

**QWEST Communications  
International Inc.  
Technical Publication**

**Supplier Quality Process (SQP)  
for  
Product's and Service's**



## NOTICE

QWEST Communications International Inc. reserves the right to revise this document for any reason, including but not limited to, conformity with standards promulgated by various governmental or regulatory agencies; utilization of advances in the state of the technical arts; or to reflect changes in the design of equipment, techniques, or procedures described or referred to herein.

Liability to anyone arising out of use or reliance upon any information set forth herein is expressly disclaimed, and no representation or warranties, expressed or implied, are made with respect to the accuracy or utility of any information set forth herein.

This document is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this publication represent any commitment by QWEST Communications International Inc. to purchase any specific products. Further, conformance to this publication does not constitute a guarantee of a given supplier's equipment and/or its associated documentation.

Ordering information for QWEST Technical Publications can be obtained from the Reference Section of this document.

If further information is required, please contact:

QWEST Communications International Inc.  
Manager – New Services Planning  
700 W Mineral Ave., Room MN F15.15  
Littleton, CO 80120  
(303) 707-7107  
Fax: (303) 707-9497  
E-Mail: [jhsmit2@qwest.com](mailto:jhsmit2@qwest.com)



COMMENTS on PUB 77351 Module 1

PLEASE TEAR OUT AND SEND YOUR COMMENTS/SUGGESTIONS TO:

QWEST Corporation  
Manager – New Services Planning  
700 W Mineral Ave., Room MN F15.15  
Littleton, CO 80120  
(303) 707-7107  
Fax: (303) 707-9497  
E-Mail: jhsmit2@qwest.com

Information from you helps us to improve our Publications. Please take a few moments to answer the following questions and return to the above address.

Was this Publication valuable to you in understanding The technical parameters of our service?	YES _____ NO _____
Was the information accurate and up-to-date?	YES _____ NO _____
Was the information easily understood?	YES _____ NO _____
Were the contents logically sequenced?	YES _____ NO _____
Were the tables and figures understandable and helpful	YES _____ NO _____
Were the pages legible?	YES _____ NO _____

If you answered NO to any of the questions and/or if you have any other comments or suggestions, please explain:

---

---

---

(Attach additional sheet, if necessary)

Name \_\_\_\_\_ Date \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Telephone Number \_\_\_\_\_

E-Mail \_\_\_\_\_



## CONTENTS

Chapter and Section	Page
1. Introduction.....	1-1
1.1    General.....	1-1
1.1.1    Requirements.....	1-1
1.2    Reason for Reissue.....	1-1
1.3    Purpose and Definition.....	1-2
1.3.1    Organization of this Publication.....	1-2
1.4    QWEST Policy.....	1-3
1.4.1    Policy Statement.....	1-3
1.5    QWEST Quality Process Management Team Responsibilities.....	1-3
1.5.1    Functions.....	1-3
1.5.2    Objectives.....	1-3
2.    System Elements.....	2-1
2.1    Supplier Standards.....	2-1
2.2    Management Responsibility.....	2-1
2.2.1    Quality Policy.....	2-1
2.2.2    organization.....	2-1
2.2.2.3    Management Representative.....	2-2
2.2.3    Management Review.....	2-2
2.3    Quality System.....	2-2
2.3.1    General.....	2-2
2.3.2    Typical Internal Process Audit Cycle Flow.....	2-3
2.3.3    Quality System Procedures.....	2-3
2.3.4    Quality Planning.....	2-4
2.4    Contract Review.....	2-8
2.4.1    General.....	2-8
2.4.2    Review.....	2-8
2.4.3    Amendment to Contract.....	2-8
2.4.4    Records/Orders.....	2-9
2.5    Document and Data Control.....	2-9
2.5.1    General.....	2-9
2.5.2    Document and Data Approval and Issue.....	2-9
2.5.3    Document and Data Changes.....	2-10
2.6    Purchasing.....	2-10
2.6.1    General.....	2-10
2.6.2    Evaluation of Contracted Labor.....	2-10
2.6.3    Purchasing Data.....	2-11
2.6.4    Verification of Purchased Product or Service.....	2-11

**CONTENTS (Continued)**

<b>Chapter and Section</b>	<b>Page</b>
2.7 QWEST Supplied Product.....	2-11
2.8 Product Identification and Traceability .....	2-12
2.9 Process Control .....	2-12
2.10 Inspection and Testing .....	2-12
2.10.1 General.....	2-12
2.10.2 Receiving Inspection .....	2-13
2.10.3 In-process Inspection and Testing.....	2-13
2.10.4 Final Inspection and Testing.....	2-13
2.10.5 Inspection and Test Records.....	2-13
2.11 Control of Inspection, Measuring, and Test Equipment .....	2-14
2.11.1 General.....	2-14
2.11.2 Control Procedure .....	2-14
2.12 Inspection and Test Status.....	2-15
2.12.1 General.....	2-15
2.13 Control of “Corrective Action Necessary” Product.....	2-15
2.13.1 General.....	2-15
2.13.2 Review and Disposition of “Corrective Action Necessary” Product....	2-15
2.14 Reporting of Corrective and Preventive Action.....	2-16
2.14.1 General.....	2-16
2.14.2 Corrective Action.....	2-19
2.14.3 Preventive Action.....	2-19
2.15 Handling, Storage, Packaging, Preservation, and Delivery of Product .....	2-20
2.15.1 General.....	2-20
2.15.2 Handling .....	2-20
2.15.3 Storage.....	2-20
2.15.4 Packaging.....	2-20
2.15.5 Preservation.....	2-20
2.15.6 Delivery.....	2-20
2.16 Control of Quality Records.....	2-20
2.17 System Quality Audits .....	2-21
2.18 Training .....	2-23
2.19 Servicing .....	2-23
2.20 Statistical Techniques.....	2-23
2.20.1 Identification of Need.....	2-23
2.20.2 Procedures.....	2-23

**CONTENTS (Continued)**

<b>Chapter and Section</b>	<b>Page</b>
3. Audits and Measurements .....	3-1
3.1 Audits and Procedures.....	3-1
3.1.1 Audit Overview.....	3-1
3.1.2 Requirements .....	3-2
3.1.3 QWEST Validation Quality Process.....	3-2
3.1.4 System Audit.....	3-4
3.1.5 Process Audit .....	3-4
3.1.6 Product Audit.....	3-4
3.1.7 Sampling Plan Guidelines.....	3-5
3.1.8 Sampling (In Process and Final).....	3-5
3.2 QWEST Audit Reports .....	3-6
3.2.1 Supplier Assessment Report (SAR) RG 47-0146.....	3-7
3.2.2 “Corrective Action Necessary” (Defects) .....	3-8
3.3 Supplier Conversion Tables .....	3-10
3.3.1 Counting / Reduction Table .....	3-10
3.4 Supplier Assessment Report (SAR) Calculations.....	3-10
3.5 Supplier Measurements .....	3-12
3.5.1 Triple Hundred Index (I100*3) Matrix.....	3-12
3.5.2 Notification.....	3-13
3.5.3 Supplier Assessment Program (SAP) .....	3-13
3.5.4 Supplier Rating.....	3-13
4. Definitions .....	4-1
4.1 Acronyms.....	4-1
5. References.....	5-1
5.1 QWEST Technical Publications .....	5-1
5.2 Miscellaneous Publications .....	5-2
5.3 Ordering Information.....	5-2
5.4 Trademarks.....	5-2

**Tables**

Table 1-1: Document Organization.....	1-2
Table 3-1: Reduction of Defects.....	3-10
Table 3-2: Conversion Table .....	3-11
Table 3-3: Frame Equivalencies .....	3-11



## CONTENTS

<b>Chapter and Section</b>	<b>Page</b>
1. Introduction.....	1-1
1.1 General.....	1-1
1.1.1 Requirements .....	1-1
1.2 Reason for Reissue .....	1-1
1.3 Purpose and Definition.....	1-2
1.3.1 Organization of this Publication.....	1-2
1.4 QWEST Policy.....	1-3
1.4.1 Policy Statement .....	1-3
1.5 QWEST Quality Process Management Team Responsibilities.....	1-3
1.5.1 Functions .....	1-3
1.5.2 Objectives .....	1-3
 <b>Table</b>	
1-1: Document Organization.....	1-2



## 1. Introduction

### 1.1 General

This publication provides the service supplier with requirements for quality processes, products and services. These requirements are applicable to internal **service suppliers**, external service suppliers, **contractors, and CLECs**. This manual outlines a quality system suitable to meet engineering, installation and removal functions, and is adaptable for service suppliers having specific designs, specifications, or standard requirements. The **purpose** of this **document** is to ensure proper coordination and cooperation prior to, during and upon completion of an engineering, installation or removal activity **within any Qwest owned or leased facility**.

#### 1.1.1 Requirements

Service suppliers doing business with QWEST for a product type shall show a level of expertise in that technology, based on past history and/or specific training in that technology. Installation personnel representing the Service Supplier shall be qualified to work on the equipment that they have been contracted to install. The suppliers shall be required to comply with all suppliers, manufacturers, and QWEST standards.

All equipment placed in Qwest owned or leased facilities will be subject to random quality and safety audits conducted by Qwest. These audits will determine whether engineering and installation of equipment comply with Qwest standards and requirements. Qwest shall provide written notice of any non-compliance to the responsible party in a timely manner. Such notice will include identification of the specific equipment and/or installation requirement not in compliance.

Violation of NEBS Level 1-safety standards as identified in SR-3580, GR-63-CORE, and GR-1089-CORE must be corrected within 15 calendar days. If there is an immediate threat to the safety of Qwest employees, the physical integrity of the conduit system, cable facilities, other equipment on the premises, or interference with the performance of Qwest's service obligations Qwest may perform such work and/or take such action as Qwest deems necessary to mitigate risk at the responsible party's expense. If, during installation, Qwest determines that the activities and/or equipment of any service supplier, contractor, or CLEC do not comply with the NEBS Level 1 safety standards or are in violation of any applicable laws or regulations all equally applied to Qwest, Qwest has the right to stop all installation work until the situation is remedied.

**Note:** Any QWEST entity and or subsidiary performing or sub-contracting work in a QWEST facility shall comply with all requirements within **Qwest** Technical Publication 77350, and be in compliance with processes and requirements of this standard.

### 1.2 Reason for Reissue

Whenever this publication is reissued, the reason(s) will be listed in this paragraph.

- Update General **and Requirements** Sections – Chapter 1
- Modify **QWEST** to read **Qwest** in all Chapters
- Update Supplier **Standards - Chapter 2**

### 1.3 Purpose and Definition

This publication is intended to familiarize the service supplier with the processes surrounding measurements and auditing procedures needed to perform and measure all aspects of, installation and removal functions. The guidelines described in this publication are applicable to all types of telecommunication equipment installations and removals (i.e., switching, power, radio and transmission products, etc.)

This publication along with associated publications listed herein, provide the procedures necessary for service suppliers to inspect products or services by suppliers who have been qualified and contracted with QWEST to provide products or services.

This publication is intended to familiarize the service supplier with the QWEST product or service requirements by:

- Outlining the general requirements.
- Defining the necessary publications required.

QWEST shall audit and measure all aspects of products, productivity, or services provided by the service supplier processes. These measurements shall be based on established expectancies and their performances within QWEST. QWEST shall measure service suppliers by utilizing stand-alone audits, joint in-process audits, Central Office Operations (COO) feedback, Engineering Service Order Tracking (ESOT) data, and the suppliers own quality data. The service supplier shall establish and maintain documented standards for gathering and reporting quality levels to QWEST.

