



MAINTENANCE CENTERS QUALITY MANUAL

**QM1000
7 NOVEMBER 2003**

This Quality Manual has been coordinated with both Maintenance Center Albany and Barstow and is hereby released for their use as of the date of this manual.

(Signed Copy on File in QAO)

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PREFACE

This document implements the Maintenance Centers, Albany and Barstow, use of the International Organization for Standardization's ISO 9001:2000 Quality Management System Standards endorsed by the Commanding General, Marine Corps Logistics Command. We believe the incorporation of this Quality Management System enhances the Marine Corps Logistics Command' and Maintenance Centers' strategic plans that encompass our visions, missions, centers of excellence, and goals.

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Synopsis of Change
1	3 May 2001	Revisions were made to incorporate DCMA Comments from the Qualification Audits and to correct grammatical errors. Document should be reviewed in its entirety, specific changes can be provided by the Command Quality Office (CQO).
2	22 Apr 2002	Quality Manual was revised to incorporate the ISO 9001:2000 standard revisions and should be reviewed in its entirety.
3	19 Jun 2002	Paragraph 3.7.3.c, MCA-QM1000 and MCB-QM1000 changed to MCA-QM1100 and MCB-QM1100 – Typo. Second Sentence Paragraph 3.7.3.c, QP 7303 changed to QP 7302 – Typo.
4	9 July 2002	Maintenance Center Albany (MCA) organizational chart and organization description (page 10) revised to reflect reorganization effective 30 Jun 02 as provided by phoncon with MCA Management Representative of 8 Jul 02.
5	29 July 2002	Revised cover page to provide for approval by the Command Quality Management (L150).
6	9 Oct 2002	Deleted last sentence from paragraph 7.3.7c stating, “At MCB procedure SP 7.3 describes the controls over facilities and reverse engineering.” MCB does not perform any facilities and/or reverse engineering.
7	7 Apr 2003	Revised International Auditing guidelines due to new International Standard revision, corrected several procedure numbers
8	7 Nov-2003	Office name change to LOGCOM Quality Assurance Office, Revised the MCB organizational chart and hierarchy of functions

TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>TITLE</u>	<u>PAGE</u>
	Preface	i
	Record of Changes	i
	Table of Contents	ii
1	Scope	1
1.2	Exclusions	1
2	Normative References/Applicable Documents	2
3	Terms and Definitions	3
4	Quality Management System	4
4.1	General Requirements	4
4.2	Documentation Requirements	4
5	Management Responsibility	8
5.1	Management Commitment	8
5.2	Customer Focus	8
5.3	Quality Policy	8
5.4	Planning	9
5.5	Responsibility, Authority and Communication	10
5.6	Management Review	12
6	Resource Management	14
6.1	Provision of Resources	14
6.2	Human Resources	14
6.3	Infrastructure	15
6.4	Work Environment	15
7	Product Realization	16
7.1	Planning of Product Realization	16
7.2	Customer – Related Processes	16
7.3	Design and Development	17
7.4	Purchasing	19
7.5	Production and Service Provision	19
7.6	Control of Monitoring and Measuring devices	21
8	Measurement, Analysis and Improvement	23
8.1	General	23
8.2	Monitoring and Measurement	23
8.3	Control of Nonconforming Product	24
8.4	Analysis of Data	25
8.5	Improvement	25
 <u>Figures</u>		
1	Maintenance Centers Quality Policy	9
2	Maintenance Center Albany (MCA) Organizational Chart	10
2	Maintenance Center Barstow (MCB) Organizational Chart	11

1. SCOPE

1.1 Quality Manual Scope

This Quality Manual (QM) establishes a Quality Management System (QMS) to ensure consistent quality of the Maintenance Centers' products and services that meet customer and regulatory requirements. The aim is to enhance customer satisfaction through the effective application of QMS, including processes for continual improvement of the system and the assurance of conformity to Marine Forces and other customers.

This QM is a basic manual providing information for the QMS; management responsibility/commitment, customer focus, resource management, product realization and measurement, analysis, and improvement for the implementation and sustainment of ISO 9001:2000 or ANSI/ASQC Q9001-2000 in accordance with the Commanding General, Marine Corps Logistics Commands (MARCORLOGCOM) Base Order 4855.8A. This manual is organized along the same structure of ISO 9001:2000. The section numbering corresponds to clause numbering of the standard.

