPI 100.2 | All |
| 18 | QA Records | QC 101 | Add. I |
| | | QC 102 | Add. I |
| | | QC 114 | 2.4.12 |
| | | QC 116 | 5.0 |
| | | SPI 100.2 | |
| | | MEP #2 | |
| | | MEP #4 | |
| | | MEP #10 | 7.0 |
| 19 | Audits | QC 116 | 1.0, 2.0, 5.0 |

2. Quality Assurance Program

2a
Requirement: Establishment of a Quality Assurance Program in compliance with applicable portions of the standard.

Procedures:

QC 114 - Quality Assurance Program
All others referenced herein

Implementation: All procedures referenced in this document have been in regular use for some years prior to the generation of this document. This document proposes to demonstrate their substantial compliance with the letter and intent of ANSI N45.2

2b
Requirement: Consideration of the technical aspects of activities performed.

Reference: Section 4, Design Control

2c
Requirement: Provisions for identification and compliance with Codes and Standards.

Procedures:

QC 114 Quality Assurance Program

Implementation: QC 114, Sections 1.0 and 2.0, require incorporation of contract specific requirements and standards.

2d
Requirement: Definition of organizational structure.

Reference: Section 3, Organization.

2e

Requirement: Identification of items and services to which standards apply.

Implementation: The program described in this document is applicable to any contract which invokes ANSI N45.2. It is also in use for contracts invoking Mil-Q-9858, and RDT F2-2.

2f

Requirement: Provision for assurance of quality consistent with applicable standards and requirements.

Procedures:

QC 114 Quality Assurance Program

Implementation: The procedures of this document apply to contracts for equipment and services for any Nuclear facility. QC 114, Sections 1.0 and 2.0, require incorporation of contract specific requirements and standards.

2g

Requirement: Provision for documentation of activities affecting Quality.

Reference: Section 18, Quality Assurance Records.

2h

Requirement: Provision for training of personnel performing activities affecting Quality.

Procedures:

QC 529 Training Program

Implementation: QC 529 provides for training of all personnel in the Quality Control Department and all supervisors of other departments performing activities affecting quality.

2i

Requirement: Provision for accomplishment of activities affecting Quality under controlled conditions.

Reference: Section 10, Control of Special Processes

2j

Requirement: Consideration of need for special processes.

Reference: Section 10, Control of Special Processes

2k

Requirement: Provision for management review of Quality Assurance Program.

Reference: Section 19, Audits.

3. Organization

3a
Requirement: Documentation of organizational structure, responsibilities, authority, and lines of communication for quality assurance.

Procedures:

- Organizational Chart
- General Manager's Statement of Policy

Implementation: The Organizational Chart at the end of this section documents the structure and lines of communication. The General Manager's Policy Statement documents the responsibility and authority for quality assurance.

3b
Requirement: Establishment of organizational responsibility.

Procedures:

- Various

Implementation: Most Quality Control procedures specify involvement of another organization and establish its responsibility. An example is Engineering responsibility for disposition of discrepant material and corrective action requests.

3c
Requirement: Establishment of authority and responsibility of persons and organizations performing activities affecting quality.

Procedures:

- Various

Implementation: This is done in the Quality Control and Engineering procedures referenced in this document.

3d
Requirement: Authority and freedom of persons performing quality assurance functions sufficient to identify problems, initiate solutions, verify implementation, and control further activity to proper dispositioning.

Procedures:

QC 800 — Corrective Action Request

Implementation: Per QC 800, it is the joint responsibility of Engineering and Quality Control to determine the need for, and obtain, corrective action, in any situation affecting quality.

3e
Requirement: Designation of person responsible for overall effectiveness of Quality Assurance Program.

Procedures:

- General Manager's Policy Statement

Implementation: The Quality Control Manager has responsibility for outgoing quality.

13f
Requirement: Independence of person responsible for overall effectiveness of Quality Assurance Program.

Procedures:

- General Manager's Policy Statement

Implementation: The Quality Control Manager has the authority to set up requirements necessary to assure customer satisfaction.

13g
Requirement: Access to appropriate management level of person responsible for overall effectiveness of Quality Assurance Program.

Procedures:

- Organizational Chart

Implementation: The Quality Control Manager reports directly to the General Manager.

3h

Requirement: Regular reports by person responsible for overall effectiveness of Quality Assurance Program.

Procedures:

QC 114 Quality Assurance Program

Implementation: This is accomplished through staff meetings, and written status reports, mandated by QC 114, Section 2.4.12(g).

3i

Requirement: Structure of organization and assignment of responsibility such that attainment of quality objectives is accomplished by those responsible for performing work and verification of conformance is accomplished by those not responsible for performing work.