The measurements stipulated in this publication are intended to support assessment of overall quality performance. With this publication and Corrective Action feedback from QWEST the supplier shall be able to set targets and goals to establish continuous quality improvement. These measurements shall be used to evaluate performance against targets and goals set by QWEST.

#### 1.3.1 Organization of this Publication

The information presented in this manual has been organized to provide the service supplier with requirements that shall satisfy product or service standards of QWEST.

**Table 1-1: Document Organization**

Chapter	Contents
Chapter 1:	Introduction.
Chapter 2:	This chapter details guidelines for the quality process and is structured to provide the service supplier with quality system process requirements.
Chapter 3:	Audits and Measurements. Provides the service supplier with an explanation of the process and the measurement tables that QWEST shall use to measure the service supplier's performance. The service supplier shall adopt the same expectancies and measurements provided in this chapter.
Chapter 4:	Definitions
Chapter 5:	References

## 1.4 QWEST Policy

### 1.4.1 Policy Statement

To establish long term, mutually beneficial relationships between QWEST, CLECs, and service suppliers, focused on a joint process committed to reduce cost and cycle time, improving quality and service and providing continuous quality improvement.

## 1.5 QWEST Quality Process Management Team Responsibilities

### 1.5.1 Functions

- Provide leadership and direction for the Installation Service Supplier(s) (ISS) to meet QWEST objectives.
- Provide quality processes, guidelines and instructions to enable service suppliers to meet the requirements of QWEST.
- Provide assistance to service suppliers in education, interpretation of requirements and training in quality processes.
- Monitor and work with service suppliers to reduce defect and error rates in products or services.
- Evaluate Supplier feedback, issue requests for Supplier Corrective Action. Approve and track corrective action.
- Implement disciplinary action based on a supplier's failure to meet or respond to QWEST requests, or meet quality expectations.

### 1.5.2 Objectives

To assure the highest quality and productivity from supplier products and services.

The QWEST Quality Process Management Team (QPMT) shall incorporate Total Quality Management (TQM) and Supplier Quality Management (SQM) philosophies to ensure that QWEST receives quality products and services. Total Quality Management (TQM) is defined as: The process of continuous quality improvement. Supplier Quality Management (SQM) is defined as: Quality management that focuses on the improvement of products and services by the establishment of long term, beneficial relationships with selected service suppliers.



## CONTENTS

Chapter and Section	Page
2. System Elements .....	2-1
2.1 Supplier Standards .....	2-1
2.2 Management Responsibility.....	2-1
2.2.1 Quality Policy.....	2-1
2.2.2 Organization .....	2-1
2.2.2.3 Management Representative .....	2-2
2.2.3 Management Review .....	2-2
2.3 Quality System.....	2-2
2.3.1 General .....	2-2
2.3.2 Typical Internal Process Audit Cycle Flow.....	2-3
2.3.3 Quality System Procedures .....	2-3
2.3.4 Quality Planning .....	2-4
2.4 Contract Review.....	2-8
2.4.1 General .....	2-8
2.4.2 Review .....	2-8
2.4.3 Amendment to Contract.....	2-8
2.4.4 Records/Orders .....	2-9
2.5 Document and Data Control.....	2-9
2.5.1 General .....	2-9
2.5.2 Document and Data Approval and Issue .....	2-9
2.5.3 Document and Data Changes.....	2-10
2.6 Purchasing .....	2-10
2.6.1 General .....	2-10
2.6.2 Evaluation of Contracted Labor.....	2-10
2.6.3 Purchasing Data .....	2-11
2.6.4 Verification of Purchased Product or Service .....	2-11
2.7 QWEST Supplied Product.....	2-11
2.8 Product Identification and Traceability .....	2-12
2.9 Process Control .....	2-12
2.10 Inspection and Testing .....	2-12
2.10.1 General .....	2-12
2.10.2 Receiving Inspection .....	2-13
2.10.3 In-process Inspection and Testing.....	2-13
2.10.4 Final Inspection and Testing.....	2-13
2.10.5 Inspection and Test Records.....	2-13

**CONTENTS (Continued)**

<b>Chapter and Section</b>	<b>Page</b>
2.11 Control of Inspection, Measuring, and Test Equipment .....	2-14
2.11.1 General .....	2-14
2.11.2 Control Procedure .....	2-14
2.12 Inspection and Test Status.....	2-15
2.12.1 General.....	2-15
2.13 Control of “Corrective Action Necessary” Product.....	2-15
2.13.1 General.....	2-15
2.13.2 Review and Disposition of “Corrective Action Necessary” Product....	2-15
2.14 Reporting of Corrective and Preventive Action.....	2-16
2.14.1 General.....	2-16
2.14.2 Corrective Action.....	2-19
2.14.3 Preventive Action.....	2-19
2.15 Handling, Storage, Packaging, Preservation, and Delivery of Product .....	2-20
2.15.1 General .....	2-20
2.15.2 Handling .....	2-20
2.15.3 Storage.....	2-20
2.15.4 Packaging.....	2-20
2.15.5 Preservation.....	2-20
2.15.6 Delivery.....	2-20
2.16 Control of Quality Records.....	2-20
2.17 System Quality Audits .....	2-21
2.18 Training .....	2-23
2.19 Servicing .....	2-23
2.20 Statistical Techniques.....	2-23
2.20.1 identification of Need.....	2-23
2.20.2 procedures .....	2-23

## **2. System Elements**

### **2.1 Supplier Standards**

This standard governs quality related activities and lists publications for use by service suppliers and the QWEST Supplier Management Team.

Failure of a service supplier to be compliant with all required processes of this standard by a date established by QWEST and the service supplier could result in the removal of that supplier for consideration of work.

Upon failure of a CLEC to take all appropriate steps to correct any non-compliance within 15 calendar days or as soon as reasonably possible, Qwest may pursue immediate resolution by the Commission or a court of competent jurisdiction.

### **2.2 Management Responsibility**

#### **2.2.1 Quality Policy**

The service supplier's management with executive responsibility shall define and document its policy for quality including objectives and its commitment to quality. The quality policy shall be relevant to the service supplier's organizational goals and the expectations and needs of QWEST.

The service suppliers Quality Policy shall be:

- Understood, implemented and maintained at all levels by appropriate supplier management action.
- Relevant to the organizational goals and the expectations and needs of QWEST and the supplier.

#### **2.2.2 Organization**

##### **2.2.2.1 Responsibility and Authority**

The service supplier responsibility, authority and the interrelations of personnel who manage, perform and verify work affecting quality shall be defined and documented, particularly for personnel who need the organizational freedom and authority to:

- Initiate action to prevent the occurrence of any nonconformity relating to product or service.
- Identify and document any problems relating to product or service quality systems.
- Verify and document the implementation of solutions.
- Control further processing, delivery or installation of "Corrective Action Necessary" products or services until the deficiency or unsatisfactory condition has been corrected to meet QWEST quality standards.

#### **2.2.2.2 Resources**

The service supplier shall identify resource requirements and provide adequate resources, including the assignment of trained personnel for management, performance of work, and verification activities including internal quality audits.

#### **2.2.2.3 Management Representative**

- The service supplier's management with executive responsibility shall appoint a member of the supplier's own management who, irrespective of other responsibilities, shall have defined authority for:
- The service supplier shall ensure that a quality system is established, implemented and maintained in accordance with the standards established by QWEST Technical Publication 77369.
- The service supplier shall report on the performance of the quality system to the supplier's management for review and as a basis for continuous improvement of the quality system.

#### **2.2.3 Management Review**

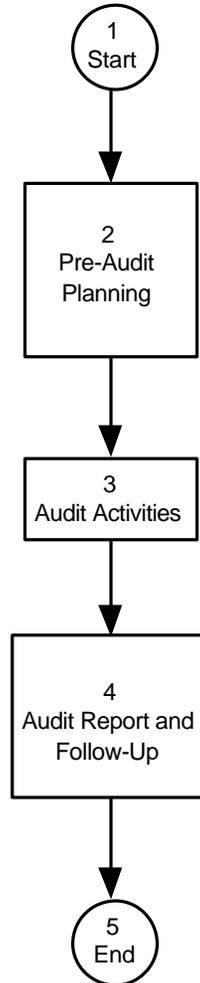
- The service supplier's quality council, with executive responsibility, shall review the quality system at defined intervals sufficient to ensure its continuing suitability and effectiveness in satisfying the standards of QWEST and the service supplier's stated quality policy and objectives.
- Records of such reviews shall be maintained.

### **2.3 Quality System**

#### **2.3.1 General**

The service supplier shall establish, document and maintain a quality system as a means of ensuring that product or service conform to specified QWEST standards. The supplier shall prepare a quality manual covering the 20 elements defined in Chapter 2 of this standard. The quality manual shall make reference to the quality system procedures and outline the structure of the documentation used in the quality system.

### 2.3.2 Typical Internal Process Audit Cycle Flow



**Note:** Refer to typical detailed flow charts at end of Section 2.3 (Supplier reference only).

### 2.3.3 Quality System Procedures

**Notes:**

1. Publication ANSI/ASQC Q10013-1995, "Guidelines for Developing Quality Manuals," may be of assistance in the preparation of a quality manual.
2. Documented procedures shall make reference to work instructions that define how an activity is performed.

The service supplier shall:

- Prepare documented procedures consistent with the requirements of QWEST and the service supplier's stated quality policy.
- Effectively implement the quality system and its documented procedures.

#### 2.3.4 Quality Planning

The service supplier's procedures can be defined and referenced by using QWEST Technical Publications standards for meeting quality requirements in Publication 77369.

Quality planning shall be consistent with all other requirements of a service suppliers' quality system and shall be documented in a format to suit U S WEST's method of operation. The service supplier shall follow activities in meeting the specified requirements for products, services, projects or contracts.

