BOLTEX, mfg.

QUALITY CONTROL

MANUAL

UNCONTROLLED MANUAL NO. _____

STATEMENT OF AUTHORITY AND RESPONSIBILITY

This Manual documents the Quality Management System of **BOLTEX** mfg.

Each employee of the company shall be responsible for the implementation of the requirements of this Manual in the area of his or her responsibility.

The Quality Assurance Manager has the authority and responsibility:

A. To guide management for continuous improvement of quality system.
B. To identify problems affecting quality.
C. To initiate, recommend, or provide solutions to quality problems through designated channels.
D. To verify implementation of solutions.
E. To control further processing, assemble, or delivery of a nonconforming item, deficiency, or unsatisfactory condition until proper corrective action has been taken.
F. Provide management with changing customer requirements.

BOLTEX mfg. shall make available, for on-site review, such procedures, work orders or process drawings as are necessary to understand the program and to demonstrate compliance with this Manual.

BOLTEX mfg. shall afford the Purchaser/and or Purchaser's Representative reasonable access to facilities and documents to ascertain that the items being purchased are being produced to the requirements of this Manual and any referenced Specifications(s).

Any conflict including a situation adverse to quality, which may arise that cannot be resolved by the individuals, and organizations involved in this program shall be taken to the President for resolution.

_____

FRANK V. BERNOBICH
PRESIDENT

DATE: _____

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Scope

The purpose of the Quality Manual is to provide a documented quality management system for BOLTEX mfg. The manual includes the organization structure, responsibilities, procedures, processes and resources for implementing and maintaining the quality management system. The quality system described in this manual applies to the control of quality throughout all areas of performance, including as appropriate, procurement, identification, stocking and issue of material; the entire process of manufacture; and the packaging, storing and shipping of material. Unless otherwise specified, all products and services provided by BOLTEX mfg. shall be manufactured and performed in accordance with the quality management system described in this Quality Manual.

1.2 Quality Standards and Specifications

1.2.1 Compliance

BOLTEX mfg. quality system is in accordance with the requirements of the following standards and specifications in the manufacturing of FORGED STEEL FLANGES.

IS0 9001/ASQC Q9001 (2000)	Quality Management Systems Requirements
ASME B16.5	Pipe Flanges and Pipe Fittings
ASME B16.36	Orifice Flanges
ASME B16.47	Large Diameter Steel Flanges
MSS-SP-44	Steel Pipeline Flanges
MIL-STD-45662	Military Standard, Calibration System Requirements

1.2.2 References

ISO 9000/ASQC Q9000 (2000)	Quality Management Systems-Fundamentals and Vocabulary
ISO 9004/ASQC Q9004 (2000)	Quality Management Systems-Guidelines for Performance Improvements

1.3 General Quality System Terms

1.3.1 Conformance

An affirmation indication or judgement that a product or service has met the requirements of the relevant specifications, contract or regulation; also the state of meeting the requirements.

1.3.2 Quality

The totality of features and characteristics of a product or service that bears on its ability to satisfy stated or implied needs; fitness for use or purpose; conformance to the requirements.

1.3.3 Quality Assurance

All those planned or systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality.

1.3.4 Quality Audit

A systematic and independent examination and evaluation to determine whether quality activities and results comply with planned arrangements and whether these arrangements are implemented effectively and are suitable to achieve objectives.

1.3.5 Quality Control

The operational techniques and the activities used to fulfill requirements of quality.

1.3.6 Quality Management

That aspects of the overall management function that determines and implements the quality policy.

1.3.7 Quality Policy

The overall intentions and directions of an organization as regards quality as formally expressed by top management.

1.3.8 Quality System

The organizational structure, responsibilities, procedures, processes and resources for implementing quality management.

1.3.9 Quality System Review

A formal evaluation by management of the status and adequacy of the quality system in relation to quality policy and/or objectives resulting from changing circumstances.

1.3.10 NCR

Non-Conformance Report, a document for Quality Control to record non-conformance to specifications, standards or instructions. A means of obtaining a disposition for non-conformance.

NOTE: **Throughout this manual, reference is made to "product" and "service". These words are used in a broad sense. "Product" and "service" may be written in singular form, but also applies to the plural case. "Product" may be tangible or intangible.**

QUALITY POLICY

Boltex mfg. is committed to providing quality products and services, which meet or exceed customer requirements. The quality commitment is achieved through the active participation of all employees. Employees have the responsibility and authority to maintain the requirements of the quality system and to provide the necessary input for continuous improvement of the quality of the product and services provided to our customers.

_____

FRANK V. BERNOBICH
PRESIDENT

WRITTEN BY:	APPROVED BY:
QUALITY ASSURANCE MANAGER	PRESIDENT

MISSION STATEMENT

Boltex mfg. is dedicated to total customer satisfaction by providing world class quality products delivered on time.

Our people are the source and their involvement and teamwork form the foundation of our company.

Boltex mfg. is committed to continuous improvement of our operation through technological advances, continuing education and innovative ideas.

_____

FRANK V. BERNOBICH
PRESIDENT

WRITTEN BY:	APPROVED BY:
QUALITY ASSURANCE MANAGER	PRESIDENT

4.0 MANAGEMENT RESPONSIBILITY

4.1 Organization

The organization at BOLTEX mfg. is shown in Exhibit 4-1. Although distinct departments are defined in the organization, BOLTEX mfg. maintains flexibility in duties and responsibilities, without compromising the function of each department. The objectives of the organization's structure are to provide efficient operation or function of each department, reduce operating costs, limit the number of levels of management and minimize departmental barriers.

4.1.1 Responsibility and Authority

All employees at BOLTEX mfg. are responsible for the quality of the products and services provided. Each employee has an individual responsibility to assure their contribution to the product or service complies with customer requirements. Where necessary, BOLTEX mfg., may choose to delegate the responsibility for internal or external quality assurance. The company or persons so delegated shall be independent of the activities reported on. The Quality Assurance Department, by the direction of the Quality Assurance Manager, has the direct responsibility and authority to assure that the company complies with the company's quality system requirements and to verify products and services meet customer quality requirements.

4.1.1.1 President

Ultimate responsibility for control and functioning of the organization. Develops and establishes the quality objects to which the company will perform and conform.

4.1.1.2 Quality Assurance/Control Manager

The Quality Assurance Manager reports directly to the President. Responsible for providing the major impetus of the company's quality system. The Quality Assurance Manager has the responsibility and authority to provide the resources necessary to support the quality system. It is the Quality Assurance Manager's responsibility to establish and maintain a system to provide the organizational freedom and authority to:

A) Guide management for continuous improvement of quality program,
B) Initiate action to prevent the occurrence of product nonconformity,
C) Identify and record any product quality problems,
D) Initiate, recommend or provide solutions through designated channels,
E) Verify the implementation of solutions,
F) Control further processing, delivery or installation of non-conforming product until the deficiency or unsatisfactory condition has been corrected and
G) Provide management with changing customer requirements.