Procedures:

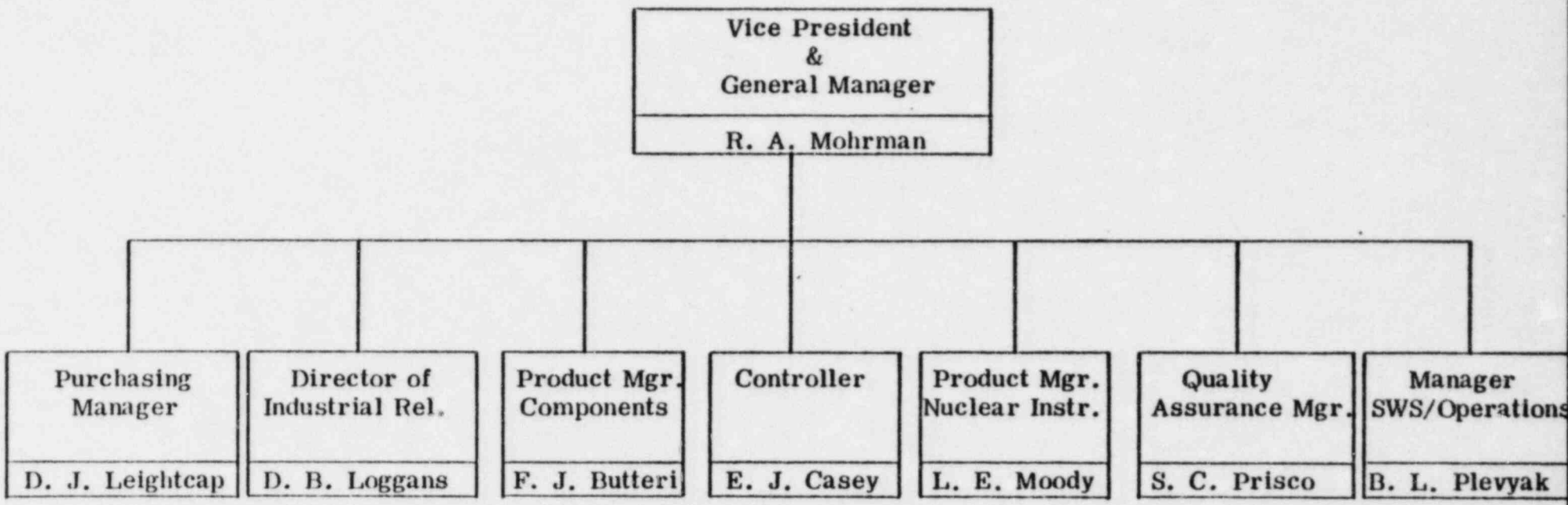
- Organization Chart

77-15 Design Review for Nuclear Engineering

Implementation: Attainment of quality objectives is by Engineering and Manufacturing. Verification is by Quality Control, except that design review is principally an Engineering function according to 77-15.

FAIRCHILD WESTON
Schlumberger

# WESTON CONTROLS
Archbald, Pa.




2/26/81
Date

R. Mohrman
Approved

WESTON COMPONENTS & CONTROLS
Archbald, Pennsylvania

This division has established a Quality Control system to assure that all products manufactured here meet the quality standards established by the customer.

The responsibility for outgoing quality rests with the Quality Control Manager. Therefore, he has the authority to set up the requirements necessary to assure customer satisfaction.

No one, with the exception of the Vice President & General Manager, may set aside or waive these requirements, and he would only take such action if it were with the concurrence of the customer and in the best interests of Weston.

Richard A. Mohrman
Vice President & General Manager

4. Design Control

4.1 General

4.1a
Requirement: Establishment and documentation of measures to assure that design requirements are translated into procedures.

Procedures:

77-15 Design Review for Nuclear Engineering
MEP #1 Engineering Design Release
MEP #2 Preparation of Manufacturing Instructions

Implementation: 77-15 calls for three (3) stages of design review including participation by selected engineers and a representative from Quality Control. MEP #1 specifies the procedures by which documentation is released from Engineering for plant distribution. MEP #2 is the procedure by which manufacturing instructions are written and issued.

4.1b
Requirement: Inclusion of provisions to assure inclusion of appropriate quality standards.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for Quality Control participation in all design reviews.

4.1c
Requirement: Provisions for identification, documentation and control of changes from requirements and standards.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for documentation of design review activities.

4.1d
Requirement: Availability for review of design control documentation.

Procedures:

| | |
|---|---|
| MEP #4 | Print Distribution |
| 77-15 | Design Review for Nuclear Engineering. |

Implementation: MEP #4 requires centralized location in Print Control of all Engineering documentation for production. Design review meeting minutes are retained in the Order Entry file.

4.1e
Requirement: Provision for analyses in design control measures.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |

Implementation: 77-15 includes analyses in the design review process.

4.1f
Requirement: Establishment of measures for selection and review of essential materials, parts, equipment, and processes.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |

Implementation: 77-15 design review should incorporate this activity.

4.2 Interface Control

4.2a
Requirement: Application of design control measures to interfaces for coordination among organizations.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering. |

Implementation: 77-15 specifies participation in design review by circuit and mechanical design engineering, manufacturing engineering, and quality control.

4.2b
Requirement: Establishment of procedures for documentation involving design interfaces.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 requires multi-departmental, multi-disciplinary participation in design review, preparation of drawings, and checking of drawings.

4.3 Design Verification

4.3a
Requirement: Application of design control measures to verify design adequacy.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for three (3) multi-disciplinary design reviews including provisions for analyses and testing.

4.3b
Requirement: Performance of verification by persons other than those who perform the design.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for design review by a board consisting of numerous engineers, assuring that each individual's work is examined by another.

4.3c
Requirement: Identification of design verification methods used.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for verification of design by analysis or test and documentation of same.

4.3d
Requirement: Verification for each application of previously proven designs.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 requires that the design review consider all contract technical requirements.

4.3e
Requirement: Identification of testing for design verification.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for establishment of tests, review of results; and documentation of such review.