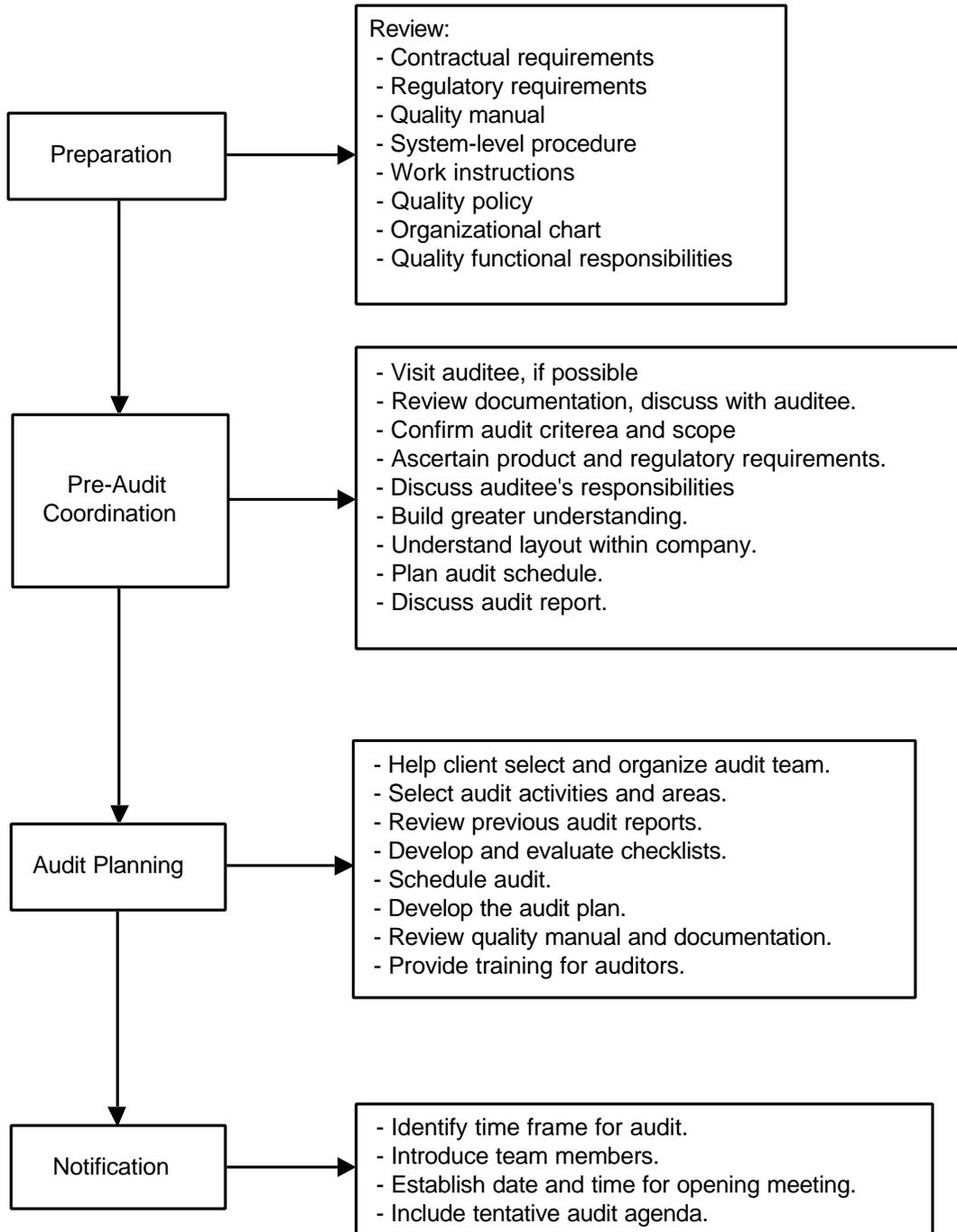
The preparation of Quality Plans.

- The identification of any controls, processes, equipment (including inspection, calibration, and operational tests of equipment), fixtures, resources and skills that may be needed to achieve the required product or service quality.
- Ensuring compatibility of the product or service, and the applicable documentation.
- The updating as necessary of quality control, inspection and testing techniques.
- The identification of suitable verification at appropriate stages of the product or service.

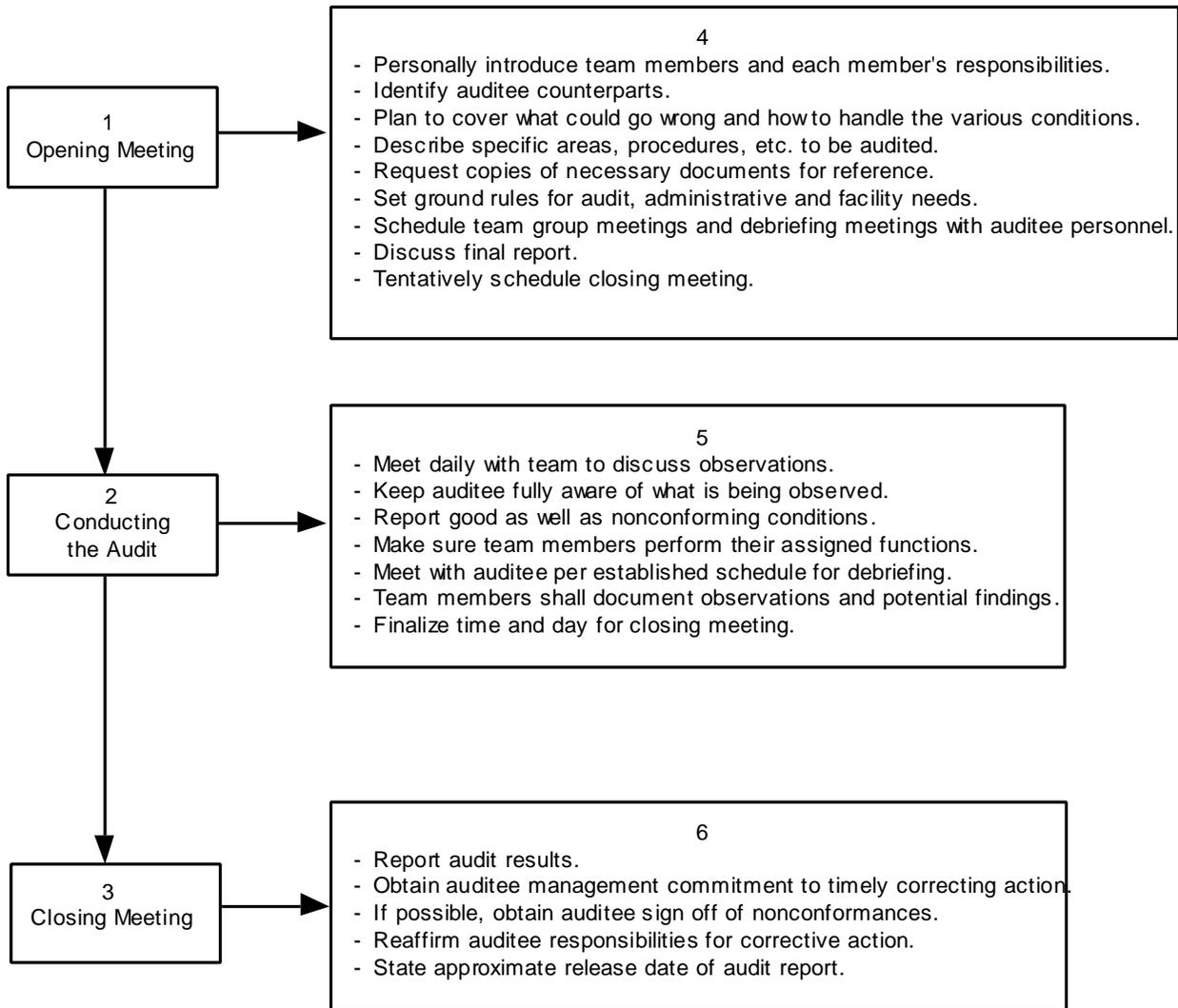
The identification and preparation of quality records.

**Note:** The quality plans may be in the form of a reference to the appropriate documented procedures that form an integral part of the service supplier's quality system. See typical flow charts below:

### 2.3.4.6 Process Audits: Pre-Audit Planning Flow

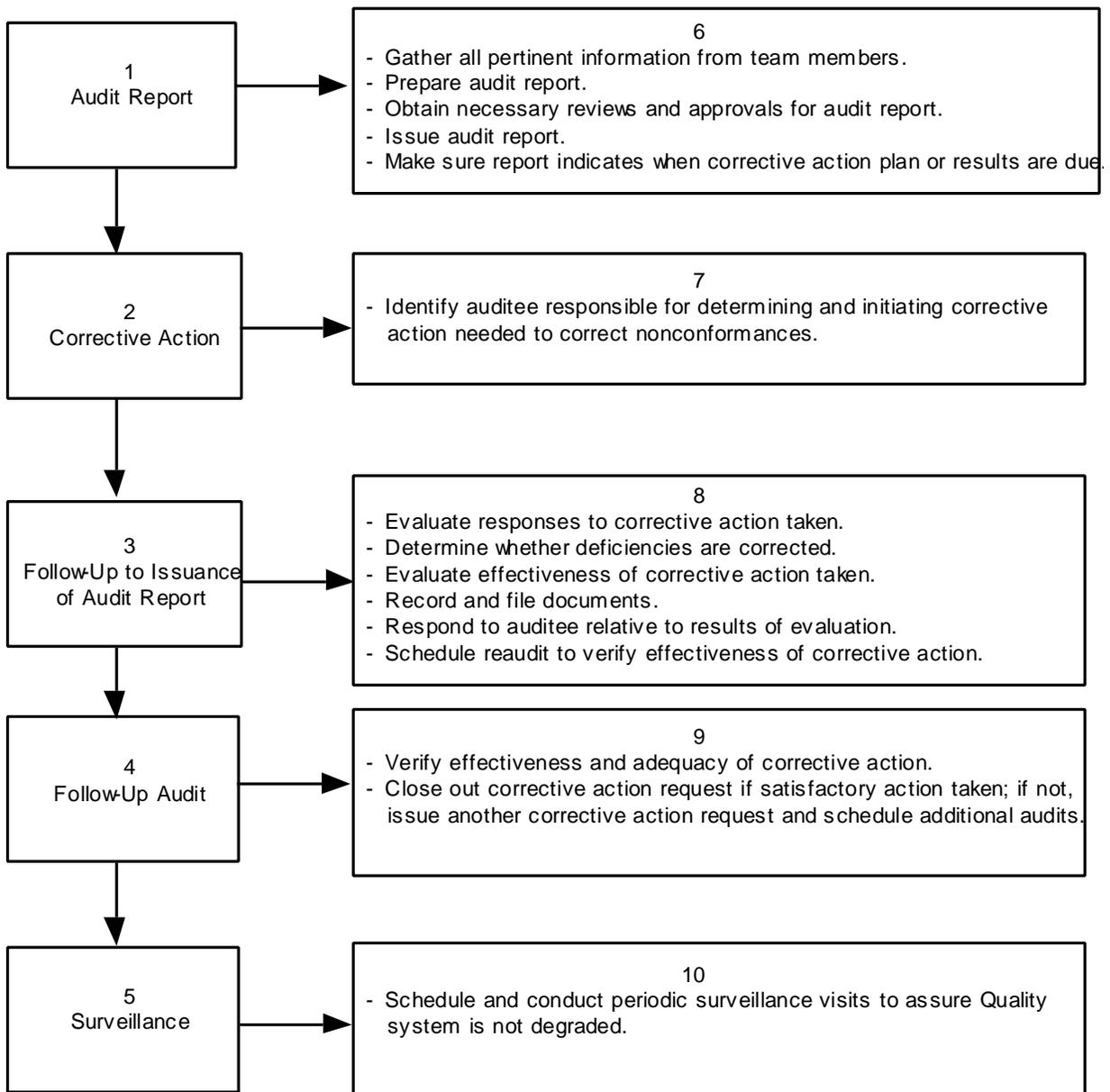


### 2.3.4.7 Audit Activity Flow



**Note:** This type of audit is done by QWEST Quality Process Management Team on a service suppliers internal processes.

### 2.3.4.8 Process Audit: Report and Follow-up Flow



## 2.4 Contract Review

### 2.4.1 General

The service supplier shall establish and maintain documented procedures for contract review and for the coordination of these activities.

**Note:** The Design Work Package (DWP) is a contractual document. Deviation from this document including the scheduled service date without proper authorization shall be considered a violation of contract. When there is a conflict between the DWP and a standard configuration, the service supplier shall contact the Installation Control Center ICC for resolution.

### 2.4.2 Review

Before the submission or the acceptance of a contract or order (statement of requirement), the contract or order shall be reviewed by the service supplier to ensure that:

QWEST requirements are adequately defined and documented. Where no written statement of requirements are available for an order received by verbal means, the supplier shall ensure that the order requirements are agreed to and documented before their acceptance.

Any differences between the supplier's, QWEST Technical Standards, and Design Work Package (DWP) requirements shall be resolved prior to job acceptance.