For brevity the International Organization for Standardization ISO 9001:2000 standard or its American equivalent, the ANSI/ASQC Q9001:2000 standard will be referred to simply as ISO 9001 throughout the remainder of this QM, unless reference to a specific standard is required

The LOGCOM, Director Quality Assurance Office is responsible for maintaining the QM. The one, original controlled version of the QM is in the custody of the Director Quality Assurance Office. A read only copy of the controlled version is available electronically on each Maintenance Center's website/local area network. By definition, any printed version, other than the one, controlled original QM is uncontrolled. Any proposed revisions to this QM must be submitted to the Director Quality Assurance Office who electronically authorizes approval of all revisions. Approval of any revision shall not be made until internal reviews chaired by the Management Representative at each Maintenance Center are conducted and Inter-Maintenance Centers coordination has taken place to ensure a consolidated revision.

The mission of the Maintenance Centers is the overhaul, repair or rebuild of ground tactical wheeled and tracked vehicles and ancillary equipment. All assets provided to the Maintenance Centers are under configuration control. In cases where the customer does not specify configuration criteria, the equipment will be returned in the same configuration as received by the Maintenance Centers.

1.2 Exclusions

Applicable exemptions if any are noted in the corresponding sections of this QM.

2. NORMATIVE REFERENCES/REFERENCE DOCUMENTS

The following normative documents contain provisions that constitute the foundation for the QMS described in this QM:

ISO 9000:2000 or ANSI/ASQC Q9000-2000

ISO 9001:2000 or ANSI/ASQC Q9001-2000

ISO 9004:2000 or ANSI/ASQC Q9004-2000

ISO QE 19011-2002 or BSR/ASQ QE19011-2002

TI 4733-35/23¹⁾

Commanding General, MARCORLOGCOM Base Order 4855.8A

1) Includes the American National Standard ANSI/NCSL Z540-1-1994, Calibration Laboratories and Measuring and Test Equipment-General Requirements.

3. Terms and Definitions (ISO 9000:2000 definitions will be used when applicable)

NOTE 1. The term “organization” replaces the term “supplier” used in ISO 9001:1994, and refers to the unit to which this International Standard applies. Also the term “supplier” now replaces the term “subcontractor”.

NOTE 2. Throughout the text of this manual wherever the term “product” occurs, it also means “service”.

NOTE 3. In general, the definitions in ISO 9000:2000 or ANSI/ASQC Q9000: 2000 apply, however the following definitions are provided to assist the user in understanding the application of the ISO 9001 quality standard and the quality policies contained in this QM.

- 3.1 Customer Furnished Parts (CFP/M).** Parts and/or material furnished by a customer.
- 3.2 Customer/Purchaser.** The recipient of a product or service provided by the Maintenance Centers.
- 3.3 Integrated Product Team (IPT).** A team comprised of process owners, e.g., office, section, shop or cost work center employees, that chart, monitor and manage their performance through team meetings, performance reviews, self-imposed corrective actions and continuous improvement of their processes.
- 3.4 Test Measuring and Diagnostic Equipment (TMDE).** The United States Marines Corps term that is equivalent to the ISO 9000:2000 vocabulary term measuring equipment.
- 3.5 Service.** Service is the result of at least one activity necessarily performed at the interface between the supplier and the customer and is generally intangible.

MAINTENANCE CENTERS

Quality Manual

QUALITY SYSTEM REQUIREMENTS

4. Quality Management System

4.1 General Requirements. The Maintenance Centers have established, documented, and maintain a QMS and continually improve its effectiveness in accordance with the requirements of ISO 9001. The QMS involves all levels of production processes and those administrative processes that may affect the quality of the product or services. The Maintenance Centers have:

- a. Identified the processes needed for QMS and their application throughout the organization;
- b. Determined the sequence and interaction of processes;
- c. Determined the criteria and methods needed to ensure that both the operation and control of processes are effective.
- d. Ensured the availability of resources and information necessary to support the operation and monitoring of these processes;
- e. Monitored, measured and analyzed these processes;
- f. Implemented actions necessary to achieve planned results and continuous improvement of these processes.

These processes are managed by the Maintenance Centers in accordance with the requirements of ISO 9001.

Note 1. Whenever the Maintenance Centers choose to outsource any process that may affect product conformity with the [Statement of Work](#) (SOW) or customer requirements, they exercise sufficient control to ensure that such processes are performed according to the relevant requirements of ISO 9001 and customer requirements. Control of such outsourced processes are identified within the QMS in section 7.4

Note 2. Processes needed for the QMS referred to above include processes for management activities, provision of resources, product realization and measurement.