4.3f
Requirement: Demonstration by testing of adequacy under most adverse design conditions.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 requires that testing shall prove performance.

4.3g
Requirement: Consideration of operating modes and environmental conditions in determining most adverse test conditions.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 requires consideration of all contract requirements and use of testing to prove performance according to requirements.

4.3h
Requirement: Provision for modification and retesting as necessary to assure performance.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 provides for final design review at which modifications are made and retesting considered.

4.4 Change Control

4.4a
Requirement: Application to design changes of design control measures commensurate with those of the original design.

Procedures:

MEP #5 Instructions for the Design, Drafting, and Revisions of all Engineering Documentation

77-15 Design Review for Nuclear Engineering

Implementation: MEP #5, Section 10.0, requires that the project engineer approve all engineering changes. 77-15 requires that the project engineer participate in and document all design reviews.

5. Procurement Document Control

5a
Requirement: Establishment of documented measures to assure that requirements necessary to assure quality are included or referenced in procurement documents.

Procedures:

QC 524 Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders

Implementation: QC 524 is a procedure for the application of quality requirements to Bills of Materials and purchase requisitions, and the review of purchase orders to insure that contract requirements are met.

5b
Requirement: Subjection of procurement document changes to same degree of control as original document.

Procedures:

QC 524 Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders

Implementation: QC 524, Sections 6.0 and 7.0, require review of purchase order changes by cognizant Quality Control Engineer to assure that revised requirements are consistent with those mandated in prime contract.

5c
Requirement: Inclusion in procurement document of ANSI N45.2-1971 requirement as necessary.

Procedures:

QC 524 Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders

Implementation: QC 524, Sections I and II require Quality Control review of purchase documents for incorporation of mandated quality requirements.

5d

Requirement: As applicable, inclusion in procurement document of provisions for supplier Quality Assurance Program, basic technical requirements, source inspection and audit, documentation; lower tier procurements.

Procedures:

QC 524 Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders.

Implementation: QC 524, Appendix I, contains standard codes for some of the above requirements and special codes by which any quality requirement may be incorporated into a purchase order.

6. Instructions, Procedures, and Drawings.

6a
Requirement: Prescription of activities affecting quality by means of documents and accomplishment in accordance with same.

Procedures:

| | |
|---|---|
| MEP #2 | Preparation of Manufacturing Instructions |
| MEP #9 | Operation Sheet Preparation, Mechanical |
| MEP #11 | Operation Sheet Preparation, Electrical Assembly |
| 77-15 | Design Review for Nuclear Engineering |
| - | All Quality Control prefix procedures referenced |

Implementation: MEP Nos. 2, 9, 11 specify procedures for preparation of manufacturing instructions and operation sheets. 77-15 contains provisions for drawing preparation. Quality Control prefixed documents contain Quality Assurance procedures and reference Inspection Instructions. It is the responsibility of Quality Control to assure that activities are carried out in accordance with procedures.

6b
Requirement: Inclusion of appropriate criteria in documents.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: The membership of the design review board includes all persons responsible for generation of correct procedure documents.

6c
Requirement: Specification of quantitative criteria, as appropriate, in documents.

Procedures:

77-15 Design Review for Nuclear Engineering

Implementation: 77-15 requires review by Quality Control and Manufacturing Engineering of final documents for inclusion of all necessary criteria.

7. Document Control

7a
Requirement: Establishment and documentation of measures to control issuance of documents prescribing activities affecting quality.

Procedures:

77-17 Document Control Index
MEP #4 Print Distribution

Implementation: 77-17 establishes responsibility of the Project Manager for preparation and control of the Document Control Index which indexes all drawings and procedures applicable to a project. MEP #4 governs the distribution through Print Control of all engineering documentation formally released for production by means of a Print Distribution Guide. All Quality Control procedures are generated and distributed by the Quality Control Manager or cognizant Quality Control Engineer.

7b
Requirement: Review and approval for release by authorized personnel, and distribution to location of prescribed activity.

Procedures:

MEP #1 Engineering Design Release
MEP #4 Print Distribution

Implementation: MEP #1 requires Project Engineer approval for release of any project documentation. MEP #4 governs distribution to Manufacturing, Production Control, and Quality Control.

7c
Requirement: Review and approval of document changes by those performing original review and approval, unless otherwise designated.

Procedures:

| | |
|---|---|
| MEP #5 | Instructions for the Design, Drafting, and Revision of all Engineering Documentation |
| Implementation: | MEP #5, Section 10.0, requires Project Engineer authorization for drawing changes. |

7d
Requirement: Access to background information, and understanding of requirements of original document, by those reviewing changes.

Procedures:

| | |
|---|---|
| MEP #5 | Instructions for the Design, Drafting, and Revision of all Engineering Documentation |
| Implementation: | MEP #5, Section 10.0, requires Project Engineer authorization for drawing changes. Project Engineer has responsibility for Document Control Index. |

7e
Requirement: Awareness and use of documents which are current.

Procedures:

| | |
|---|---|
| MEP #4 | Print Distribution |
| Implementation: | All engineering changes are recorded on a Print Control Distribution Sheet. All departments receiving changes sign off upon receipt, per MEP #4, Section 5.1. |

7f
Requirement: Procedures for document control and changes, to preclude use of outdated documents.