**Note:** For prioritizing of these standards see QWEST Technical Publication 77350, Chapter 1, "General Requirements."

The service supplier has the capability to meet the QWEST contract or accepted order requirements.

### 2.4.3 Amendment to Contract

The service supplier shall request a change to a QWEST contract following the procedures outlined in QWEST Technical Publication 77350 Issue G, Chapter 13, "Job Information Memorandum (JIM)" RG 47-0004.

#### **2.4.4 Records/Orders**

Records of contract reviews and changes shall be documented and maintained for a minimum of 1 year.

Channels for communication and interface with QWEST shall be established; i.e., Quality Management Team (QMT), Installation Control Center (ICC), the Design Engineer, QWEST Installation Service Supplier, etc.

### **2.5 Document and Data Control**

#### **2.5.1 General**

The service supplier shall establish and maintain documented procedures to control all documents and data that relate to the requirements of QWEST Communications International Inc. including, to the extent applicable, documents of external origin such as standards and customer drawings/records. Documents and data can be in the form of any type of media, such as hard copy or electronic media. Typically there are 4 levels of documentation:

- Level One (1) - Quality Manual
- Level Two (2) - Procedures
- Level Three (3) - Instructions
- Level Four (4) - Records, Forms, Charts, Lists, etc.

#### **2.5.2 Document and Data Approval and Issue**

- All documents and data shall be reviewed and approved by the service supplier for adequacy by authorized personnel prior to issue. A master list procedure shall be used to identify the current revision status of all documents and shall list the status of invalid and/or obsolete documents.
- The service supplier's control shall ensure:
- The pertinent issues of appropriate documents are available at all locations where product or service essential to the effective functioning of the quality system are performed. All required approval or acknowledgment signatures shall be legible when read by any authorized QWEST representative.
- Invalid and/or obsolete documents are promptly removed from all points of issue or use, or otherwise assured against unintended use. Obsolete documents shall be maintained on the "Master List" for one (1) year.
- Any obsolete documents retained for legal and/or knowledge preservation purposes are to be identified.

### 2.5.3 Document and Data Changes

Changes to documents and data shall be reviewed and approved by the same functions and/or organizations that performed the original review and approval, unless specifically designated otherwise. The designated functions and/or organizations shall have access to pertinent background information upon which to base their review and approval.

The nature of the change shall be identified in the document or on the appropriate attachments.

## 2.6 Purchasing

### 2.6.1 General

The service supplier or the Engineer, Furnish, and Install (EF&I) Supplier shall establish and maintain documented procedures and records to ensure that miscellaneous purchased product or service conforms to QWEST specified requirements.

### 2.6.2 Evaluation of Contracted Labor

QWEST reserves the right to review the service supplier's quality process to assure that their contracted labor force meets all U S WEST's, requirements.

- The service supplier shall select contract labor on the basis of their ability to meet QWEST technical standards.
- This selection shall be dependent upon the type of product or service, and the impact of contract labor product or service on the quality of the final product or service.
- QWEST reserves the right to evaluate the competency of a services suppliers work force and contract labor. This evaluation is to ensure the qualified personnel are working in our equipment facilities. The evaluation test shall be based on the assignment responsibility (Lead Installer, laborer, etc.) and the type of work being done (Switch, Transmission, Power, Radio).

The service supplier shall establish and maintain quality records of qualified contract labor. See QWEST Technical Publications 77350, Chapter 2, "General Requirements."

The service supplier projects shall be supervised by qualified personnel on all installation jobs using contracted labor. The contracted labor force of a service supplier shall not be left in any QWEST facility without qualified supervision. The service supplier representative shall be present to instruct and manage their contracted labor force throughout the installation interval. The service supplier shall be responsible for all violations, service outages, loss of equipment, and damages cause by their contracted labor force.

**Note:** When a supplier contracts E&F only the installation (I) piece shall be sourced by Installation Control Center (ICC).

### **2.6.3 Purchasing Data**

The service supplier's purchasing documents shall contain data clearly describing the product ordered and shall include:

- The type, class, grade, cost, title, name, number, unique document identification number and issue or other precise product identification.
- The title or identification, and issues of specifications, drawings, documentation, process requirements, inspection instructions and relevant technical data, including requirements for approval or qualification of product, procedures, process equipment and personnel.
- The service supplier shall review and approve purchasing documents for adequacy of the specified requirements prior to release.

### **2.6.4 Verification of Purchased Product or Service**

#### **2.6.4.1 Supplier Verification of Contracted Labor**

Where the service supplier proposes to verify purchased product or services based on the contract labor's documentation of specifications meeting QWEST's requirements. The supplier shall specify the verification arrangements and the method in the purchasing documents.

#### **2.6.4.2 QWEST Verification of Contract Labor Product or Service**

QWEST shall be afforded the right to verify the service supplier's premises that contract labor product or service conform to specified requirements.

Verification by QWEST shall not absolve the service supplier or the contract labor force of the responsibility to provide acceptable product or service.

### **2.7 QWEST Supplied Product**

The service supplier shall establish and maintain documented procedures for the control of verification, storage and maintenance of QWEST supplied product. Any such product that is lost, damaged or otherwise unsuitable for use shall be documented and reported to QWEST. The service supplier or their contracted agent that transports equipment between QWEST facilities or the supplier's warehouse shall be liable for loss or damage to that equipment.

## **2.8 Product Identification and Traceability**

The service supplier shall establish and maintain documented procedures for identifying the product, such as ironwork, piece parts, manuals, drawings, records, and all other references that are essential to the installation process. The supplier shall track and identify product from receipt and during stages of installation. Traceability shall be a specified requirement. The service supplier shall establish and maintain documented procedures for unique identification of individual product or service. This identification shall be recorded or documented.

## **2.9 Process Control**

The service supplier shall identify and plan the product or service processes that directly affect quality and shall ensure that these processes are carried out under controlled conditions.

Controlled conditions shall include the following:

- Documented procedures defining product or service process.
- Compliance with reference standards, codes, quality plans and/or documented procedures.
- Monitoring and control of suitable process parameters and product or service characteristics.
- The approval of processes and equipment.
- Criteria for workmanship, which shall be stipulated in the clearest practical manner (e.g., written standards, representative samples or illustrations).
- Maintenance of equipment to ensure continuing process capability.
- The requirements for any qualification of process operations, including associated equipment and personnel, shall be specified.
- Supplier records shall be maintained for quality processes, product or service and personnel training.

## **2.10 Inspection and Testing**

### **2.10.1 General**

The service supplier shall establish and maintain documented procedures for inspection and testing activities in order to verify that the specified requirements for a product or service are met. The required inspection and testing, and the records to be established, shall be documented in the suppliers quality plan or documented procedures.

### **2.10.2 Receiving Inspection**

The service supplier shall ensure that incoming product or service is not used or processed until it has been inspected or otherwise verified as “Meets Requirements” to QWEST’s specified standards. Verification of the specified requirements shall be in accordance with the supplier’s quality plan and/or documented procedures.

### **2.10.3 In-process Inspection and Testing**

The service supplier shall:

- Inspect and test the product or service as required by QWEST standards and the supplier’s quality plan and documented procedures.
- Hold product or service until the required inspection and tests have been completed.

### **2.10.4 Final Inspection and Testing**

The service supplier shall carry out all final inspections and testing in accordance with QWEST standards and the suppliers quality plan, procedures, and instruction to complete the evidence of “Meets Requirements” of the product or service.

The quality plan, procedures, and instructions for final inspection and testing shall require that all specified inspection and tests have been carried out and that the results meet QWEST requirements.

No product or service shall be complete until all the activities specified by QWEST and the supplier’s quality plan, procedures, and instructions have been satisfactorily completed and the associated data and documentation are available and authorized.

### **2.10.5 Inspection and Test Records**

The service supplier shall establish and maintain records that provide evidence that the product has been inspected and/or tested. These records shall clearly show whether the product or service has passed or failed the inspections and/or tests according to defined acceptance criteria. Where the product or service fails to pass an inspection and/or test, the procedure for the control of “Corrective Action Necessary” product shall apply.

Records shall identify the inspection authority responsible for the release of the product or service.

## **2.11 Control of Inspection, Measuring, and Test Equipment**

### **2.11.1 General**

The service supplier shall establish and maintain documented procedures to control, calibrate and maintain inspection, measuring and test equipment (including test software) used by the service supplier to demonstrate the “Meets Requirements” of product or service to the specified requirements. Inspection, measuring and test equipment shall be used in a manner that ensures that the measurement is known and is consistent with the required measurement capability.

Where test software or comparative references such as test hardware is used as suitable forms of inspection, they shall be checked to prove that they are capable of verifying the acceptability of product or service, prior to release for use during installation, or servicing and shall be re-checked at prescribed intervals. The service supplier shall establish the extent and frequency of such checks and shall maintain records as evidence of control.

Where the availability of technical data pertaining to the measuring equipment is a specified requirement, such data shall be made available, when required by QWEST, for verification that the measuring equipment is functionally adequate.

### **2.11.2 Control Procedure**

The service supplier shall:

- Determine the measurements, based on specifications and requirements, to be made and the accuracy required; then select the appropriate inspection, measuring and test equipment that is capable of the accuracy and precision required.
- Identify all inspection, measuring and test equipment that can affect product or service quality and calibrate and adjust them at prescribed intervals. Where no such standards exist, the basis used for the calibration shall be documented.
- Define the process employed for the calibration of inspection, measuring and test equipment including details of equipment type, unique identification, location, frequency of inspections, inspection methods, acceptance criteria and the action to be taken when results are unsatisfactory.
- Identify inspection, measuring and test equipment with a suitable indicator or approved identification record to show the calibration status.
- Maintain calibration records for inspection, measuring test and installation equipment.
- Assess and document the validity of previous inspection and test results when inspection, measuring and test equipment is found to be out of calibration.
- Ensure that the environmental conditions are suitable for the calibration, inspections, measurements and tests being carried out.

- Ensure that the handling, preservation and storage of inspection, measuring and test equipment is such that the accuracy and fitness for use are maintained.
- Safeguard inspection, measuring and test facilities and equipment including both test software and test hardware, from adjustments that would invalidate the calibration setting.

## **2.12 Inspection and Test Status**

### **2.12.1 General**

The inspection and test status of product or service shall be identified by means which indicates “Meets Requirements” or “Additional Effort Necessary” of product or service with regard to inspection and tests performed. The identification of inspection and test status shall be documented and maintained, as defined in the quality plan, procedures, and instructions. Throughout engineering, installation and servicing process the product or service shall be evaluated to ensure compliance to QWEST standards.

## **2.13 Control of “Corrective Action Necessary” Product**

Note: See 3.1.8.3 “Types of Deficiency”, for details relating to defect requirements.

### **2.13.1 General**

The service supplier shall establish and maintain documented procedures to ensure that products and services, which does not meet specified requirements is prevented from unintended use. The supplier shall provide an adequate number of trained quality personnel to meet the requirements set by QWEST. This control shall provide for identification, documentation, evaluation, and disposition of “Corrective Action Necessary” product or service and for notification to QWEST.

### **2.13.2 Review and Disposition of “Corrective Action Necessary” Product**

The service suppliers responsibility for review and authority for the disposition of “Corrective Action Necessary” product shall be defined. “Corrective Action Necessary” products and services shall be reviewed and measured in accordance with the supplier’s documented procedures.

The service supplier shall correct “Corrective Action Necessary” product or service to meet all specified QWEST requirements.

Engineering waiver process shall meet requirements in Technical Publication 77350, Chapter 2, General Section.