4.2 Documentation Requirements

4.2.1 General. The Maintenance Centers QMS documentation include:

- a. A documented statement of Quality Policy (refer to section 5.3) and Quality Objectives (refer to MCA-QP5000 and MCB-SP5.0) to provide a focus for the Commander to direct the organization;
- b. Level 1 documentation comprised of this QM – This document provides high-level guidance for the overall quality policy guidelines and objectives. It is a controlled document and is used jointly by both Maintenance Centers.
- c. Level 2 Procedures necessary to comply with the requirements of ISO 9001 consist of:
 - Control of Documents (ISO Element 4.2.3)
 - Control of Records (ISO Element 4.2.4)
 - Internal Audit (ISO Element 8.2.2)
 - Control of Nonconforming Product (ISO Element 8.3)

MAINTENANCE CENTERS

Quality Manual

- Corrective Action (ISO Element 8.5.2)
- Preventive Action (ISO Element 8.5.3)

d. Other Level 2 (MCA-QP or MCB-SP) procedures or Level 3 Quality Work Instructions (QIs or WIs) ensure the effective planning, operation and control of processes to meet the requirements for product quality. Level 2 documentation covers who is responsible, what they are responsible for, and when and where it applies. QI/WIs may include process description, work and test instructions, test and inspection plan, process flow charts and process maps. The respective Maintenance Centers quality documents will vary from each other due to variations in facilities, equipment, infrastructure, environmental concerns, the complexity of processes and their interactions, and competence of personnel. References to level 2 Procedures are made within QM where appropriate

e. Quality records required by ISO 9001 (see 4.2.4) that demonstrate effective operation of QMS will be legible, readily identifiable and retrievable. Documented procedures, MCA-QP4240 and MCB-SP4.2.4, have been established to define the control needed for identification, storage, protection, retrieval, retention time and disposition of record

Note 1. Where the term “documented procedure” appears within this manual, this means that the procedure is established, documented, approved, implemented and maintained.

Note 2. The documentation at each center can be in any form or type of medium.

4.2.2 Quality Manual. The Maintenance Centers have established and maintain this QM, the QM includes:

- a. The scope of the QMS, including details of and justification for any exclusion. These exclusions are noted in the corresponding sections of this manual.
- b. The documented procedures established for the QMS are referenced in applicable sections.
- c. MCA-QM1100 and MCB-QM1100 process maps describe the interaction between the processes of the QMS at each center.

4.2.3 Control of Documents

a. The Maintenance Centers have established and maintain documented quality procedures to control all documents required by the QMS. Records are a special type of document and are controlled according to requirements given in 4.2.4. A documented procedure has been established to define the controls needed:

1. To approve documents for adequacy prior to issue.
2. To review and update as necessary and re-approve documents.
3. To ensure that changes and the current revision status of documents are identified and are available at all locations where operations essential to the effective functioning of QMS are performed.
4. To ensure that relevant version of applicable documents are available at point of issue.
5. To ensure that documents remain legible and readily identifiable.
6. To ensure that documents of external origin such as technical manuals and customer drawings are identified and their distribution controlled.

MAINTENANCE CENTERS

Quality Manual

7. To prevent the unintended use of obsolete documents, and to apply suitable identification to them if they are retained for any purpose such as for legal and or knowledge preservation purposes.

b. Procedures MCA-QP4230 and MCB-SP4.2.3 Control of Documents have been established to conform to the requirements of this section.

4.2.4 Control of Records

a. The Maintenance Centers demonstrate effective operation of the QMS records and have established and maintain documented quality procedure for identifying, storage, protection, collecting, indexing, accessing, filing, retrieval, retention time, maintaining, and disposition of quality records. Quality records are legible, readily identifiable and retrievable. Quality records are retained for the minimum period specified in the applicable procedures or instructions, contracts and/or SECNAVINST 5212.5 Navy and Marine Corps Records Disposition Manual.

b. Records are retained for the following as required by the referenced ISO 9001 requirement. Other records as necessary are also retained in accordance with established retention and maintenance requirements.

1. Management Review	(ISO Element 5.6)
2. Competence, Awareness And Training	(ISO Element 6.2.2)
3. Planning of Product Realization	(ISO Element 7.1)
4. Review of Requirements Related to the Product	(ISO Element 7.2.2)
5. Design and Development Input	(ISO Element 7.3.2)
6. Design and Development Review	(ISO Element 7.3.4)
7. Design and Development Verification	(ISO Element 7.3.5)
8. Design and Development Validation	(ISO Element 7.3.6)
9. Control of Design and Development Changes	(ISO Element 7.3.7)
10. Purchasing Process	(ISO Element 7.4.1)
11. Validation of Processes For Production and Service Provision	(ISO Element 7.5.2)
12. Identification and Traceability	(ISO Element 7.5.3)
13. Customer Property	(ISO Element 7.5.4)
14. Control of Monitoring and Measuring Devices	(ISO Element 7.6)
15. Internal Audit	(ISO Element 8.2.2)
16. Monitoring And Measurement of Product	(ISO Element 8.2.4)
17. Control of Nonconforming Product	(ISO Element 8.3)
18. Corrective Action	(ISO Element 8.5.2)