4.1.1.3 Quality Inspectors

The Quality Inspector reports directly to the Quality Assurance/Control Manager. Responsible for performing the quality functions as assigned. Quality Inspectors have the authority to reject any product or service, which does not meet specifications. Quality Inspectors may also be assigned tasks such as gage coordination, SPC coordination and inspection documentation control.

4.1.1.4 Plant Manager

The Plant Manager reports directly to the President and is responsible for all production, generation of process drawings, process control, tooling design, and scheduling of machines.

4.1.1.5 Sales Manager

The Sales Manager reports directly to the President. Responsible for marketing and sales efforts includes the accurate communication of customer's standards and special requirements. Responsible for communicating customer feedback to management.

4.1.1.6 Purchasing Manager

The Purchasing Manager reports directly to the President. Responsible for the purchasing of components to specifications established by national standards or customer requirements.

4.1.1.7 Finance and Accounting Manager

The Finance and Accounting Manager reports directly to the President. Responsible for the accounting and payroll functions. Preparation of financial documents and year-end accounting activities.

4.1.1.8 Shipping/Receiving Warehouse Manager

The Shipping/Receiving Warehouse Manager reports directly to the President. Responsible for visually inspecting incoming materials for damage and assuring certificates are received along with the material. Pulling of inventory against sales order and arranging for shipment.

4.1.1.9 Accounting/Records Clerk

The Accounting/Records Clerk reports directly to the Finance and Accounting Manager. Responsible for processing all sales orders. Check Mill Test Reports (MTR) for accuracy and assigns BOLTEX's heat codes for traceability.

4.1.1.10 Machine Shop Manager

The Machine Shop Manager reports directly to the Plant Manager. Responsible for selecting appropriate process control methods for machining processes. Determines production personnel and equipment requirements.

4.1.1.11 Production Manager

The Production Manager reports directly to the Machine Shop Manager. Responsible for controlling and monitoring the machining process. Programs machining operations for completion of product to product standards.

4.1.1.12 Maintenance Manager

The Maintenance Manager reports directly to the Machine Shop Manager. Responsible for maintaining the production equipment and environment in accordance with equipment manufacturer's recommendations.

4.2 Verification Resource and Personnel

BOLTEX mfg. shall provide in-house verification including, but not limited to, inspection, test and monitoring of production and servicing of the process and/or product, audits of the quality system, process and/or products. Verification shall be conducted by personnel independent of those having direct responsibility for the work being performed. All personnel and equipment used to verify conformity shall possess a level of skill or accuracy commensurate with the product, service and/or specification.

4.2.1 Management Representative

The Quality Manager shall act as the management representative having defined authority and responsibility for promoting the awareness of customer requirements throughout the organization and ensuring the requirements of the quality manual, quality control procedures and quality control specifications are implemented and maintained.

4.2.2 Management Review

The management of BOLTEX mfg. shall review the quality system defined in this Manual and Quality Control Procedures, at appropriate intervals (1 year maximum). The review will evaluate the need for changes to the quality system, including policy and management objects. Records of management reviews of the quality system will be maintained in accordance with the applicable quality control procedure.

4.2.3 Quality Objectives

Quality objectives at relevant functions and levels of the quality management system are established at the management review meetings. The quality objectives shall be measurable and consistent with the quality policy. All quality objectives will be reviewed yearly to ascertain whether the objectives have been reached. Analyses are made and quality objectives are maintained and/or changed for the following year.

4.3 Attendance

The President and Department Heads of Quality, Production, Sales, Purchasing, Accounting, Shipping/Receiving and Warehouse attend the management review meetings.

5.0 Infrastructure

Each Department Manager/Supervisor determines, provides and maintains the infrastructure needed to achieve conformity to product requirements. The infrastructure includes, as applicable:

Buildings, workspace and associated utilities.

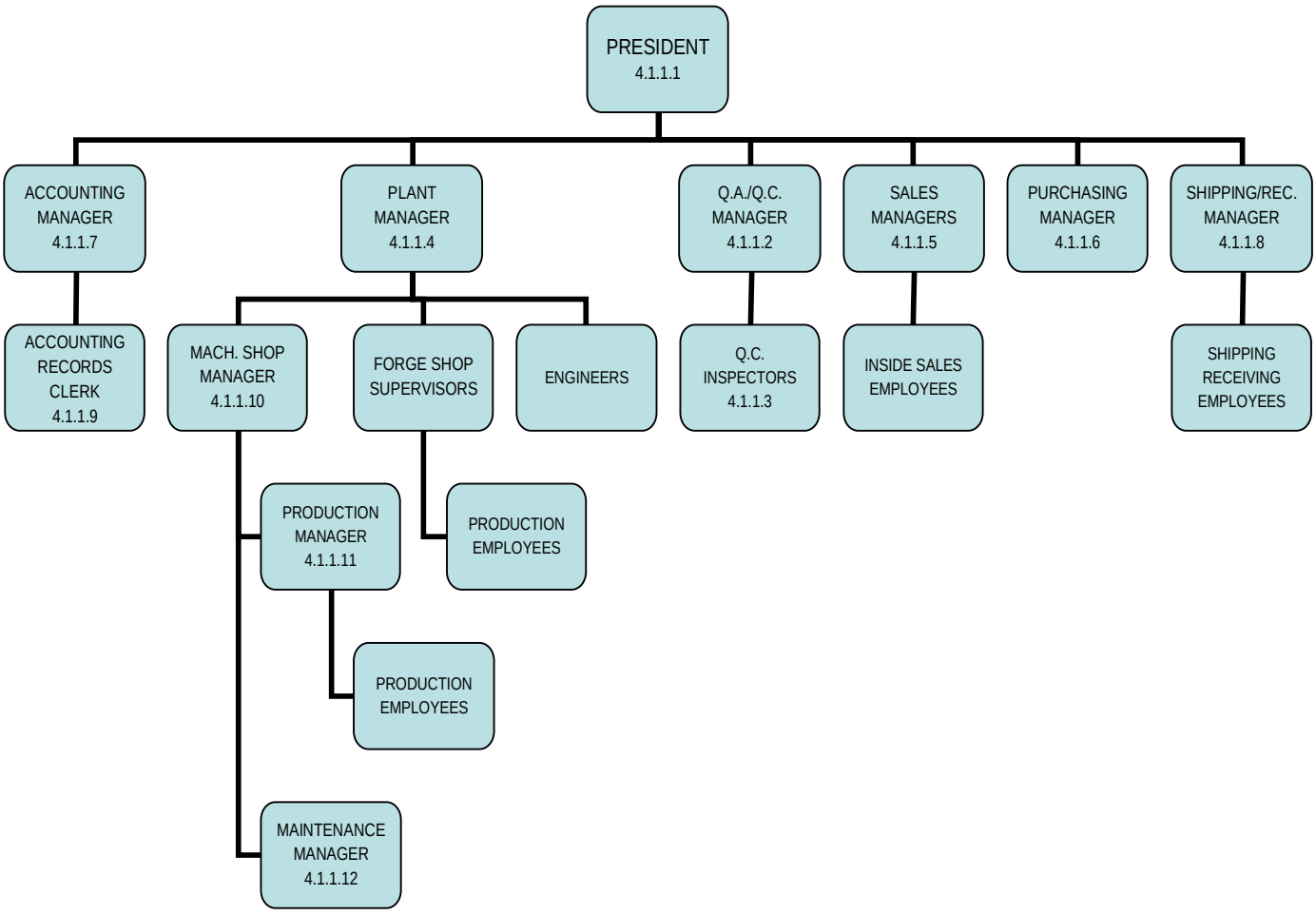
Hardware and software process equipment and tooling to support the operation.