Procedures:

| | |
|---|---|
| MEP #4 | Print Distribution |

Implementation:

MEP #4, Section 1.0, specifies Print Control as the location from which all current revision levels of engineering documents, released to production, are distributed. Section 4.7 specifies that Print Control receive copies of all engineering changes, and keep up to date card files indicating the current revision level of all engineering documents.

7g
Requirement:

Provisions for identification of those responsible for preparing, reviewing, approving, and issuing documents and revisions.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |
| MEP #5 | Instructions for the Design, Drafting, and Revision of all Engineering Documentation |

Implementation:

77-15 requires signatures of drafting checker, engineering reviewer, and project manager on drawings. MEP #5, Section 10.0, requires project engineer approval for drawing changes.

8. Control of Purchased Material, Equipment, and Services

8a

Requirement: Establishment and documentation of measures to assure that purchases conform to procurement documents.

Procedures:

| | |
|---|---|
| QC 524 | Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders |
| QC 100 | Receiving Inspection |

Implementation: QC 524 prescribes means of control of vendor Quality and incorporation of contract requirements into purchase orders. QC 100 prescribes inspection of purchased material.

8b

Requirement: Inclusion, as appropriate, of source evaluation and selection, evidence of furnished quality, source inspection and audit, and receiving inspection.

Procedures:

| | |
|---|---|
| QC 524 | Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders |
| QC 100 | Receiving Inspection |

Implementation: QC 524, Appendix I, provides for inclusion of vendor survey, obtaining of certification, and source inspection and audit. QC 100 prescribes the procedures for the Receiving Inspection area.

8c

Requirement: Source inspection and audit to be commensurate with required quality.

Procedures:

| | |
|---|---|
| QC 524 | Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders |

Implementation: QC 524, Appendix I, requires consideration of need for source inspection and audit.

8d

Requirement: Availability at plant site of documentary evidence of conformance to procurement requirements, prior to installation, if required.

Procedures:

QC 114 Quality Assurance Program

Implementation: QC 114, Section 2.4.13, specifies preparation of Quality Assurance documents related to delivery as required by contract.

8e

Requirement: Sufficiency of documentary evidence to identify specific requirements.

Procedures:

QC 114 Quality Assurance Program

Implementation: QC 114, Section 2.4.13, specifies preparation of Certificates of Compliance according to contract requirements.

8f

Requirement: Assessment of vendor quality at appropriate intervals.

Procedures:

QC 524 Incorporation of Quality Control Requirements into Purchase Orders and Quality Control Review of Purchase Orders

Implementation: QC 524, Appendix I, requires consideration of need for survey and/or Quality System Audit of vendor's facilities.

9. Identification and Control of Materials, Parts, and Components.

9a
Requirement: Establishment and documentation of measures for identification and control of materials, parts, and components.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |

Implementation: By Addendum I to QC 101 and QC 102, items are controlled through the use of Inspection History Cards.

9b
Requirement: Provision for use and installation of proper items and relating of items to a document.

Procedures:

| | |
|---|---|
| MEP #2 | Preparation of Manufacturing Instructions |
| MEP #9 | Operation Sheet Preparation, Mechanical |
| MEP #11 | Operation Sheet Preparation, Electrical Assembly |
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |

Implementation: Addendum I of QC 101 and QC 102 describe procedures for assuring that accepted items are incorporated into equipment. MEP #2, MEP #9, and MEP #11 prescribe technical documents for fabrication and assembly which are generated for each contract.

9c
Requirement: Use of physical identification to maximum extent possible.

Implementation: Not usually practical with electronic equipment.

9d

Requirement: Identification by physical separation or other appropriate means when physical identification not practical.

Implementation: Assemblies stored in plastic bags which also contain equipment documents.

9e

Requirement: Marking, where employed, to be clear, unambiguous, and indelible, and not to effect function.

Implementation: Marking not normally practical with electronic equipment.

9f

Requirement: Marking, where employed, to be on each part of subdivided item, and not hidden by coatings.

Implementation: Marking not normally practical with electronic equipment.

9g

Requirement: Traceability of material to records to be provided when required.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: Addendum I to QC 101 and QC 102 require Inspection History Cards to accompany each item undergoing inspection. MEP #10, Section 7.0, requires similar traceability of test programs through use of log books.

10. Control of Special Processes

10a
Requirement: Establishment and documentation of measures to assure that special processes are accomplished, under controlled conditions, to applicable requirements, by qualified personnel.

Procedures:

| | |
|---|---|
| QC 106 | Control of Special Processes and Nondestructive Testing |
| QC 529 | Training Program |
| MEP #2 | Preparation of Manufacturing Instructions |
| QC 114 | Quality Assurance Program |

Implementation: QC 114, Sections 1.2.1 and 2.4.2 call for review by Quality Control of quotation documents and post-award contract documents for special process requirements and need for qualified personnel, with qualification to be implemented if necessary. MEP #2 requires Engineering personnel to prepare special process instruction sheets. Q.C. 106 defines the controlled conditions for each process. Q.C. 529, Section 5.0, mandates the training and Q.C. 106 mandates retention of personnel qualification records.

10b
Requirement: Qualification of personnel, procedures, and equipment in compliance with requirements of applicable codes and standards.

Procedures:

| | |
|---|---|
| QC 114 | Quality Assurance Program |

Implementation: Q.C. 114, Sections 1.2.1 and 2.4.2 place responsibility with Quality Control for special process compliance.

10c
Requirement: Maintenance of Qualification Documentation.