Repair and/or reworked product or service shall be evaluated in accordance with the supplier’s quality plan, documented procedure, and meet all QWEST requirements.

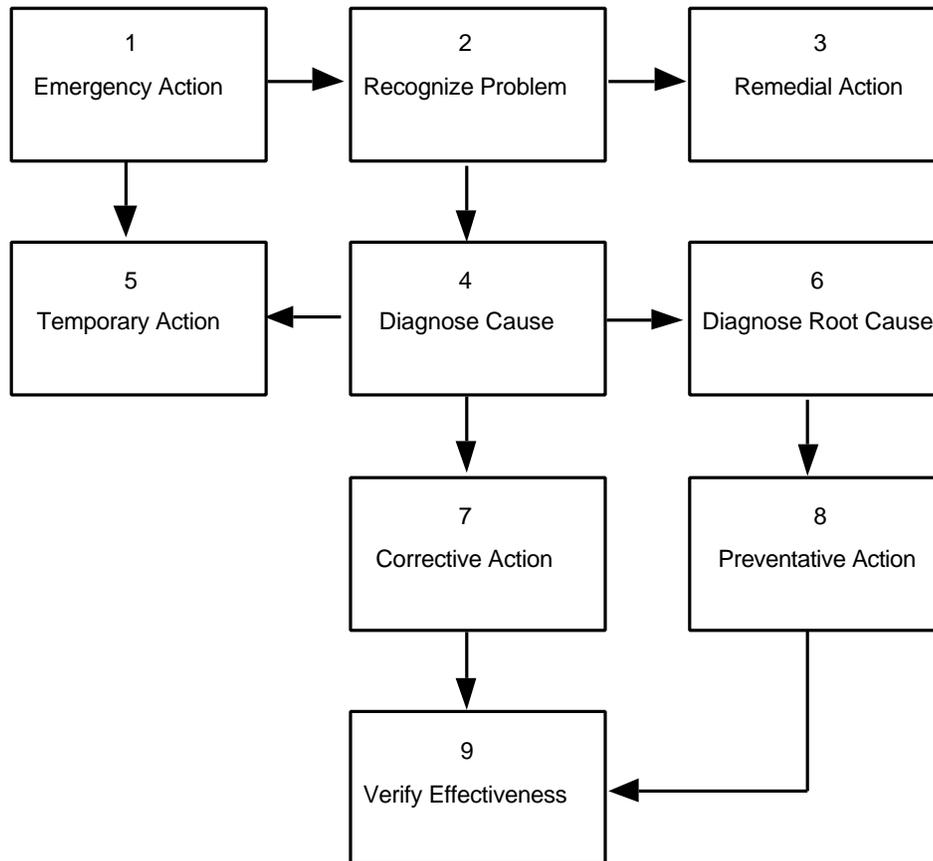
## **2.14 Reporting of Corrective and Preventive Action**

### **2.14.1 General**

The service supplier shall establish and maintain documented procedures for implementing corrective and preventive action.

The service supplier shall implement and record any changes to the documented procedures resulting from corrective and preventive action.

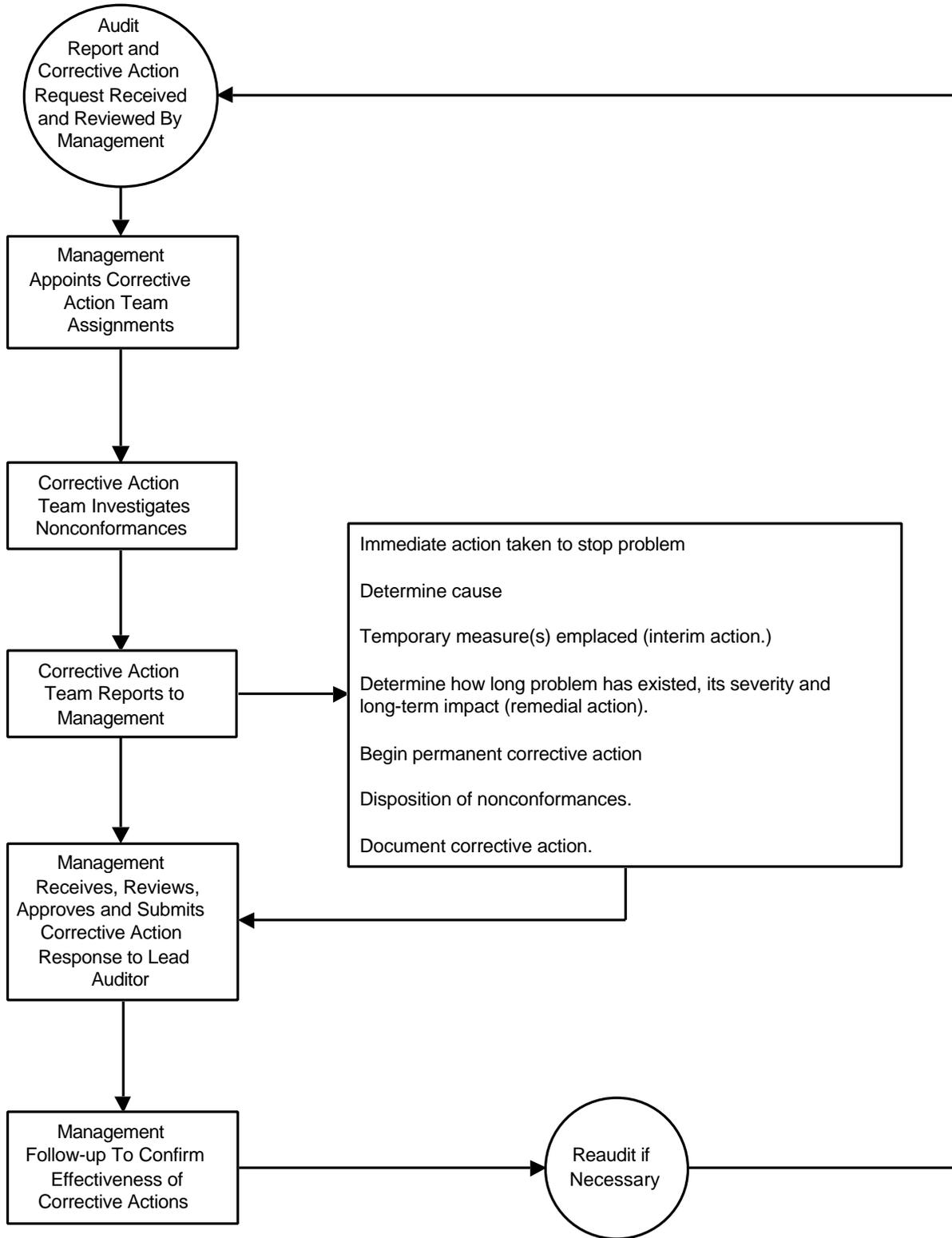
### 2.14.1.1 Corrective and Preventive Action Loop flow chart (typical)



The supplier must have a documented system and procedures for:

1. Investigating the cause of a defect “Corrective Action Necessary” product and service.
2. Investigating the actions needed to prevent the reoccurrence of defects.
3. Responding to defects in proportion to the “Corrective Action Necessary”.
4. Making certain that corrective actions are dealt with effectively.
5. Making changes in the supplier’s quality system as needed.
6. Keeping documented records of corrective actions and their effectiveness.

**2.14.1.2 Corrective Action Flowchart.**



### 2.14.2 Corrective Action

The service supplier's procedure for corrective action shall include:

- The effective handling of QWEST complaints and reports of product or service nonconformities shall be resolved within 30 days of supplier's notification.
- Investigation of the root cause of "Corrective Action Necessary" items relating to the products and services, process and quality system and recording the results of the investigation.
- Determination of the corrective action needed to eliminate the root cause of "Corrective Action Necessary".
- Applying controls to ensure that corrective action is taken and that it is effective.

Where the availability of technical data pertaining to the measuring equipment is a specified requirement, such data shall be made available, when required by QWEST.

**Note:** All corrective action processes and procedures shall and be approved by the QWEST Quality Process Management Team (QPMT) prior to implementation.

### 2.14.3 Preventive Action

The service supplier's procedures for preventive action shall include:

- The use of appropriate sources of information such as processes and work operations that affect product or service quality, audit results, quality records, service reports and QWEST complaints to detect, analyze and eliminate potential causes of "Corrective Action Necessary".
- Determination of the steps needed to deal with any problems requiring preventive action.
- Initiation of preventive action and application of controls to ensure that it is effective.
- Documentation and information that is relevant to actions taken shall be submitted for management review.

## **2.15 Handling, Storage, Packaging, Preservation, and Delivery of Product**

### **2.15.1 General**

The service supplier shall establish and maintain documented procedures for handling, storage, packaging, preservation and delivery of product.

### **2.15.2 Handling**

The service supplier shall provide methods of handling product that prevent damage or deterioration.

### **2.15.3 Storage**

The service supplier shall use designated storage supply areas or stock rooms to prevent damage or deterioration of product and to comply with the QWEST combustible policy. See Technical Publication 77350, Chapter 2, "Installation Activities."

To detect deterioration, the condition of product in stock they shall be assessed at appropriate intervals and documented.

### **2.15.4 Packaging**

The service supplier shall control packing, packaging and marking processes (including materials used) to the extent necessary to ensure "Meets Requirements" to QWEST standards.

### **2.15.5 Preservation**

The service supplier shall apply methods for care and the segregation of product when the product is under the supplier's control.

### **2.15.6 Delivery**

The service supplier shall arrange for the protection of the quality of the product after their inspection and test. This protection shall be extended and include delivery to destination.

## **2.16 Control of Quality Records**

The service supplier shall establish and maintain documented procedures for identification, collection, indexing, access, filing, storage, maintenance and control of quality records.