Supporting services, communication, and transportation, cleaning of equipment and workspaces.

6.0 Reference Procedure

Boltex mfg. Standard Operating Procedure BQP-09-Q

BOLTEX MFG. CO.
ORGANIZATIONAL CHART



(EXHIBIT 4-1)

5.0 QUALITY MANAGEMENT SYSTEM

5.1 Scope

BOLTEX mfg. has established and maintains a documented quality management system as a means of ensuring the implementation, effectiveness, and continual improvement of Boltex mfg. product. The Quality Manual provides the required documentation of the quality management system. The system includes:

A) Documented quality control procedures in accordance with industry and customer standards and specifications.

B) The means to effectively implement the documented quality system procedures included in this manual.

C) The means to effectively measure, monitor and analysis of processes.

***** BOLTEX mfg. has identified all key processes needed for the quality management system and their application throughout the organization. The sequence and interaction of these processes are identified by various flow charts (Section 5, Exhibit 1, BQP-01-E Exhibit 3 and 4, organization chart Section 4, Exhibit 4-1), and different procedures in the standard operating procedures manual.

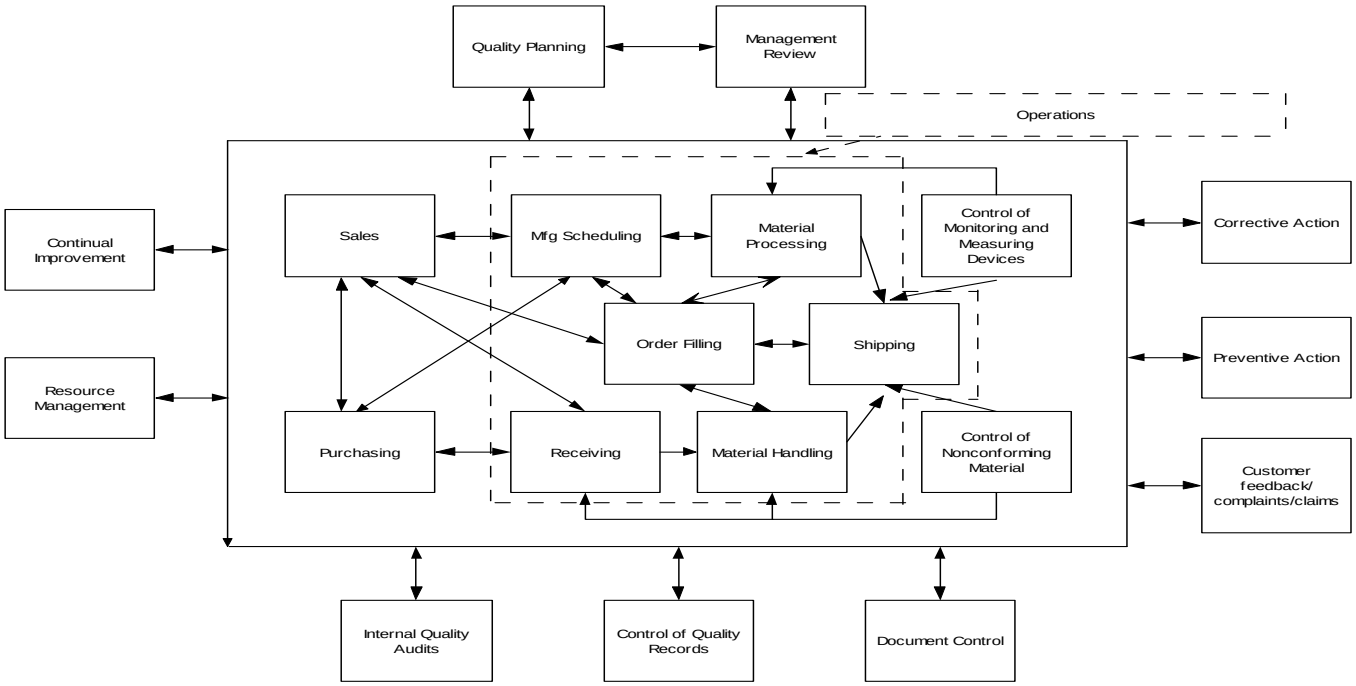
5.2 Responsibility

All BOLTEX mfg. employees are responsible for assuring that the quality management system, as defined by the Quality Manual, is maintained and revised as necessary.

5.3 Reference Procedure

Boltex mfg. Standard Operating Procedure Manual.

BOLTEX MFG. CO.
0RGANIZATIONAL PROCESS FLOW



(EXHIBIT 1)

WRITTEN BY:	APPROVED BY:
QUALITY ASSURANCE MANAGER	PRESIDENT

6.0 CONTRACT REVIEW

6.1 Scope

The contract review procedure establishes a system to ensure customer requirements are met to ensure customer satisfaction. All Contracts or purchase orders received by BOLTEX mfg. shall be reviewed to ensure that:

A) The requirements are adequately defined and documented,

B) Any requirements differing from those in the tender/quotation are resolved and

C) The capability to meet the contractual requirements exists within the company or by outside services.

6.2 Responsibility

It is the responsibility of the Sales Manager or his authorized representative at BOLTEX mfg. to assure the obligations of the contract or purchase order are adequately defined, correct and can be met as specified. Assistance may be obtained from any support function or department within the company or from outside sources. Any discrepancies must be resolved with the customer in a prompt manner.

6.3 Review Items

The purpose of the review is to ensure that the contracts or purchase orders include the information described in Section 6.1 (Scope). As a minimum, contract or purchase orders shall be reviewed for completeness of the following items:

A) Contract/purchase order number
B) Part/drawing description
C) Quantity
D) Price
E) Delivery date
F) Authorization/signature

When required, technical requirements in excess of industry accepted standards and specifications, shall be reviewed during the preparation of the quotation and verified after receipt of order. Any changes in the contract requirements or scope after quoting may require renegotiation of the contract.

6.4 Approval Record

After reviewing and approval of the contract, the authorized representative shall sign or initial the contract to indicate approval. When required by the customer, the acknowledgement copy shall be returned to the customer. Any unresolved issues must be clarified before an approval signature is applied.

6.5 Customer Communication

It is the responsibility of the Sales Manager or his authorized representative to establish communication on customer satisfaction with respect to the product shipped from Boltex mfg. co. This includes but not limited to, personal interviews, telephone surveys and mail /email questionnaires.
Customer communication will be documented and corrective action taken when appropriate.

Boltex mfg. Standard Operating Procedure No. BQP-01-S, BQP-02-S.

7.0 DESIGN CONTROL

7.1 Scope

BOLTEX mfg. has established and maintains this procedure to verify that products conform to industry or customer specified requirements.