Procedure:

| | |
|---|---|
| QC 106 | Control of Special Processes and Nondestructive Testing |

| | |
|---|---|
| Implementation: | QC 106 mandates retention of qualification records for personnel, process, and equipment on a case-by-case basis. |
| 10d<br>Requirement: | Definition of qualification criteria if no standard applicable or sufficient. |
| Procedures: | |
| QC 529 | Training Program |
| Implementation: | QC 529, Section 5.0, requires Quality Control to define standards for process, equipment, and personnel where existing standards not applicable. |

11. Inspection

11a
Requirement: Establishment of an inspection program to verify conformance to documents concerning activities affecting quality.

Procedures:

| | |
|---|---|
| QC 100 | Receiving Inspection |
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |

Implementation: The above mentioned documents, all documents referenced therein, and all inspection instructions generated for a specific contract, and the execution thereof, constitute the established inspection program

11b
Requirement: Inspection of an activity performed by persons other than those performing the activity.

Procedure:

- Organization Chart

Implementation: All inspection personnel are within Quality Control organization and perform no assembly or fabrication function.

11c
Requirement: Inspection of an activity performed by persons not reporting directly to the immediate supervisors responsible for the activity.

Procedure:

- Organization Chart

Implementation: All inspection personnel report to inspection foremen who supervise no persons having assembly or fabrication responsibility.

11d

Requirement: Inspection of each work operation where necessary to assure quality.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |

Implementation: QC 101, Section 1.0, requires first piece inspection on every operation in every lot.

11e

Requirement: Where sampling is used, sampling procedure based on standard practices, and justified for sample size and selection process.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 100 | Receiving Inspection |
| QC 114 | Quality Assurance Program |

Implementation: QC 101, Section 2.0, requires use of sampling charts where advantageous. QC 100, Section 2.0, specifies Mil-Std-105 as the sampling plan. For contracts invoking ANSI N45.2-1971, use of standard sampling plans will be incorporated into the quality requirements per QC 114, Sections 2.4.9 through 11.

11f

Requirement: Monitoring of process to be provided if inspection of processed items not valid.

Procedures:

| | |
|---|---|
| QC 106 | Control of Special Processes |

Implementation: Process monitoring would be provided as necessary and appropriate procedures generated on a case-by-case basis.

11g

Requirement: Both inspection and control of process to be provided if required for adequate control.

Procedures:

| | |
|---|---|
| QC 106 | Control of Special Processes |
| QC 114 | Quality Assurance Program |

Implen tation: Based on contract requirements, process monitoring may be added to the customary inspection operations by QC 114, Sections 2.4.9 through 11.

11h

Requirement: Mandatory inspection hold points to be documented.

Procedures:

| | |
|---|---|
| QC 114 | Quality Assurance Program |
| QC 803 | Inspection Point Programs |
| QC 804 | Inspection Point Programs |

Implementation: QC 114, Section 2.4.8, requires preparation of inspection point program according to QC 803 and QC 804 for programs requiring mandatory inspection hold points.

11i

Requirement: Consent of customer to be documented prior to continuation beyond mandatory inspection hold point.

Procedures:

| | |
|---|---|
| QC 804 | Inspection Point Programs |

Implementation: QC 804, Section 4.0, requires specification of customer approval document identification.

11j

| | |
|---|---|
| Requirement: | Provision for program of in-service inspection by or for the organization responsible for the operation of the plant. |
| Procedure: | |
| QC 114 | Quality Assurance Program |
| Implementation: | Weston is not, as a rule, involved in in-service inspection at 10 CFR 50 licensed facilities, but such requirements would be addressed if involved through the provisions of QC 114. |

12. Test Control

12a.
Requirement: Establishment of a test program to assure that testing, required to assure satisfactory performance, is identified, documented, and carried out properly.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |
| MEP #10 | Test Engineering |
| QC 104 | Final Test |

Implementation: 77-15, MEP #10, and QC 104 cover the test program from prototype to final shipment, including requirements, format, and acceptance criteria.

12b
Requirement: Coverage by the test program of all required tests, such as prototype qualification, preoperational, and operational.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |
| QC 104 | Final Test |
| MEP #10 | Test Engineering |

Implementation: 77-15, QC 104, and MEP #10 provide for all required testing from prototype to final test, and include provision for testing after delivery to contractual requirements.

12c
Requirement: Provision, by organization with design responsibility, of test requirements and acceptance criteria, unless otherwise designated.

Procedures:

| | |
|---|---|
| 77-15 | Design Review for Nuclear Engineering |

Implementation: 77-15 requires that those participating in the design process, specify test requirements and acceptance criteria, and review results.

12d

Requirement: Provision in test procedures for meeting of prerequisites, availability and use of adequate instrumentation, and performance of monitoring.

Procedures:

MEP #10 Test Engineering

Implementation: MEP #10, Section 3, requires specification of prerequisites, instrumentation, monitoring, and proper documentation.

12e

Requirement: Documentation of test results and evaluation by responsible authority to assure satisfaction of requirements.

Procedures:

QC 104 Final Test

Implementation: QC 104, Sections 1.0 and 2.0, require approval of test instruction and review of results by the Quality Control Manager and storage in Quality Control files.

13. Control of Measuring and Test Equipment

13a
Requirement: Establishment and documentation of measures to assure that inspection, measuring, and testing equipment, and devices affecting quality are of proper capability.