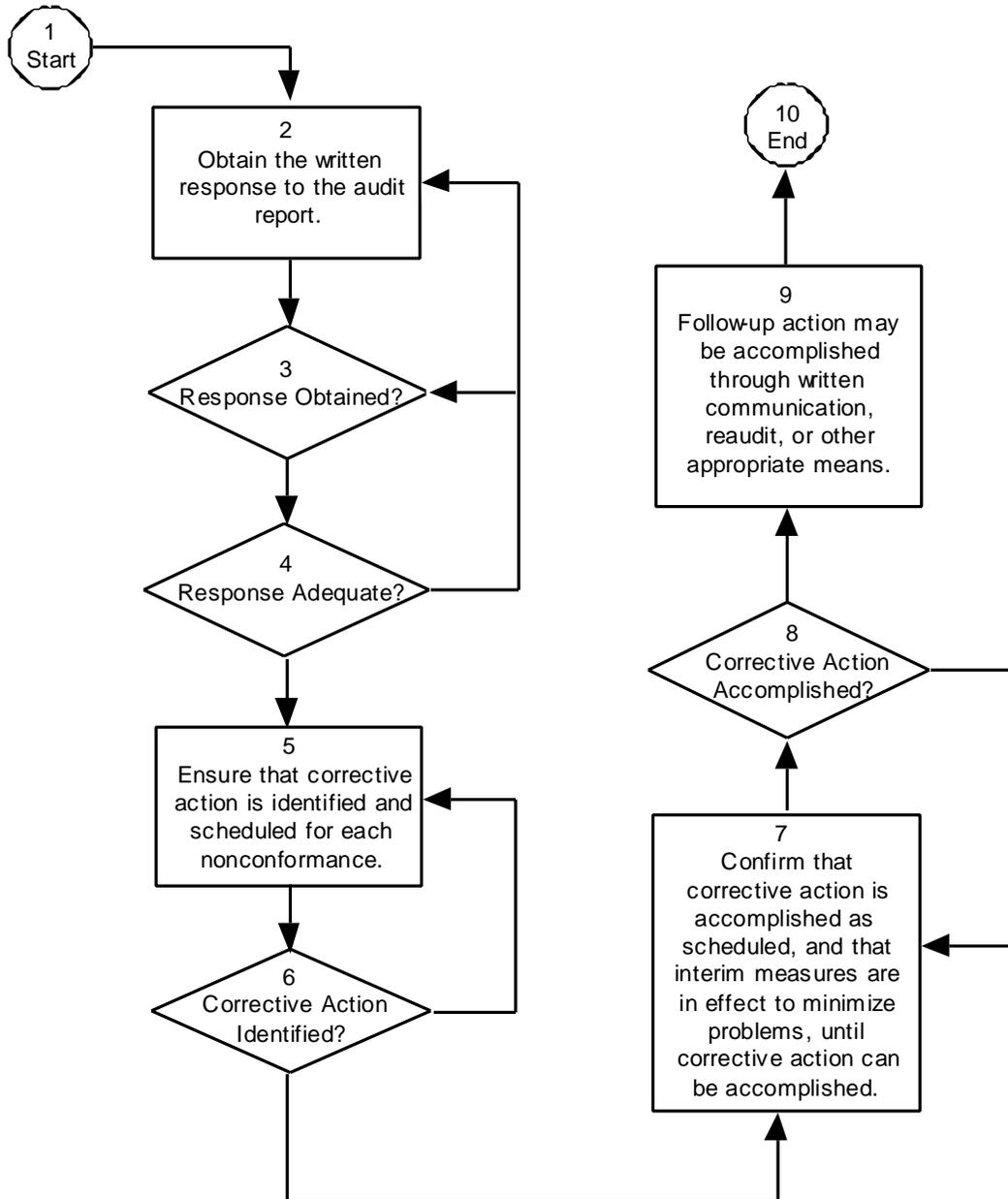
Quality records shall be maintained to demonstrate "Meets Requirements" to specified standards and the effective operation of the quality system. Quality records from the sub-contractor shall be an element of this data.

All quality records shall be legible and shall be stored and retained in such a way that they are readily retrievable. These records shall be stored in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss. The retention time of quality records shall be two years. Quality records shall be made available for evaluation by QWEST.

### **2.17 System Quality Audits**

- The service supplier shall establish and maintain documented procedures for planning and implementing system quality audits to verify whether quality activities and related results comply with planned arrangements and to determine the effectiveness of the quality system.
- System quality audits shall be scheduled on the basis of the status and importance of the activity to be audited and shall be carried out by personnel independent of those having direct responsibility for the activity being audited. QWEST reserves the right to participate in joint system audits of the service supplier.
- The supplier shall provide an example of evaluating and selecting audit samples.
- The development of the audit schedule shall be the process that brings QWEST and the service supplier(s) together for the propose of setting timelines, methods, scope and sequence of the quality audit(s). See “Audits and Measurements”, Chapter 3, paragraph 3.1.7.
- Once the joint audit schedule has been developed, it shall be distributed to all affected parties, internal as well as the supplier base.
- The results of the audits shall be recorded and brought to the attention of the personnel having responsibility in the area audited. The management personnel responsible for the area shall take timely corrective action and maintain documented deficiencies found during the audit.
- Follow up audit activities shall verify and maintain documented procedures of the implementation and effectiveness of the corrective action taken. See flow chart below:

### 2.17.1 Follow up Flow Chart



## **2.18 Training**

The service supplier shall establish and maintain documented procedures for identifying training needs and shall provide training of all personnel performing activities affecting quality and installations within QWEST. Personnel performing specific assigned tasks such as quality auditing and or the installation of equipment and tests shall be qualified on the basis of appropriate education, training and/or experience. Records of such training shall be documented and maintained.

Service suppliers doing product installations for QWEST shall provide their installation forces with established training developed by QWEST. See minimum required training and testing below:

- Installation Assessment Test (TP 77350)
- Power Assessment Test

**Note:** Power Assessment Test is only required by lead installers on projects involving major power transitions.

## **2.19 Servicing**

Where servicing is a specified requirement, the supplier shall establish and maintain documented procedures for performing, verifying and reporting that servicing meets the specified QWEST requirements.

## **2.20 Statistical Techniques**

### **2.20.1 Identification of Need**

The service supplier shall identify the need for statistical techniques required for establishing, controlling and verifying process capability of product or service characteristics.

### **2.20.2 Procedures**

The service supplier shall establish, maintain and provide documented procedures of implementation and control of the application of statistical techniques that shall meet minimum established requirements of QWEST. The supplier shall follow at a minimum the sampling plan in Chapter 3 of this document.



## CONTENTS

Chapter and Section	Page
3. Audits and Measurements .....	3-1
3.1 Audits and Procedures.....	3-1
3.1.1 Audit Overview.....	3-1
3.1.2 Requirements .....	3-2
3.1.3 QWEST Validation Quality Process.....	3-2
3.1.4 System Audit.....	3-3
3.1.5 Process Audit .....	3-4
3.1.6 Product Audit.....	3-4
3.1.7 Sampling Plan Guidelines.....	3-4
3.1.8 Sampling (In Process and Final).....	3-5
3.2 QWEST Audit Reports .....	3-5
3.2.1 Supplier Assessment Report (SAR) RG 47-0146.....	3-7
3.2.2 “Corrective Action Necessary” (Defects) .....	3-7
3.3 Supplier Conversion Tables .....	3-9
3.3.1 Counting / Reduction Table .....	3-9
3.4 Supplier Assessment Report (SAR) Calculations.....	3-9
3.5 Supplier Measurements .....	3-11
3.5.1 Triple Hundred Index (I100*3) Matrix.....	3-11
3.5.2 Notification.....	3-11
3.5.3 Supplier Assessment Program (SAP) .....	3-12
3.5.4 Supplier Rating.....	3-12

### Tables

3-1: Reduction of Defects .....	3-9
3-2: Conversion Table .....	3-10
3-3: Frame Equivalencies .....	3-11



### **3. Audits and Measurements**

The service supplier shall be in compliance with the requirements listed in Chapter 2 of this Publication. QWEST shall perform an annual audit of the service supplier's process to maintain their status as an approved supplier.

#### **3.1 Audits and Procedures**

##### **3.1.1 Audit Overview**

An audit is an examination that evaluates the suppliers quality system processes, installed products or services installations as it applies to a particular service supplier. It will examine all elements of the system, process and installations and their related quality system elements to evaluate the system against the referenced standards or specifications required by QWEST for that process.

Engineering, Installation Quality Process Personnel and the service supplier will have the responsibility of utilizing the appropriate Job Specifications, Publications, Appendices, Drawings (COEFM), QWEST Technical Publications 77350, 77351, 77355, 77368, 77369, 77385 and any other publication relating to Engineering, Installation practices and manufacturing requirements.

The Quality Process Management Team (QPMT) shall provide the development of quality metrics and quality improvement strategies for the service supplier.

The Service Supplier feedback and other management process criteria shall be utilized by Quality Process Management Team (QPMT) personnel.

The QPMT and the Contract Liaison Manager (CLM) shall manage service suppliers to promote continuous quality improvement, reduce cycle time and lower overall cost.

Provide Total Quality Management (TQM) criteria to assess installation suppliers in training and applications around these quality management tools.

The service supplier shall have knowledge of and proficiency in quality planning, conducting, and reporting the results of a quality audit.

The service supplier shall audit a given number of jobs based on statistical sampling to ensure that all work contracted by the service supplier meets QWEST requirements. At minimum this requires the service supplier to audit 20 percent of all work assigned in each zone.

**Notes:** QWEST Quality Process Management Team and the supplier shall adopt the sampling table as a guideline in Chapter 3, “Sampling Plan Guidelines.”

If, during the Audit process, an item does not meet standards or requirements (includes manufacturing) as specified in the (DWP) or technical publications, that item shall be documented as a defect in the supplier audit report.

### 3.1.2 Requirements

- In planning, conducting, and reporting audit results, the service supplier shall:
- Observe auditing standards and other directives.
- Plan the audit and prepare working papers.
- Review the existence of adequate controls and substantiating material.
- Examine every major and relevant aspect of the audit subject.
- Remain within the audit scope and exercise objectivity.
- Remain alert for any indication of evidence that can impact the audit results and possibly warrant more intensive or extensive auditing; report critical (service and safety) deficiencies immediately.
- Privileged information should not be disclosed to unauthorized persons.
- Maintain ethical conduct at all times during the audit.
- Report on the audit results clearly, accurately and without delay.

### 3.1.3 QWEST Validation Quality Process

The service supplier shall meet all requirements around the accuracy of feedback data, and be in compliance with critical quality standards and processes. Feedback requirements associated with Supplier Assessment Report (SAR) RG 47-0146, and any other information request shall be accurate and complete. Failure to report supplier quality accurately and be in compliance with critical quality standards and processes shall carry penalties.

Validation of supplier data accuracy shall be determined by Quality Reports accomplished with unannounced audits by QWEST (QPMT) along with feedback from the Design Engineer and Central Office Operations (COO) personnel.

**Note:** See Chapter 3 “Product Audit” for corrective action and requirements around non-compliance to quality standards and processes.

Incident levels for non-compliance to quality standards and processes shall be reported to the service supplier on the “Supplier Incident Notification” (SIN) form RG 47-0151.

The service supplier that has received a “Supplier Incident Notification” RG 47-0151 shall notify the QWEST Quality Manager for resolution in the area of non-compliance. Failure to resolve any incident level rating within thirty days (30) days shall result in escalation to the next (SIN) level.

These penalties are:

#### **3.1.3.1 First incident**

The supplier shall be notified of failure to comply with QWEST requirements of reporting quality performance data accurately or in non-compliance with critical quality standards or processes. QWEST shall increase the amount of verification audits in geographical area(s) of non-compliance. Effective corrective action shall be taken by the service supplier so that true quality performance data, standards, and processes can be obtained.

#### **3.1.3.2 Second incident**

The supplier shall be notified of continuing non-compliance of reporting quality data or critical quality standards or processes in geographical area(s). QWEST could perform both internal and external audits of the supplier's quality system. The supplier shall be placed on probation in geographical area(s) of non-compliance.

#### **3.1.3.3 Third Incident**

QWEST shall request that the supplier's primary contract and work in geographical area(s) be placed on hold until compliance in the area(s) of non-compliance can be obtained.

#### **3.1.3.4 Fourth Incident**

The QWEST Quality Process Management Team (QPMT) shall request that the supplier be removed from geographical area(s) of non-compliance.

**Note:** If the service supplier implements effective, measurable corrective action any time during the penalty evaluation period they shall be returned to the normal supplier category rating. The "First Incident" penalty may be bypassed if (QPMT) or QWEST upper management feels that the suppliers actions or lack of an acceptable response requires "Second Incident" escalation.

### **3.1.4 System Audit**

A system audit shall be used to determine the existence, effectiveness and efficiency of the service supplier's quality program. The basic system audit shall be used to investigate whether organizational elements, activities, functions and departments have operational quality controls.

A system audit shall be conducted as a process of verifying the acceptability of a new service supplier to QWEST. The purpose of the pre-award survey is to evaluate the ability of the service supplier to provide installation services, and corrective action procedures that meet QWEST requirements. QWEST will also be able to determine what assistance is needed by the service supplier to obtain acceptable results.