7.2 Responsibility

BOLTEX mfg. employs no design function. Product design is controlled by the application industry specifications or special customer requirements. Products that are not contained in industry accepted specifications would require that the customer provide a detailed drawing of the item to be manufactured.

7.3 Design Document Control

Customer supplied design documentation (drawings) shall be maintained in a manner to assure that only the latest revision(s) are used to manufacture the product.

7.4 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-01-S.

8.0 DOCUMENT and DATA CONTROL

8.1 Scope

The document and data control procedure establishes the review, approval and control of all documents and data that relate to the requirements of the Quality Management System.

8.2 Responsibility

It is the responsibility of the Quality Assurance Manager to maintain the requirements of document and data control.

8.3 Document Approval

The Quality Assurance Manager has the responsibility to review all national standards that directly affect product produced by Boltex mfg. co. to ensure the latest revision of that standard is being met. This review will be yearly or when required by that standard. The results of that review will be documented.
All pertinent production documents shall be reviewed and approved for adequacy by authorized personnel prior to issue. Customer and/or industry association documents are assumed to have authorized approval prior to issue. Customer documents are reviewed by BOLTEX mfg. in accordance with Section 6.0 (Contract Review). Documents, which do not have clear approval, shall be reviewed by the Quality Assurance Manager or the appropriate support function/group, prior to release.

8.4 Document Storage

National standards and/or customer specifications are to be stored in a location controlled or authorized by the Quality Assurance Manager. Only authorized personnel shall have access to documents. Customer documents are to be stored by customer name and/or document number. Industry association or military specifications/standards are to be stored by organization name and document number. Customer sketches modifications and/or special requirements will be stored with the purchase order file.

Pertinent production documents are to be released/issued to manufacturing with the work order. All locations where operations essential to the effective functioning of the quality system are performed shall have access to the necessary production documents. At the completion of the work order, quality control documents are to be forwarded to the Quality Assurance Department and work orders are forwarded to the Sales Department.

8.5 Document Changes/Modifications

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

Where practical, the nature of the change shall be identified in the document or appropriate attachments. Documents shall be re-issued after a practical number of changes have been made.

Changes or modifications affecting work-in-progress are to be reviewed to determine impact. New or updated documents will be issued to manufacturing as applicable and previously released documents removed.

8.6 Obsolete Documents

Obsolete documents are stored in a location separate from current documents. Obsolete documents previously released to the shop floor shall be collected and properly dispositioned.

8.7 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-01-Q.

9.0 PURCHASING

9.1 Scope

This procedure establishes a system to ensure materials, products or services purchased conform to the specified requirements of BOLTEX mfg. and/or customer requirements.

9.2 Responsibility

Purchasing has the responsibility to administer the procurement requirements in this procedure and those of the customer. Assistance is obtained from the support functions/organizations and the customer, as necessary.

9.3 Assessment of Suppliers

BOLTEX mfg. selects suppliers on the basis of their ability to conform to the specified requirements, including quality. Quality Assurance shall maintain a record of acceptable suppliers (approved vendors list). Where applicable, customer approval or specified vendors are used.
Where processes that affect product quality are outsourced, Boltex will approve the process before any processes are started.

9.4 Purchasing Data

Purchasing documents shall contain data clearly describing the product or service ordered, including where applicable:

A) The type, class, style, grade or other precise identification,

B) The title or other positive identification, and applicable issue of specifications,

C) The title, number and revision of the quality system standard to be applied to the product or service.

Purchasing shall review purchase requests and review/approve purchasing documents for adequacy of specified requirements prior to release. Technical and quality support shall be provided as necessary.

9.5 Verification of Products and Services

Where specified in the contract or purchase order, BOLTEX mfg. or the company's representative shall have the right to verify at source or upon receipt that purchased products or services conform to the specified requirements. Verification by BOLTEX mfg. or the company's representative shall not absolve the supplier of the responsibility to provide acceptable products or services, nor shall it preclude subsequent rejection. When BOLTEX mfg. customer's representative elects to carry out verification at the supplier's facility, such verification shall not be used as evidence of effective control of quality by the supplier.

9.6 Customer Furnished Material

Prior to delivery, arrangements shall be made between BOLTEX mfg. and the customer for the shipment of customer furnished materials. This includes raw materials, parts, components, tooling and gaging. BOLTEX mfg. shall verify, identify, store and maintain property that is provided by the customer. Verification by BOLTEX mfg. does not absolve the customer of the responsibility to provide acceptable product. Customer furnished material shall be handled, stored, packaged and delivered in accordance with Section 15.0 (Handling, Storage, Packing and Delivery). Any such product that is lost, damaged or otherwise unsuitable for use shall be recorded and reported to the customer in a timely manner.

9.7 Product Identification and Traceability

Where appropriate, products shall be identified from applicable drawings, specifications or other documents during all stages of production and delivery. Where, and to the extent that, traceability is a specified requirement, individual products, or batches shall have a unique identification. This identification shall be recorded and the certification stored.

9.8 Reference Procedure

Boltex mfg. Standard Operating Procedures No. BQP-01-P thru BQP-07-P, BQP-19-Q, BQP-01-M

WRITTEN BY:	APPROVED BY:
QUALITY ASSURANCE MANAGER	PRESIDENT

10.0 PRODUCT REALIZATION

10.1 Scope

This procedure establishes the requirement to identify and plan the production processes, which directly affect quality, and to ensure that the processes are carried out under controlled conditions. Controlled conditions shall include the following:

A) Documentation defining the manner of production where the absence of such instructions would adversely affect quality, use of suitable production equipment, suitable working environment, compliance with applicable standards/codes and quality control procedures.

B) Monitoring and control of suitable process and product characteristics during production.

C) The approval of processes and equipment, as appropriate, and,

D) Criteria for workmanship, which shall be stipulated, to the greatest practical extent, in written standards or by means of representative samples.

10.2 Responsibility

Product realization is the responsibility of Production Control, Manufacturing, Purchasing and Inspection, as applicable. Responsibilities are assigned according to function and/or requirements.

10.3 Product Realization Documentation

All production jobs shall be detailed on a work order and process drawing (Figure 10-1 and 10-2).

The work order shall describe the following:

A) Work order number,
B) Customer name (if applicable to purchase order)
C) Part description
D) Quantity
E) Special customer requirements

10.3.1 Work Order Control and Changes

The work order is prepared by the Sales Manager or Authorized Representative. Revisions to an approved work order may be handwritten on the document with the initials and date by the same functions/organizations that performed the original review. (See Section 6 - 6.4).

10.3.2 Process Drawing and Changes

The Production Manager, or authorized representative, is responsible for preparing a computer generated process drawing which describes the product to be manufactured, quantity, configuration of the finished product, dimensions, tolerances, marking requirements and identification. If an incorrect process drawing is found, the individual discovering the error shall notify the Production Manager or his authorized representative to review and correct the error by handwriting the correction on the drawing with the initials and date or by issuing a new drawing with the correction on it.