Procedures:

| | |
|---|---|
| QC 113 | Control of Production Gaging and Measuring Equipment |
| QC 115 | Control of Test and Measuring Instrume nts and Standards |

Implementation: QC 113 and QC 115 perform the above functions for the two types of instrumentation.

13b
Requirement: Maintenance of test equipment, at prescribed intervals, against certified equipment having known, valid relationship with recognized standards.

Procedures:

| | |
|---|---|
| QC 115 | Control of Test and Measuring Instruments and Standards |
| QC 113 | Control of Production Gaging and Measuring Equipment |

Implementation: QC 115, Section 6.0, prescribes the calibration and recall intervals for the various items of test equipment. QC 115, Section 4.0, prescribes the calibration standards which are used. Traceability to NBS is maintained. QC 113, Sections 4.0 and 1.0 respectively, prescribe the same information for production gaging and measuring equipment.

13c
Requirement: Documentation of basis for calibration where no standard exists.

Procedures:

| | |
|---|---|
| QC 115 | Control of Test and Measuring Instruments and Standards |

Implementation: QC 115, Section 7.0, prescribes documentation of special calibration requirements.

13d

Requirement: Definition of calibration method and interval based upon requirements.

Procedures:

QC 115 Control of Test and Measuring Instruments and Standards

Implementation: QC 115, Section 8.0, requires Calibration Department to maintain manufacturer's documentation on each instrument for proper use and calibration.

13e

Requirement: Performance of special calibration when accuracy is suspect.

Procedures:

QC 113 Control of Production Gaging and Measuring Equipment
QC 115 Control of Test and Measuring Instruments and Standards

Implementation: QC 113, Section 8.0, requires inspector to insure that all gages used are legal gages prior to acceptance of first piece. QC 115, Section 9.0, requires repair or tagging of any item found defective during production.

13f

Requirement: Evaluation and documentation of validity of prior results when inspection or test equipment found out of calibration.

Procedures:

QC 113 Control of Production Gaging and Measuring Equipment
QC 115 Control of Test and Measuring Instruments and Standards

Implementation: QC 113, Section 10.0 and QC 115, Section 10.0, require documentation of equipment found out of calibration. Quality Control investigates the circumstances, obtains disposition, and documents it.

13g

Requirement: Repair or replacement of equipment found consistently out of calibration.

Procedure:

| | |
|---|---|
| QC 113 | Control of Production Gaging and Measuring Equipment |
| QC 115 | Control of Test and Measuring Instruments and Standards |

Implementation: QC 113, Section 9.0, contains the scrap/rework criteria for gages, and QC 115, Section 9.0, contains the method of dispositioning unsatisfactory equipment.

13h

Requirement: Maintenance of records and marking of equipment to indicate calibration status.

Procedures:

| | |
|---|---|
| QC 113 | Control of Production Gaging and Measuring Equipment |
| QC 115 | Control of Test and Measuring Instruments and Standards |

Implementation: QC 113, Section 6.0, requires recordkeeping and attachment of labels to indicate calibration status of production gaging and measuring equipment. QC 115, Sections 5.0 and 6.0, do likewise for test and measuring instruments.

14. Handling, Storage, and Shipping

14a
Requirement: Establishment and Documentation of Measures to Control Handling, Storage, and Shipping.

Procedures:

| | |
|---|---|
| QC-105 | Packaging and Shipping Inspection |
| 55-9-1 | Material Handling |

Implementation: These procedures cover movement of material from final inspection to departure from plant. Based on contract requirements, any special requirements are converted into operation sheets, implemented, and verified.

14b
Requirement: Specification, Provision, and Verification of Special Coverings, Equipment, and Environments When Necessary.

Procedures:

| | |
|---|---|
| QC-105 | Packaging and Shipping Inspection |
| 55-9-1 | Material Handling |

Implementation: Procedures call for special protection called out on order entry to be specified by Engineering, implemented by Production Control, and verified by Quality Control.

14c
Requirement: Scheduled Inspection and Test of Special Handling Equipment According to Written Procedures.

Procedures:

| | |
|---|---|
| QC-105 | Packaging and Shipping Inspection |
| 55-9-1 | Material Handling |

Implementation: Procedures call for special handling called out on order entry to be specified by Engineering, implemented by Production Control, and verified by Quality Control.

14d

Requirement: Provision of Adequate Instructions for Marking, Labeling, Packaging, Shipment, and Storage of Items.

Procedures:

| | |
|---|---|
| QC-105 | Packaging and Shipping Inspection |
| 55-9-1 | Material Handling |

Implementation: Based on requirements referenced in the order entry, Engineering generates operation sheets for packaging and shipping activities. Execution is verified by Quality Control.

14e

Requirement: Adequacy of Marking to Identify, Maintain, and Preserve the Shipment.

Procedures:

| | |
|---|---|
| QC-105 | Packaging and Shipping Inspection |
| 55-9-1 | Material Handling |

Implementation: Special marking requirements specified in contract are converted to operation sheets by Engineering, implemented by Production Control, and verified by Quality Control.

15. Inspection, Test, and Operating Status

15a
Requirement: Establishment and documentation of measures to identify inspection and test status.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: Addendum I to both QC 101 and QC 102 prescribe the Inspection History Card as the means of identification of inspection status, and MEP #10, Section 7.0, prescribes the Test Log as the means of identification of test status.