Quality system reviews shall be performed when significant changes affecting installation quality declines or when there are changes in management.

### **3.1.5 Process Audit**

The Process Audit shall ensure that inputs are consistent and conform to QWEST requirements, that the process is in control and capable of meeting those requirements, and that the output conforms to QWEST Requirements.

A portion of the system audit shall be devoted to the process audit. One or more of the processes shall be audited during the systems audit.

### **3.1.6 Product Audit**

The product audit is an assessment of the final product or installation and removal performance. It shall evaluate the intent and purpose of the final product or installation and removal. The product audit will assess safety and workmanship requirements. See QWEST Technical Publication 77350 for service supplier requirement information.

If the service supplier has not corrected all assessed defects and issued a corrective action report from Product Assessment System (PAS) to the QWEST Quality Process Management Team (QPMT) responsible quality consultant within Thirty (30) days, the quality consultant shall issue a second corrective action. This "Second Notification" shall be returned to the quality consultant within five (5) working days from this issue date on the corrective action. Non-compliance to the second notice shall cause escalation to the QPMT for failure to comply with set standards. The QPMT shall then issue a first level "Supplier Incident Notification" (SIN) to the appropriate service supplier. If that supplier fails to meet this requirement on a continuing basis that supplier shall be placed on a higher level SIN report that could result in holding of work or even dismissal as a primary supplier.

Note: "First Incident" level status refer to Section 3.1.3.1, "QWEST Validation Quality Process."

**3.1.7 Sampling Plan Guidelines**

The Quality Process Management Team and the service supplier shall use the table below as a minimum required guideline to meet an acceptable statistical sample rate.

<b>Percent of Jobs Audited</b>			<b>Percent of Jobs Examined</b>	
<b>Job Size (In Equivalent Frames)</b>	<b>Normal</b>	<b>Tightened</b>	<b>Job Size (In Equivalent Frames)</b>	<b>Percent Examined</b>
10 or less	20%	30%	10 or less	100%
11 and 25	50%	100%	11 and 25	50%
26 and up	100%	100%	26 and up	25%

**Note:** As stated in Chapter 3, “Audit Overview” of this chapter, the service supplier shall audit a given number of jobs based on statistical sampling to ensure that all work contracted by the service supplier meets QWEST requirements

**3.1.8 Sampling (In Process and Final)**

The service supplier shall adopt a documented sampling system that meets the recommended QWEST requirements.

**3.1.8.1 Frequency**

Frequency of the quality audit by the service supplier shall meet QWEST requirements. QWEST shall evaluate and report quality levels for all service suppliers. Supplier rating and quality standing within the supplier community will be given to each services supplier doing work during the assessment period. Executive summaries are considered confidential in nature, and will only be given to QWEST employees with a need to know.

Level of assurance to QWEST shall be the major factor in determining audit frequency. These levels shall be provided by QWEST. The higher the level of assurance; the more frequent the audits.

**3.1.8.2 Level of deficiency**

If an audit has reported critical deficiencies that, if unreported and uncorrected, could lead to a service interruption or could be classified as a critical safety item, that item shall be documented and reported to QWEST. If this type of deficiency occurs, the service supplier shall schedule audits more frequently.

### 3.1.8.3 Types of deficiency

Any QWEST requirement or “Critical” requirement not met, shall be documented and reviewed by QWEST.

- “Critical Requirement” not met is a condition that experience or judgment indicates is likely to cause unsafe conditions for those who use, maintain, or depend on the product; or a defect likely to prevent performance of the function of the major end item, and has to be corrected by the service supplier within twenty four (24) hours of notification.
- Requirement not met is a defect, other than critical, that may cause the product to fail, cause poor performance, shorten life, prevent interchangeability or fail to meet all the requirements set forth by U S WEST. The time requirement for the correction of this type of defect is within thirty (30) days after supplier notification.

Note: If a supplier needs an extension to this requirement they shall obtain approval from the quality manager that issued the Product Assessment Report (PAR). Extensions should only be granted when additional equipment is “back ordered”, or awaiting delivery of needed items.

## 3.2 QWEST Audit Reports

QWEST Audit Report is a written notification to the Service supplier, Design Engineer, Central Office Operation that an audit has been performed on a specific job. The QWEST auditor shall be responsible for completing the Engineering Service Order Tracking (ESOT) report and distributing to the appropriate personnel.

Following is a list of formulas and methods used to derive each supplier's rating. The following raw data shall be gathered from each individual audit for each supplier:

An expectancy value shall be given, depending on the number of Frames Added (FA) and Equivalent Frames Added (EFA). In addition to the frame expectancy, a value is given for:

- BRN = Battery / Ground Connections 350 Kcmil and Larger
- BSS = Battery String & Stand
- CBL = Connecting Blocks Frame
- COS = COSMIC Frames
- DFV = Distribution Frame Verticals
- EEF = Empty Equipment Frame
- EFA = Equivalent Frame(s) Added (Combination of ESE/PEI/PEI\_EFA)
- FCC = Fiber/Coax Connections (Field Installed)
- FRM = Frame(s) Removed
- GCA = Grounding Connections Added
- IWF = Ironwork Feet
- PBS = Individual Battery cells added
- SWC = Solderless Wirewrap Connections

The Quality Process Management Team (QPMT) and the service supplier shall build frame values based on the total installed product. The use of the tables in Chapter 3, "Supplier Assessment Report (SAR) Calculation" are the procedures that shall be used to calculate the number of equivalent 7' frames:

$$\begin{aligned}
 \text{EFA} &= \text{ESE\_EFA} + \text{TEI\_EFA} + \text{PEI\_EFA} \\
 \text{FE} &= (\text{EFA}) + (\text{EEF} * .1) + (\text{FRM} * .5) + (\text{BSS} * 2) + (\text{PBS} * .042) + \\
 &\quad (\text{IWF} * .025) + (\text{COS} * 1) + (\text{DFV} * .1) + (\text{CBL} * .025) + \\
 &\quad (\text{GCA} * .05) + (\text{SWC} * .00025) + (\text{BRN} * .05) + (\text{FCC} * .0025) \\
 \text{DE} &= (\text{ESE\_EFA} * 0.2) + ((\text{FE} - \text{ESE\_EFA}) * .6666) \\
 \text{QI} &= \text{DA/DE}
 \end{aligned}$$

The following data shall be derived for each supplier over the span of the sample period:

$$\begin{aligned}
 \text{Count} &= \text{number of QI's in sample period} \\
 \text{Mean} &= (\text{sum of QI's for sample period}) / \text{Count (number of jobs)} \\
 \text{Rating} &= 100 - (\text{mean} * 10) \text{ If } (R < 40) \text{ Then } R = 40
 \end{aligned}$$

### 3.2.1 Supplier Assessment Report (SAR) RG 47-0146

The Supplier Assessment Report shall be a written notification to the Quality Process Management Team (QPMT) that an audit has been performed on a specific job. The service supplier(s) shall be responsible for accuracy and frequency of the audit report.

The Audit Report shall consist of the following:

- Issue Date (This is the date that the supplier should review the PAR).
- Complete Date (Job Complete Date)
- Issue (Issue of the PAR) 1, 2, 3, etc. = number of final audits or changes to the audit on same BVAPP, 0 = In Progress Report or CLEC orders without BVAPP Number)
- Service supplier

**Note:** Use RG 47-0146, Issue Date 02/99 for input data of equipment installed. See Chapter 3, “QWEST Audit Reports” for calculating input data. Supplier shall build frame values based on the total installed product.

### **3.2.2 “Corrective Action Necessary” (Defects)**

The following process for construction of “Corrective Action Necessary” shall be used by the Quality Process Management Team (QPMT). The service supplier shall use the same process in the construction, documentation and reporting of their results to QWEST. This shall provide the suppliers with the same measurements and data as QWEST.

“Corrective Action Necessary” Code Breakdown:

**3.2.2.1-Category is a specific Paragraph in Technical Publication 77350.**

**3.2.2.2-Requirement indicates whose work item it is against.**

**3.2.2.3-Level indicates the severity of an item.**

Numbers below reference chapter numbers in Technical Publication 77350 Issue G.

<b><u>Chapter</u></b>	<b><u>Title</u></b>
1	Introduction
2	System Elements
3	Audits and Measurements
4	Cable Holes, Penetrations, and Fire/Smoke Protection
5	Cabling, Forming, Running, and Securing
6	Wiring
7	Connecting
8	Equipment Designations
9	Power
10	Storage Batteries
11	Bonding and Grounding
12	Hazardous Material Handling
13	Documentation
14	Forms
15	Methods Of Procedure (MOPs)
16	Competitive Local Exchange Carrier
17	Definitions
18	References

### **3.2.2.2 Requirement Type**

- 1 - Fails to meet a QWEST requirement.
- 2 - Fails to meet manufacturer's requirements.
- 3 - Fails to meet engineering or installation service supplier's requirement
- 4 - Fails to meet regulatory bodies requirement, (NFPA, OSHA, NEC, etc.)

### **3.2.2.3 Level**

- 1 - Additional Effort Necessary "Critical" (Service Affecting or Safety)
- 2 - Additional Effort Necessary

### 3.3 Supplier Conversion Tables

The service supplier shall utilize conversion tables provided by QWEST. The supplier shall be required to provide accurate data. Supplier Audit Reports and the QWEST Audit Reports shall be the means by which QWEST will measure the performance of each supplier.

#### 3.3.1 Counting / Reduction Table

##### 3.3.1.1 Counting Rule

Counting rules are used to determine the number of defects to record on the service supplier's feedback report as number found and the number assessed.

##### 3.3.1.2 Reduction Rule

Reduction rules provide methods of translating an observed count of defects to some lesser count. Reductions are permitted only for groups of identical defects.

See table below:

**Table 3-1: Reduction of Defects**

<u>Number of Identical Defects Found</u>	<u>Defects Assessed</u>
2	1
3 - 8	2
9 - 32	3
33 - 209	4
210 - 3217	5
> 3217	6

### 3.4 Supplier Assessment Report (SAR) Calculations

An expectancy value is given depending on the number of Frames Added (FA) and Equivalent Frames Added (EFA). In addition to the frame expectancy, a value is given for Empty Equipment Frames (EEF), Frame Removals (FRM), Battery String (24) Cells and Stand (BSS), Partial Battery String (PBS), Feet in Ironwork (IEF), COSMIC Modules (COS), Distribution Frame Verticals (DFV), DF Connecting Blocks (CBL), Grounding Connections (GCA), Solderless Wirewrap Connections (SWC), Battery / Battery Return Connections (BRN), and Fiber / Coax Connections (PCC). The Service Supplier shall build frame values based on the total installed product. Use the following tables to calculate the number of equivalent 7' frames:

**Table 3-2: Conversion Table**

Equipment Type	Conversion to Equivalent Frames 7' Frames
Electronic Switches in Inches	72" = Equivalent 7' Frame EFA = $72''/8 * .1 = .9$
Transmission in Inches	72" = Equivalent 7' Frame EFA = $72''/8 * .1 = .9$ 96" = Equivalent 9' Frame EFA = $96''/8 * .1 = 1.2$ 120" = Equivalent 11'6" Frame EFA = $120''/8 * .1 = 1.5$
Power Equipment in Inches	Note: Same as Transmission above
Empty Equipment Frames Added	EEF = (.1) Equivalent 7, 9 and 11".6' Frame
Frame Removals	1 Frame removed = $72''/2 = 36''$ Equivalent 7' Frame = $96''/2 = 48''$ Equivalent 9' Frame = $120''/2 = 60''$ Equivalent 11" 6" Frame
Battery Strings and Stands, Individual Batteries	1 Battery String (Consisting of 24 battery cells, battery stand, and cabling associated with the string) = (2) Equivalent 7' Frame Partial Battery String = .042 per cell (24) CELLS * .042 = 1 EFA
Feet of Ironwork	1 Foot of ironwork (includes cable rack and auxiliary framing) = 0.025 Equivalent Frames
Distribution Frames	1 Cosmic Module = 1 Equivalent 7' Frame 1 Vertical/Horizontal = 0.1 Equivalent 7' Frame
Connecting Blocks	Total Number of Blocks * .025
Grounding Connections**	Total Number of Major Connections * .05 this does not include chassis grounds, foreign object, or frame grounds.
Wire Wrap Connections	Total Number of SWC * .00025
Battery/Battery Return Connections 350 (kcmil) to 1000 (kcmil)	Total Number of Major Connections * .05 this compensates for preparing, connecting, cabling, mounting, and drilling of bars.
Fiber / Coax Connections	Total Number of Fiber / Coax connections (FCC) * .0025

\*\* Grounding jobs shall include chassis, foreign object, and frame grounds.