10.3.3 Work Environment

Production equipment and machines are regularly maintained following the schedules and recommendations provided by their manufacturers. Performance of the equipment is continuously monitored. Proper maintenance of buildings and equipment and regular cleaning of the production area ensure suitable work environment.

10.4 Special Processing

These are processes, the results of which cannot be fully verified by subsequent inspection and testing of the product and where, for example, processing deficiencies may become apparent only after the product is in use. Accordingly, continuous monitoring and/or compliance with documented procedures are required to ensure the specified requirements are met. Special processes shall be qualified and shall also comply with the other requirements of this procedure. Records shall be maintained for qualified processes, equipment and personnel, as appropriate.

10.4.1 Welding

All hardface welding will be subcontracted to a qualified vendor. All welding shall be performed in accordance with approved procedures. The Q.A. Manager shall review and approve the vendors welding documentation.

10.4.2 Heat Treat

Heat Treat operations, including stress relieving, shall be performed in accordance with BOLTEX, customer or vendor approved procedures. Inspection shall assure that heat treat operations have been performed within the parameters of the applicable procedure(s).

10.4.3 Non-Destructive Examination

A qualified vendor approved by Boltex and/or customer specifications shall perform subcontracted, non-destructive examinations. Subcontractor's NDE procedures shall be reviewed and approved by the Quality Assurance Manager. A minimum NDT level II technician per the requirements of SNT-TC-1A shall complete all non-destructive examinations.

10.5 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-01-E, BQP-01-M, BQP-02-M, BQP-03-M, BQP-04-M, BQP-16-Q.

Approved By: _____
Date: _____

BOLTEX mfg.
WORK ORDER

W.O.# _____

CLIENT	FINISHED DESCRIPTION	QTY ORD	QTY PRD	DESCRIPTION OF FORGING TO USE	MARKING	DATE TRANSFERRED	SPECIAL INSTRUCTIONS
Boltex					Boltex		

NOTES: _____

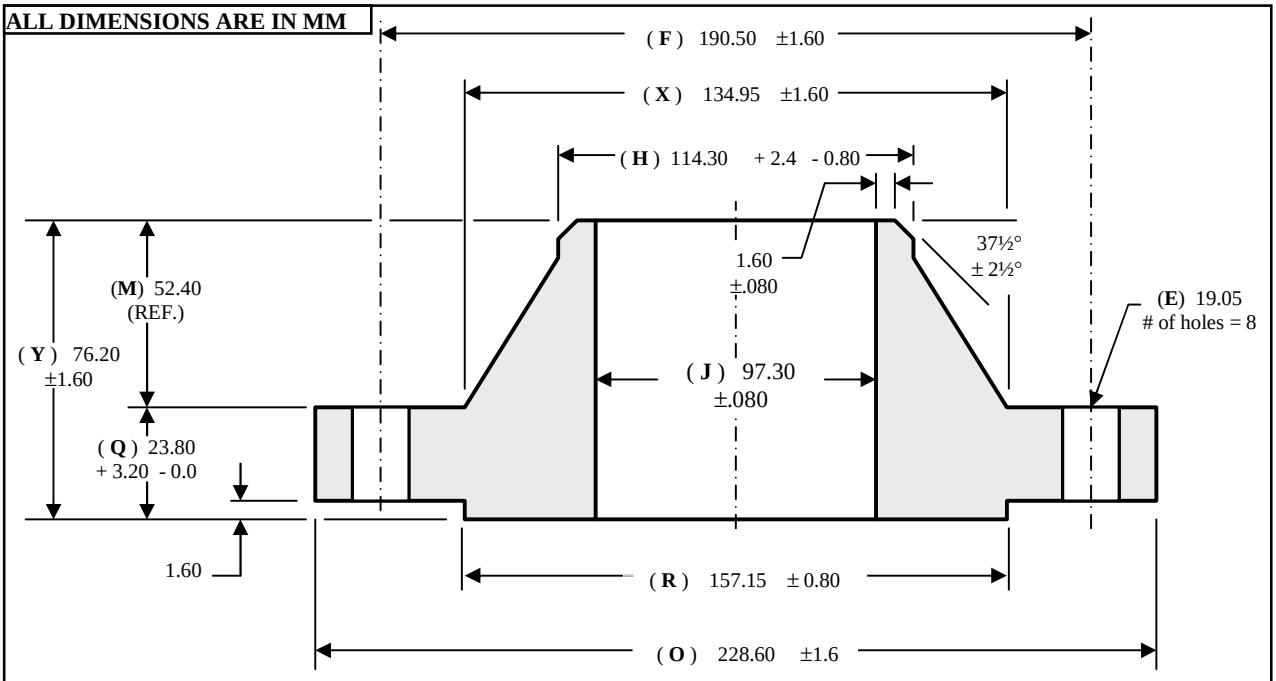
(FIGURE 10-1)

WRITTEN BY:	**APPROVED BY**:
QUALITY ASSURANCE MANAGER	**PRESIDENT**

BOLTEX mfg.

Qty: 2796 4" 150 RF WELD NECK FLANGE XH **Notes:** THE FIRST PART OF EACH SETUP MUST BE CHECKED **Notes:** _____ **Notes:** _____ Marking: BOLTEX 4 150 B16 SA105 XH (H. C.)(DATE)	DUE DATE: CHECKED BY:

ALL DIMENSIONS ARE IN MM



DRILLING TOLERANCES:

Center to Center of Adjacent Bolt Holes : = ± 0.80
Maximum Eccentricity Between Bolt Circle
Diameters 'F' and Machined Facing Diameters = ±1.60

(FIGURE 10 – 2)

WRITTEN BY: **QUALITY ASSURANCE MANAGER**	**APPROVED BY**: **PRESIDENT**

11.0 MONITORING AND MEASURING PROCESS

11.1 Scope

The monitoring and measurement of products and services provided by BOLTEX mfg. is controlled by this procedure. Products and services shall be properly inspected and tested, to ensure compliance to customer requirements, through all phases of production.

11.2 Responsibility

It is the responsibility of the Quality Assurance Department to verify those products and services provided by the company meet the stated or implied requirements. Although the Quality Assurance Department has the primary responsibility for assuring the quality of products and services, all BOLTEX mfg. employees shall provide the inspection and testing support as necessary.

11.3 Receiving Inspection and Testing

Incoming materials and products received by BOLTEX mfg. shall be verified prior to use in production. Receiving Department shall review incoming products and determine if the product and data supplied conforms to the requirements specified on the purchase order (Section 9.0 Purchasing). Verification shall be to a level commensurate with the product and/or application of the product. Consideration shall also be given to the control exercised at source and the documented evidence of quality conformance provided. Any products determined to require additional inspection or verification, or requiring special inspection instructions, shall be forwarded to the Quality Assurance Department or applicable support function/organization. Products that have been verified shall be identified and accepted to inventory or issued directly to manufacturing.

11.4 First Article Inspection and Testing

The applicable process drawing shall define the first article inspection requirements. The parts shall be inspected for compliance to the feature(s) or operation(s) produced at that sequence. Any parts found in non-compliance require the re-submittal of another unit until the specified requirements are met.