15b
Requirement: Provision of means for assuring that required tests and inspections are performed and acceptability is known.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: Addendum I to QC 101 and QC 102 require that completed operations be listed on the Inspection History Card. MEP #10, Section 7.0, requires that all completed test operations be recorded in the Test Log.

15c
Requirement: Identification of Nonconforming Items

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: Addendum I to QC 101 and QC 102 specify that rejection of an operation shall be recorded on the Inspection History Card and a reject, rework or scrap form shall be filled out. The number on the RR/S form is entered on the History Card. MEP #10, Section 7.0, requires that all failures shall be entered into the Test Log for the equipment, and a failure analysis report generated by the Test Engineer.

15d

Requirement: Maintenance of inspection and test status through use of indicators.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: Addendum I to QC 101 and QC 102 specify that Inspection History Cards will be both marked, stamped, and punched. MEP #10, Section 7.0, specifies log entries as the status indicator.

15e

Requirement: Provision of assurance that only items which have passed tests and inspections are included in finished product

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |

Implementation: QC 101, Section 3.0 and QC 102, Section 1.0, specify a final inspection at which verification of completion of required items takes place and acceptance tags are attached.

15f

Requirement: Inclusion of procedures for control of status indicators.

Procedures:

| | |
|---|---|
| QC 109 | Use and Control of Inspection/Test Status Devices |

Implementation: QC 109, Section 1.0, requires that inspectors and technicians sign receipts for stamps and punches. Stamps and punches are sequestered for six (6) months after return or loss of similar devices.

15g

Requirement: Provision for indicating the operating status of power plant systems.

Not applicable. Weston Components & Controls is not a Licensee under 10 CFR Part 50.

16. Nonconforming Items

16a
Requirement: Establishment and documentation of measures to control nonconforming items.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| SPI 100.2 | Processing Rejected Material |

Implementation: QC 101 and QC 102 prescribe the conduct of inspection, and reference SPI 100.2 for disposition of nonconforming material.

16b
Requirement: Inclusion, as appropriate, of procedures for identification, documentation, segregation, disposition, and notification.

Procedures:

| | |
|---|---|
| SPI 100.2 | Processing Rejected Material |

Implementation: Per SPI 100.2, Section 2.0, identification is by red disc tag, documentation is by standard form "Reject, Rework, and/or Scrap" (RR/S), and segregation in a separate container is employed when tagging is not practicable. SPI 100.2, Section 1.0, requires notification of project and quality control engineer for disposition when scrap/rework decision cannot be made at inspection foreman level. RR/S number is entered on Inspection History Card and all RR/S forms are filed in Quality Control office.

16c
Requirement: Provision for review, acceptance, rejection, repair, or rework of nonconforming items according to documented procedures.

Procedures:

| | |
|---|---|
| SPI 100.2 | Processing Rejected Material |

Implementation: SPI 100.2 specifies the procedures for disposition at the inspection foreman level and engineering level. Inspection foremen may authorize scrap in obvious cases, and rework with consent of engineering.

16d
Requirement: Definition of responsibility and authority for disposition of nonconforming items.

Procedures:

SPI 100.2 Processing Rejected Material

Implementation: SPI 100.2, Section 1.0, defines this authority according to levels of inspection foreman and process engineer, project engineer and quality control engineer, and customer.

16e
Requirement: Reinspection of repaired and reworked items according to applicable procedures.

Procedures:

QC 101 In-Process Inspection
QC 102 Assembly Inspection

Implementation: Addendum I to these procedures requires that a blank space be left in the Inspection History Card after rejection, with further documentation by the RR/S form. Thus, the reworked part will be inspected again according to the relevant inspection instruction, and the entry in the Inspection History Card completed only after acceptance.

16f
Requirement: Establishment and maintenance of measures to control further processing nonconforming items pending disposition.

Procedures:

SPI 100.2 Processing Rejected Material

Implementation: Routing for discrepant material is controlled by instructions entered on the RR/S form. This is done at the supervisory or engineering level.

16g

Requirement: Measures for provision of assurance that nonconforming items are identified as such and controlled.

Procedures:

SPI 100.2 Processing Rejected Material

Implementation: SPI 100.2 requires individual tagging of discrepant parts and generation of a Reject, Rework, or Scrap (RR/S) form. The tag shall indicate the number of the RR/S.

16h

Requirement: Measures for documentation of the verification of the acceptability of nonconforming items dispositioned rework or use as is.

Procedures:

SPI 100.2 Processing Rejected Material

Implementation: SPI 100.2 requires disposition and signature on RR/S forms for all discrepant material. Rework may be authorized at the engineering level, and "use as is" requires customer authorization.

16i

Requirement: Documentation of accepted deviation to denote as-built condition.

Procedures:

SPI 100.2 Processing Rejected Material

Implementation: SPI 100.2, Section 1.0, under Disposition of Rejected Material at Project and Quality Engineering Level, requires customer authorization for shipment of discrepant material and document of deviation and authority with shipment.

17. Corrective Action

17a
Requirement: Establishment and documentation of measures to assure prompt identification and correction of conditions adverse to quality.

Procedures:

| | |
|---|---|
| SPI 100.2 | Processing Rejected Material |
| QC 800 | Corrective Action Request |

Implementation: SPI 100.2 covers disposition of discrepant material uncovered by the inspection process. QC 800 is the procedure for obtaining and documenting corrective action for other conditions adverse to quality.