**Note:** The supplier shall calculate frame equivalencies by the example table below.

**Table 3-3: Frame Equivalencies**

Available Mounting Space	Multiplier	Equivalent Frame(s)
7' Frame 72 Inches	$72''/8 * .1$	.9
9' Frame 96 Inches	$96''/8 * .1$	1.2
11'.6" Frame 120 Inches	$120''/8 * .1$	1.5

**Note:** Equivalent Frame .9 (7' Frame) plus Empty Frame value of .1, will result in (1) frame value.

For information on operation of the Supplier Assessment Program (SAP), Product Assessment Report (PAR), feedback or quality problems please contact QWEST Quality Manager, at:

QWEST  
Attn.: Quality Manager  
Email: [jbostow@qwest.com](mailto:jbostow@qwest.com)  
Phone: 612-798-2460

### 3.5 Supplier Measurements

#### 3.5.1 Triple Hundred Index (I100\*3) Matrix

The Triple Hundred Index (I100.0\*3) matrix calculates service supplier performance in areas of workmanship, productivity and process. See the example index below:

Category	Weight	Rating	Index
Workmanship	50	92%	46
Productivity	35	86%	30.1
Process	15	95%	14.25
<b>Total 100*3</b>			<b>90.35%</b>

**Note:** The index column calculates the 100\*3 for each category as well as the total index. This index shall be calculated by multiplying the weight by the rating and then summing the last column to yield the total 100\*3 (90.35% in the example).

- Weight must add up to 100%
- Rating shall have a Maximum of 100, minimum of 40 (100 being best).
- Total rating of all categories is out of 100.

The category column in the 100\*3 matrix shows the three categories in which the QWEST Quality Process Management Team (QPMT) shall use to measure installation suppliers on workmanship, productivity, and process.

The weight column shows the weight set by the (QPMT). These weights shall be set using historical data and are established prior to every rating period. In the example shown, workmanship, productivity and process are set to 50, 35 and 15 respectively. The weights for all three categories must add up to 100%.

The rating column shall be calculated differently for each category; however, the score must be in the range where 40 is the lowest score and 100 is the best possible. The workmanship category shall be calculated from the quality index based on defects from QWEST workmanship standards.

### **3.5.2 Notification**

Each service supplier shall receive a monthly rating based on jobs in a geographical area and shall be classified as either “Meets Requirements” or “Corrective Action Necessary.” Suppliers classified, as “Corrective Action Necessary” shall be reviewed by the Quality Process Management Team (QPMT) and be placed on a Corrective Action Register (CAR). The results and the classification of service suppliers shall be documented in the QWEST quality report.

### **3.5.3 Supplier Assessment Program (SAP)**

The Supplier Assessment Program (SAP) data shall be compiled by the QWEST Quality Process Management Team (QPMT). These “Measurements and Ratings” are based on the supplier’s internal and QWEST Quality management evaluations. Quality assessment shall be the responsibility of the (QPMT) organization and is based on the 16 chapter’s, of QWEST Technical Publication 77350 Issue G. Data used to generate this report shall be provided by the supplier on the last working day of each month. The quality report issued by the tent h of each month will be the results for the previous month. The suppliers’ rating is determined by the QWEST data. If QWEST Quality Management Team doesn’t submit sufficient sample, the suppliers’ data will be used to determine the rating. The requirements for providing this data, and data formats are defined in this publication. Supplier Assessment Report (SAR),\_RG 47-0146 shall be use by the supplier submitting the data, and QWEST Quality Process Management Team (QPMT).

These quality reports shall not be made available to any supplier other than the one submitting data.

**Note:** Product Assessment Report (PAR), The PAR is a companion form that works in conjunction with Supplier Assessment Program (SAP). The PAR can be associated with a SAP record, and the SAP associated record data will be used during a print, preview and FAX operation of the PAR form. This quality process will be used by QWEST internally, and is available for all supplier if they choose.

#### 3.5.4 Supplier Rating

The supplier rating less than 90% needs improvement and shall be reported as “Corrective Action Necessary”.

Identification and root cause analysis shall be conducted and documented by the supplier.

The supplier shall submit a “Corrective Action Report” (CAR) to the (QPMT) organization within 15 days of the issue date of the month report.

The (QPMT) organization will accept or reject the suppliers (CAR), and give feedback with in 15 days of receipt. Rejection of the (CAR) will require suppliers to submit an update within 10 working days of rejection notice.

Failure to receive acceptance of the second submittal shall require an arbitration meeting with the QWEST Quality Process Management Team.

Refer questions to the QWEST Quality Management Process Team:

[jbostow@qwest.com](mailto:jbostow@qwest.com)

612-798-2460

## CONTENTS

<b>Chapter and Section</b>	<b>Page</b>
4. Definitions .....	4-1
4.1 Acronyms.....	4-1



## 4. Definitions

### 4.1 Acronyms

AMC	Architectures, Models, Configurations
ASQC	American Society for Quality Control
BRI	Business Resources, Inc.
BRN	Battery/Battery Return Connections
BSS	Battery String Cells and Stand
CAN	Corrective Action Necessary
CAR	Corrective Action Report
CBL	Connecting Blocks
CDOS	Common Defect other than 77350
CDSA	Common Defect "Safety"
CDSV	Common Defect "Service"
CCC	Coaxial Cable Connections
CLEC	Competitive Local Exchange Carrier
CO	Central Office
COE	Central Office Equipment
COO	Central Office Operations
COS	COSMIC Modules
CP	Capacity Provisioning
DA	Defects Assessed
DE	Defect Expectancy
DFV	Distribution Frame Verticals
EEF	Empty Equipment Frames
EF&I	Engineer, Furnish & Install
EFA	Equivalent Frames Added
EPA	Environmental Protection Agency
ESE	Electronic Switch Equipment in Inches
ESOT	Engineering Service Order Tracking
FA	Frames Added
FCC	Fiber/Coax Connections

FE	Frame Equivalency
FEA	Frame Expectancy Adjustment
FEM	Frame Expectancy Multiplier
FEMR	Frame Expectancy Multiplier Recommended
FRM	Equipment Frames Removed
GCA	Grounding Connections Added
ICC	Installation Control Center
ISO	International Organization for Standardization
ISS	Installation service Supplier
IWF	Ironwork in Feet
MOP	Method of Procedure
MR	Meets Requirements
MWC	Major Work Category
NPA	New Percentage Assessment
OSHA	Occupational Safety and Health Act
PAR	Product Assessment Report
PBS	Partial Battery String (number of cells)
PCGA	Power and Ground Connections
PEI	Power Equipment in Inches
QFD	Quality Function Deployment
QI	Quality Index
QM	Quality Management
QPA	Quality Program Analysis
QPMT	Quality Process Management Team
R	Rating
RA	Rating Assessment
SAP	Supplier Assessment Program
SAR	Supplier Assessment Report - RG 47-0146
SIN	Supplier Incident Notification
SPC	Statistical Process Control

SQM	Supplier Quality Management
SQP	Supplier Quality Process (TP 77369)
SWC	Solderless Wire Wrap Connections
TEI	Transmission Equipment in Inches
TP	Technical Publication
TQM	Total Quality Management



## CONTENTS

<b>Chapter and Section</b>	<b>Page</b>
5. References .....	5-1
5.1 QWEST Technical Publications .....	5-1
5.2 Miscellaneous Publications .....	5-2
5.3 Ordering Information .....	5-2
5.4 Trademarks .....	5-2



## 5. References

### 5.1 QWEST Technical Publications

- 77350                    *Telecommunications Equipment Engineering, Installation and Removal Guidelines*, Issue G, March 1999.
- 77351                    *QWEST Communications, Inc. Engineering Standards General Equipment Requirements*, Module 1 Issue F, June 2001 and Modules 2 and 3 Issue C, January 1993.
- 77352                    *Central Office Telecommunications Equipment Standard Drawing Requirements*, Issue A, April 1985.
- 77353                    *US WEST Central Office Drawing Standards*, Issue C, September 1990.
- 77354                    *Guidelines for Product Change Notices*, Issue F, February 1999
- 77355                    *Grounding - Central Office and Remote Equipment Environment*, Issue C, October 1999.\*
- 77361                    *COMMON LANGUAGE® Equipment Classification and Bar Code Labeling*, Issue B, December 1989.
- 77362                    *QWEST Communications International Inc. Documentation Requirements for Suppliers*, Issue D, July 1993.
- 77385                    *QWEST Communications International Inc. Power Equipment and Engineering Standards*, Issue F, January 2001.

**Note:** An asterisk (\*) in the above references is an advisory that the Publication is about to change.

### 5.x Telcordia Publications

- GR-63-CORE            *Network Equipment-Building Systems (NEBS) Requirements: Physical Protection*, Issue 1, October 1995
- GR-1089-CORE        *Electromagnetic Compatibility and Electrical Safety-Generic for Network Telecommunications Equipment*, Issue 2, December 1997 with Revision 1, February 1999
- SR-3580                *Network Equipment-Building System (NEBS) Criteria Levels*, Issue 1, November 1995

## 5.2 Miscellaneous Publications

General Procurement Agreement (GPA) or General Service Agreement (GSA) Contract and Individual Job Contracts.

## 5.3 Ordering Information

All documents are subject to change and their citation in this document reflects the most current information available at the time of printing. Readers are advised to check status and availability of all documents.

Ordering Information for Employees of QWEST. Submit form RG 31-0033 to:

Central Distribution Center (CDC)  
1005 17th St. S-30  
Denver, CO 80202  
Telephone: (303) 896-9446  
Fax: (303) 965-8652

Most QWEST publications are available to employees on the company network (E\*MEDIA). Call 303-624-4796 for further information.

Those who are not QWEST employees may order;

Telcordia documents from:

Telcordia Customer Relations  
8 Corporate Place, PYA 3A-184  
Piscataway, NJ 08854-4156  
Fax: (908) 336-2559  
Phone: (800) 521-CORE (2673) (U.S. and Canada)  
Phone: (908) 699-5800 (Others)

QWEST Technical Publications from:

<http://www.qwest.com/techpub>

## 5.4 Trademarks

COMMON LANGUAGE® Registered Trademark of Bell Communications Research, Inc.

QWEST® Registered Trademark of QWEST Communications International Inc.