11.5 In-Process Inspection and Testing

The purpose of in-process inspection and testing is to:

A) Inspect, test and identify product as specified by the applicable documentation,

B) Establish product conformance to specified requirements by use of process monitoring and control methods,

C) Hold product until the required inspection and tests have been completed or necessary reports have been received and verified, and

D) Identify nonconforming product.

During production, in-process inspection and testing shall be performed to ensure products are manufactured to specifications. In-process inspection and testing shall be performed by the operators and inspectors, as applicable. In-process inspections and testing which must be performed by the Quality Assurance Department are specified in BOLTEX Quality Control Procedures. All other inspections or tests will be performed by the operators or designated personnel.

11.6 Final Inspection and Testing

All products produced by BOLTEX mfg. shall be subject to final inspection, testing and/or verification. During final inspection, all specified inspections and tests, including those specified either on receipt of product or in process must be completed and the data meet the specified requirements. Any products pulled from incoming or in-processing inspection, due to urgent circumstances, must be inspected at final inspection.

The Quality Assurance Department shall carry out all final inspections and testing in accordance with documented procedures to provide objective evidence of conformance of the finished product to specified requirements.

No product shall be placed in inventory or shipped until all the activities specified in the documented procedures have been satisfactorily completed.

11.7 Non-Conforming Product

Any product not in conformance with the required specifications shall be identified and controlled in accordance with **Section 14.0 (Control of Non-Conforming Products).**

11.8 Acceptance Sampling Plans

Acceptance sampling plans may be used during incoming, in-process and/or final inspection, as applicable. The acceptance plan must be commensurate with the use or function of the product. Acceptance Sampling plans is defined in BOLTEX Quality Control Procedures.

11.9 Monitoring and Test Records

BOLTEX mfg. shall maintain records that provide objective evidence the product passed inspection and/or test with defined acceptance criteria (first article, in-process and final inspection). Inventory Transfer Sheet (Exhibit 1); will be filled out after such verification, transferring acceptable product into stock.

11.10 Reference Procedures

Boltex mfg. Standard Operating Procedures No. BQP-03-Q, BQP-04-Q, BQP-05-Q, BQP-01-W.

DATE: _____

INVENTORY TRANSFER

TSF NO. **2362**

INSPECTED BY: _____

DESCRIPTION	MARKING	PLT1	PLT2	PLT3	PLT4	PLT5	PLT6	PLT7	PLT8	PLT9	PLT10	FOR OFFICE USE ONLY TOTAL	WORK ORDER NO.

EXHIBIT 1

12.0 CONTROL OF MONITORING AND MEASURING DEVICES

12.1 Scope

The purpose of this procedure is to establish and maintain control, calibration and maintenance of inspection, measuring and test devices, whether owned by BOLTEX mfg., on loan or provided by the customer, to demonstrate the conformance of product to the specified requirements. Devices shall be used, calibrated and cared for in a manner, which insures that the measurement uncertainty is known and is consistent with the required measurement capability.

12.2 Responsibility

The Quality Assurance Manager shall be responsible for the control, calibration and maintenance of monitoring and measuring devices.

12.3 Devices Use

Devices used to inspect, measure and/or monitor product shall be appropriate for the characteristic, feature or function inspected.

12.4 Calibration

Inspection, measuring and monitoring devices owned by BOLTEX mfg. or provided by the customer shall be identified and calibrated at prescribed intervals, against certified equipment having a known valid relationship to a nationally or internationally recognized standard(s). Where no such standard exists, the basis for calibration shall be documented.

12.4.1 Calibration Status

Inspection, measuring and monitoring devices shall be identified indicating, as a minimum, serial number, calibration date, calibration due date and by whom calibration was performed. Serial numbers shall correspond to the appropriate calibration records. When it is impractical to apply a calibration label directly on an item (i.e. gage block), the calibration label may be affixed to the container or some other suitable measures may be used to reflect calibration status. Upon receipt of a loan or customer inspection, measuring or monitoring device, the Quality Assurance Manager shall verify the proper calibration status is affixed to the instrument or container.

12.4.2 Calibration Records

BOLTEX mfg. shall maintain calibration records for inspection, measuring and monitoring devices. The records shall document that established schedules and procedures are followed to maintain the accuracy of all devices and measurement standards. The records shall include an individual record of calibration or other means of control for each item of inspection, measuring and monitoring devices and measurement standards, providing a description or identification of the item, calibration source, calibration procedure used, calibration results and calibration action taken.

12.4.3 Calibration Intervals

BOLTEX mfg. has established and maintains calibration intervals to assure acceptable accuracy and reliability through out the established interval. Calibration intervals vary form prior-to-use to annually, depending on the type of device and usage. Intervals shall be shortened, or may be lengthened, when the results of previous calibrations indicate that such action is appropriate to maintain acceptable reliability. Records of calibration intervals are maintained and available from the Quality Assurance Manager.

12.4.4 Calibration Recall

Prior to the end of the calibration interval, the Quality Assurance Manager shall recall the devices requiring calibration and re-calibrate as necessary. Any device found out of calibration shall be sent to the Quality Assurance Manager. Devices which are not currently in use to inspect product and/or are out of calibration shall be properly identified (i.e., Out of Service). This includes devices, which are out of calibration and in storage. Provisions may be made for temporary extension of the calibration due date for a limited period of time under certain specific conditions, such as the completion of a test or job in progress.

12.4.5 Calibration Procedures

Calibration procedures are utilized for the calibration of all inspection, measuring and monitoring devices. Each procedure is commensurate with the equipment type. The procedures are in accordance with manufacturer's industry association, Government **MIL-STD 45662** and/or published standard practices.

12.4.6 Measurement Standards

Measurement standards used for calibration shall be traceable to certified device having a known valid relationship to a recognized standard. Where no such standard exists, the basis used for calibration shall be documented. All deviations shall be documented.

12.4.7 Environmental Conditions

Inspection, measurement and monitoring devices shall be calibrated and utilized in an environment controlled to the extent necessary to assure continued measurements of the required accuracy. Consideration shall be given to temperature, humidity, vibration, cleanliness and other controllable factors. When applicable, compensation corrections shall be applied to calibration results obtained in an environment, which departs from acceptable conditions.

12.5 Out-Of-Calibration or Tolerance

When inspection, measuring and monitoring devices are found to be “out-of-calibration” or tolerance, previous inspections and tests shall be assessed and documented to consider validity and impact.

12.6 Handling, Preservation and Storage

Inspection, measurement, monitoring devices and standards shall be handled, preserved and stored such that the accuracy and fitness for use is maintained.

12.7 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-10-Q, BQP-13-Q, BQP-14-Q, BQP-15-Q.

13.0 MONITORING AND MEASUREMENT STATUS

13.1 Scope

This procedure describes the methods, which are used by BOLTEX mfg. to indicate the monitoring and measurement status (conformity) of products through production.

13.2 Responsibility

It is the responsibility of the person performing the manufacturing or inspection operation to provide the appropriate inspection and test status of products as they are produced. Included are both production and inspection personnel.