17b
Requirement: Measures to assure that the cause of significant conditions adverse to quality is determined, and action taken.

Procedures:

| | |
|---|---|
| QC 800 | Corrective Action Request |

Implementation: QC 800 assigns responsibility to Quality Control for initiating the CAR form, describing the deficiency, its impact. The individual or organization, to whom the CAR is directed, responds with cause of deficiency and proposed corrective action. Quality Control is responsible for insuring that corrective action has been implemented.

17c
Requirement: Documentation and reports to appropriate management concerning the existence, cause, and correction of significant conditions adverse to quality.

Procedures:

| | |
|---|---|
| QC 800 | Corrective Action Request |

Implementation: QC 800 requires written corrective action if Quality Control or Engineering personnel determine that this is necessary to prevent further adverse quality performance. QC 800, Section 1.8, specifies periodic review of CAR files by the Quality Control Manager.

18. Quality Assurance Records

18a
Requirement: Preparation of sufficient records as work is performed to furnish documentary evidence of quality and activities affecting quality.

Procedures:

| | |
|---|---|
| QC 114 | Quality Assurance Program |
| - | Various Others |

Implementation: QC 114, Section 2.4.12, specifies establishment of responsibility within the Quality Control Department for meeting contract requirements with respect to records. Further, records maintenance is specified in various existing Quality Control prefix procedures for various purposes.

18b
Requirement: Adequacy of records and consistency with codes, standards, specifications, and contracts.

Procedures:

| | |
|---|---|
| QC 114 | Quality Assurance Program |

Implementation: QC 114, Section 2.4.12, places responsibility with the Quality Control Department for meeting contract requirements with respect to records. This would include any referenced code or standard.

18c
Requirement: Inclusion in records of results of reviews, inspections, tests, audits, monitoring of work performance, materials analyses, and plant operating logs.

Procedures:

| | |
|---|---|
| QC 116 | Quality Control - Internal Plant Auditing |
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| MEP #10 | Test Engineering |

Implementation: QC 116, Section 5.0, mandates audit records. Addendum I to QC 101 and QC 102 mandates inspection records. MEP #10 mandates test records.

18d
Requirement: Inclusion in records, as appropriate, of closely-related data such as qualifications of personnel, procedures and equipment and other required documentation.

Procedures:

| | |
|---|---|
| QC 106 | Control of Special Processes and Nondestructive Testing |
| MEP #2 | Preparation of Manufacturing Instructions |

Implementation: QC 106 requires records for qualifying of personnel, processes, and equipment. MEP #2 requires documentation of all manufacturing instructions.

18e
Requirement: Identification within inspection and test records of the date of inspection or test, the inspector or data recorder, type of observation, results, acceptability, and action taken in connection with deficiencies.

Procedures:

| | |
|---|---|
| QC 101 | In-Process Inspection |
| QC 102 | Assembly Inspection |
| SPI 100.2 | Processing Rejected Material |
| MEP #10 | Test Engineering |

Implementation: Addendum I of QC 101 and QC 102, and SPI 100.2 mandates the above identification through use of History Cards and RR/S forms, in the inspection process. MEP #10, Section 7.0, mandates the above information in test logs.

18f
Requirement: Identifiability and retrievability of required records.

Procedures:

| | |
|---|---|
| MEP #4 | Print Distribution |

Implementation: MEP #4 establishes Print Control as the source for Engineering records. Identification is by Order Entry Number and documents listed on the Engineering Design Release

18g
Requirement: Establishment and documentation requirements and responsibilities for record transmittal, retention, and maintenance subsequent to completion of work, consistent with applicable documents.

Procedures:

- Generated for Specific Contract

18h
Requirement: Indexing, filing, and maintenance of records in facilities that provide suitable environment to minimize deterioration or damage and to prevent loss.

Procedures:

MEP #4 Print Distribution

Implementation: Records kept in standard steel file cabinets and index cards in steel file card cabinets. Special arrangements may be made due to contract requirements.

19. Audits

19a
Requirement: Carrying out of a comprehensive system of planned and documented audits to verify compliance with quality assurance program.

Procedures:

QC 116 Quality Control - Internal Plant Auditing

Implementation: QC 116 establishes a formal means of monitoring Weston's Quality Control System. Section 1.0 specifies issuance of an auditing schedule by the Quality Control Manager. Section 5.0 specifies preparation of a detailed report by the audit team.

19b
Requirement: Performance of audits in accordance with written procedures by trained personnel having no responsibilities in the areas audited.

Procedures:

QC 116 Quality Control - Internal Plant Auditing

Implementation: Section 2.0 of QC 116 specifies that the assigned Quality Control auditor shall function as head of the audit team which shall include a non-quality control representative from an area other than that being audited.

19c
Requirement: Documentation of audit results and review by management responsible for area audited.

Procedures:

QC 116 Quality Control - Internal Plant Auditing

Implementation: QC 116, Section 5.0, specifies preparation of a detailed report with copies to the Quality Control Manager, the Head of the Department audited and the Plant Manager.

19d

| | |
|---|---|
| Requirement: | Taking of necessary action by responsible management to correct revealed deficiencies. |
| Procedures: | |
| QC 116 | Quality Control - Internal Plant Auditing |
| Implementation: | QC 116, Section 5.0, specifies a reply to the formal report including corrective action with prescribed completion date. |