13.3 Identification

The monitoring and measurement status of product shall be identified by using marking, authorized stamps, tags, labels, work order routers, inspection records, physical location and/or other suitable means, which indicate conformance or non-conformance of product with regard to monitoring or measurements performed. Unless otherwise specified, only non-conforming product will be physically segregated. Products with no physical markings (**MRB, QC HOLD**) shall be considered in conformance with specifications. The identification of monitoring and measurement status shall be maintained, as necessary, throughout production to ensure that only product that has passed the required monitoring and measurement requirements is shipped or used. Records shall identify the inspection authority responsible for the release of conforming products. **(See Section 11 - 11.9).**

13.4 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-03-Q, BQP-04-Q, BQP-05-Q.

14.0 CONTROL OF NON-CONFORMING PRODUCTS

14.1 Scope

Control of non-conforming product shall be regulated by this procedure. This control is necessary to prevent the inadvertent shipping or use of non-conforming product. Control shall provide for identification, documentation, evaluation, and segregation when practical, disposition of non-conforming product and for notification of the functions concerned.

14.2 Responsibility

The proper control of non-conforming product is the responsibility of all employees of BOLTEX mfg. The primary responsibility is with manufacturing and quality personnel, however, all support functions/organizations shall provide assistance as necessary.

14.3 Identification of Non-Conforming Product

All non-conforming product shall be properly identified in accordance with Section 13.0 (Monitoring and Measurement Status) to indicate the product does not meet the required specification(s).

14.4 Non-Conformity Review and Disposition

Once a non-conforming product is discovered, a QC Non-Conformance Report (NCR) shall be filled out by the Quality Department (Exhibit 1). A review and disposition of the non-conformity shall be conducted, as soon as possible, to prevent unnecessary processing or delivery impact. The review may be conducted by quality, manufacturing, production control, sales representative and/or the customer, depending on the nature or severity of the non-conformance.

The non-conformance review and disposition shall include the following options:

A) Accept - The product will conform to the required form, fit or function, however, does not meet all product specifications or requirements.

B) Rework - The product may be processed from a non-conforming to a conforming condition without violating BOLTEX or customer specifications.

C) Rework - Provide additional processing and/or features, which were not originally specified which will allow the product to comply with the required form, fit or function.

D) Alternate use - Classify the product for an alternate use, revision or grade which would result in the product complying with the requirements of the new classification.

E) Scrap - The product cannot be brought to a condition, which will provide the desired form fit or function.

Upon completion of the non-conformance review, the results shall be documented on the NCR. Steps should be taken to resolve all non-conforming product as soon as practical. Reworked and repaired product shall be re-inspected to the original or revised requirements. Investigation to discover the root cause of the non-conformance will be taken and conditions corrected to prevent reoccurrence.

14.4.1 Non-Conformance Notice

When required by the customer, the proposed use or repair of product which does not conform to specified requirements shall be reported for concession to the customer or customer's representative. A QC Non-Conformance Report shall be completed and sent to the responsible authority of the customer. Upon review, the customer shall complete the disposition and return the NCR to BOLTEX mfg. with the required action documented. For product which receives authorization to use-as-is or repair, a copy of the NCR shall be attached to the work order. For urgent requests, a verbal authorization may be accepted, however, must be followed by written documentation. All other forms of customer authorization for non-conforming product shall be handled in accordance with this procedure.

14.5 Corrective and Preventive Action

The distinction between corrective and preventive action is that corrective action deals with actual non-conformities and preventive action deals with potential non-conformities. This procedure does not differentiate between the two and refers to both as corrective action.

As a result of a corrective or preventive action request, an evaluation shall be performed. The purpose of this evaluation shall be to:

A) Investigate the cause of non-conforming product and the corrective action needed to prevent recurrence,

B) Analyze all processes, work operations, concessions, quality records, service reports and customer complaints to detect and eliminate potential causes of non-conforming product,

C) Initiate preventative or corrective actions to deal with problems or potential problems to a level corresponding to the risks encountered.

D) Apply controls to ensure that corrective actions are taken and are effective and/or

E) Implement and record changes in procedures resulting from corrective actions.

Evaluations shall be conducted by quality and/or manufacturing personnel, depending on the cause, nature or severity of the non-conformance. This evaluation shall be recorded on a Corrective/Preventive Action Request (Exhibit 2). Feedback shall be provided to the source of the non-conformance and all functions/organizations, which are affected. The initiating function/organization shall monitor the corrective action and recommend or implement changes as necessary. All functions/organizations shall support the corrective action process.

All corrective or preventive actions generated in a calendar year will be reviewed in the management review meeting the following year. That review will include the status, effectivness and results of the corrective action taken.

14.6 Reference Procedures

Boltex mfg. Standard Operating Procedure No. BQP-03-Q, BQP-04-Q, BQP-05-Q, BQP-11-Q, BQP-22-Q.

boltex, inc.

Q.C. NON-CONFORMANCE REPORT

Inspection Date: Report Number 1085

Part Number Description

DWG. Number Revision

PO/WO# Vendor

Heat Code(s)

1st Inspection

Item	NCR Qty.	INSP. Qty.	Discrepancy & Cause

Disposition Inspector

Item	Scrap	Accept	Rework	Explanation

2nd Inspection (for rework only) By

Date

Item	Accept	Reject

Inspector

Date

SECTION 14 – EXHIBIT 1

Boltex mfg. Co.
Corrective/Preventive Action Request

No. _____

To: _____ Request Date: _____

From: _____ Reply Due Date: _____

Product Description: _____ Heat Code(s): _____

Non-conformances report no. _____ Date issued: _____

Non-conformance or possible condition:

_____
_____
_____
_____
_____
_____

Investigation of non-conformance or possible non-conformance:

_____
_____
_____
_____
_____
_____

Corrective/Preventive action taken:

_____
_____
_____
_____
_____
_____

Signature: _____ Date: _____

Follow-up (on implementation of corrective action)

_____
_____
_____

Signature: _____ Date: _____

SECTION 14 – EXHIBIT 2

15.0 PRESERVATION OF PORODUCT

15.1 Scope

The purpose of this procedure is to establish and maintain the requirements for the handling, preservation, packaging and delivery of products manufactured by BOLTEX Mfg. Company.

15.2 Responsibility

It is the responsibility of Warehouse Manager to regulate the handling, preservation, packaging and delivery of materials and product. Any support functions/organizations, which participate in the handling, preservation, packaging and delivery of product, shall adhere to this procedure.

15.3 Handling

Materials and products received or manufactured by BOLTEX mfg. shall be handled by a method commensurate with the item. Products, which require special handling, which is not obvious, shall be appropriately marked to indicate handling precautions. Any material or product, which is a safety or health concern, shall be marked with the proper handling procedures and/or precautions. Material handling equipment shall be capable of moving the product without causing injury to the operator or damage to the product or equipment.

15.4 Preservation

Materials and product shall be stored to prevent damage or deterioration pending use or delivery. Adequate space, containers and identification shall be maintained to prevent damage or commingling of materials used in deliverable product. Materials shall be stored and issued by authorized personnel only. The following areas are authorized for use to store materials, as applicable:

15.4.1 Raw Material Preservation

Raw materials requiring machining or processing shall be stored in the raw material area outside the building prior to issue to production. Raw materials, which are used in one specific area or department, may be stored in that area as long as appropriate storage is available. Bulky materials may be stored outside the building provided adequate protection is provided to prevent damage or deterioration. Material shall be released from raw material storage by Production Control.

15.4.2 Exclusive Storage

Product, which is used exclusively in one area, may be stored in that areas provided appropriate storage and control is available.

15.4.3 Toolroom

The toolroom shall maintain control over consumable materials used to manufacture product.

15.4.4 Shipping Area

Product, which is waiting for shipment, shall be identified and stored in the shipping area pending delivery.

15.5 Packaging

BOLTEX mfg. shall control packing, preservation and marking processes (including materials used) to the extent necessary to ensure conformance to specified requirements. In addition, all products shall be identified, preserved and segregated from the time of receipt until BOLTEX mfg. responsibility ceases. Commercial packaging of a type commensurate with the product shall be used unless otherwise specified by the customer.

15.6 Delivery

BOLTEX mfg. shall arrange for the protection of the product after final inspection. Where contractually specified, this protection shall be extended to include delivery to destination.

15.7 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-01-W, BQP-02-W, BQP-03-W.

16.0 CONTROL OF QUALITY RECORDS

16.1 Scope

Quality records shall be maintained to demonstrate achievement of the required quality and the effective operations of the quality system. This procedure establishes requirements for identification, collection, indexing, filing, storage, maintenance and disposition of quality records generated by the requirements of BOLTEX mfg. Quality system.

16.2 Responsibility

It is the responsibility of the originating department to identify, collect, index, file, store, maintain and dispose of quality records generated by the requirements of the quality manual or customer.

16.3 Format

Quality records shall be in a format that provides adequate description of the data requirements as prescribed by the quality manual and/or customer specifications. All quality records shall be legible and identifiable to the product.

16.4 Retention Period

Retention times for quality records shall be one (1) year, unless otherwise specified. Where agreed contractually, quality records shall be made available for evaluation by the customer or customer's representative. Unless otherwise specified, all records for customer product shall be maintained at BOLTEX mfg.

16.5 Storage

Quality records shall be indexed according to a logical and retrievable method. Quality records shall be stored and maintained in such a way that they are readily retrievable in facilities that provide a suitable environment to minimize deterioration or damage and to prevent loss.

16.6 Quality Records

Quality records shall include, but not limited to, the following:

A) Records of Management Review
B) Records of Approved Subcontractors and Suppliers
C) Material Test Reports (MTR)
D) Product Identification and Traceability
E) Records of Purchase Orders
F) Records of Sales Orders
G) Inspection and Test Records
H) Calibration Records
I) QC Non-Conformance Reports (NCR)
J) Internal Quality Audits
K) Training Records
L) Records Pertaining to Qualified Processes
M) Corrective or Preventive Action Records
N) Heat Treating Records
O) Customer Communication (feedback)
P) Machine Maintenance Records

16.7 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-18-Q.

17.0 INTERNAL QUALITY AUDITS

17.1 Scope

The purpose of this procedure is to establish a system of planned and documented internal quality audits to verify whether quality activities comply with planned arrangements and to determine the effectiveness of the quality system. Quality audits and follow-up actions shall be carried out in accordance with this procedure.

17.2 Responsibility

The Quality Assurance Manager is responsible for the auditing of the quality system, with the support of the functional organizations. Where a conflict of interest may exist between the manager's position and the audit, the President shall appoint an unbiased party to prepare and/or conduct the audit.

17.3 Audits

BOLTEX mfg. shall schedule audits on the basis of the status and importance of the activity, or when a condition arises that adversely affects quality (one year maximum). Prior to beginning the audit, a plan shall be established such that the effectiveness of the system or procedure being audited is evaluated. The results of the audit shall be documented and brought to the attention of the personnel having responsibility in the area audited. Where deficiencies are found by the audit, the personnel responsible for the area shall take timely corrective action. A follow-up audit will be conducted as necessary. The results of the audit and any corrective action taken will be documented and will become part of the management review meeting.

17.4 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-21-Q.

WRITTEN BY:	APPROVED BY:
QUALITY ASSURANCE MANAGER	PRESIDENT

18.0 COMPETENCE, AWARENESS AND TRAINING

18.1 Scope

The procedure provides for the identification of training, skills and experience necessary for personnel in implementing the quality program.

18.2 Responsibility

It is the responsibility of management to provide an environment necessary to implement, identify and provide training within the company to maintain and improve the effectiveness of the quality program.

18.3 Identification

Management will determine and provide the resources necessary to implement and improve the effectiveness of the quality program.
All employees are encouraged to provide recommendations for training programs and courses. The identification of training requirements is generally provided by the following sources:

A) Management recommendations,
B) Employee suggestions,
C) Performance appraisals,
D) Quality system deficiencies,
E) Customer requirements and/or recommendations,
F) Introduction of new technology or equipment and/or
G) Research and development requirements

8.4 Training Classes

Training classes for the employees of BOLTEX mfg. are provided by several sources including:

A) External courses and seminars,
B) Internal training programs,
C) Customer sponsored courses,
D) On-the-job training,
E) Video training and/or
F) Self-help/self-taught courses.

18.4 Qualifications

Each manager will determine the qualifications necessary for personnel performing specific assigned tasks within their respective areas of responsibility that will affect product quality. The qualifications shall be based on the specific job requirements to complete a specific assigned task.
The manager will determine when an employee is qualified for a specific job task.

18.6 Records

Appropriate training records for each employee who has the responsibility of product quality shall be maintained and up-dated as required by each manager.

18.7 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-20-Q.

19.0 SERVICING

19.1 Scope

Boltex mfg. has established, and maintains this procedure to verify that service conforms to industry or customer specified requirements.

19.2 Responsibility

Boltex mfg. employs no specified service function. When customers require service such as:

A.) Billing information
B.) Shipment status
C.) Quality information
D.) Special job requirements

they will be directed to the responsible department. Department managers will see that their department handles all service (information) in a prompt and professional manner.

20.0 ANALYSIS OF DATA

20.1 Scope

This procedure establishes the analysis of data utilized at Boltex mfg. for improvement actives through the analysis of data collected.

20.2 Responsibility

The Quality Assurance Department shall be responsible for identifying and evaluating processes and production requirements to facilitate improvements through the analysis of data.

20.3 Identification

Through the analysis of measurements, customer feedback and non-conformance reports the Quality Assurance Department shall evaluate manufacturing processes, inspection processes and specific customer requirements to facilitate improvements in the quality program.

20.4 Implementation

Each month the Quality Assurance Department will publish a recap of the inspection actives for the preceding month. These actives will include but not limited to, First Articles, In-Process and Final Inspections results. At the end of the year, the Quality Assurance Department will compile each month's report into one report recapping the entire year of inspection actives. This report will become part of the management review meeting.

20.5 Reference Procedure

Boltex mfg. Standard Operating Procedure No. BQP-23-Q.