MAINTENANCE CENTERS

Quality Manual

19. Preventive Action

(ISO Element 8.5.3)

c. Procedures MCA-QP4240 Control of Records and MCB-SP4.2.4 Control of Records have been established to conform to the requirements of this section.

MAINTENANCE CENTERS

Quality Manual

5. Management Responsibilities

5.1 Management Commitment

a. The Maintenance Center Commanders and Senior management at each center provide evidence of their commitment to the development and implementation of the QMS and continually improving its effectiveness by:

1. Communicating to the organization the importance of meeting customer as well as statutory and regulatory requirements;
2. Establishing the Quality policy;
3. Ensuring that quality objectives are established and measured;
4. Conducting management reviews, and
5. Ensuring the availability of resources for development and implementation of the QMS.

b. Quality procedures, MCA-QP5100, MCA-QP5500 and MCB-SP5.0 and remaining paragraphs within this section describe how senior management responsibilities are discharged at each center.

5.2 Customer Focus. The Maintenance Center Commanders recognize that their operational success depends upon consistently providing high quality product/services, within cost and on time that meet or exceed the needs and expectations of both internal and external customers. Management ensures that customer requirements are determined and are met with the aim of enhancing their satisfaction (refer to sections 7.2.1 and 8.2.1 of this manual). Customer concerns are analyzed and addressed and requirements not stated by the customer but necessary for specified or intended use are determined and met satisfying the current and future needs and expectation of present and potential customers.

5.3 Quality Policy

a. The Maintenance Centers Commanders have jointly defined and established their Quality Policy as a means of leading the Maintenance centers toward **continuous** improvement of their performance. It permits quality objectives to be understood and pursued throughout the Maintenance Centers. The Quality Policy is an equal and consistent part of the Maintenance Centers overall policies and strategy. In establishing the Quality Policy the Commanders have ensured that it:

1. Is appropriate to the purpose of organization;
2. Includes a commitment to comply with requirements and continually improves the effectiveness of the QMS;
3. Provides a framework for establishing and reviewing quality objectives;
4. Is communicated and understood within the organization, and
5. Is reviewed for continuing suitability and future improvements needed for the Maintenance Centers to be successful. This is done during the Management Review meetings.

b. The Maintenance Center Quality Policy is stated below:

MAINTENANCE CENTERS Quality Manual

The Maintenance Center Quality Policy



Through
CONTINUOUS IMPROVEMENT,
we work as a team to deliver quality
products and services to all our
customers

Figure 1. Maintenance Centers Quality Policy

5.4 Planning

5.4.1 Quality Objectives. The Maintenance Centers Commanders ensure that their strategic planning and the quality policy provide a framework for the setting of quality objectives including those needed to meet requirements for product (refer to section 7.1.a), are established at relevant functions and levels within the organization. The Commanders Maintenance Centers ensure that quality objectives are measurable and consistent with the quality policy.

a. When establishing these objectives the Maintenance **Centers Commanders** have considered the strategic objectives of the LOGBASES and the Better Business Practices espoused by the Commanding General.

b. The Maintenance Centers top management has established Quality Objectives to provide confidence to their customers and employees and ensuring that the established requirements for quality are met and maintained. The effectiveness of the objectives is periodically monitored and measured by management and revised as necessary.

c. The current top level quality objectives for MCA are described in Appendix A of MCA-QP5000 and for MCB in MCB-SP5.0.

MAINTENANCE CENTERS

Quality Manual

5.4.2 Quality Management System Planning. The Maintenance **Centers Commanders** ensure that:

a. The planning of the QMS is carried out in order to meet requirements given in section 4.1, as well as the quality objectives. The planning focuses on defining the processes needed to effectively and efficiently meet the quality objectives and requirements consistent with the vision of the Maintenance Centers.

b. The integrity of the QMS is maintained when changes to the QMS are planned and implemented. Changes that may affect the QMS are reviewed during management review meetings. In addition, QMS is revised to reflect any changes discovered during QMS audits

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

Maintenance Center Albany

a. The following organization chart defines the authorities and hierarchy of the functions, which manage, perform, and verify work-affecting quality.

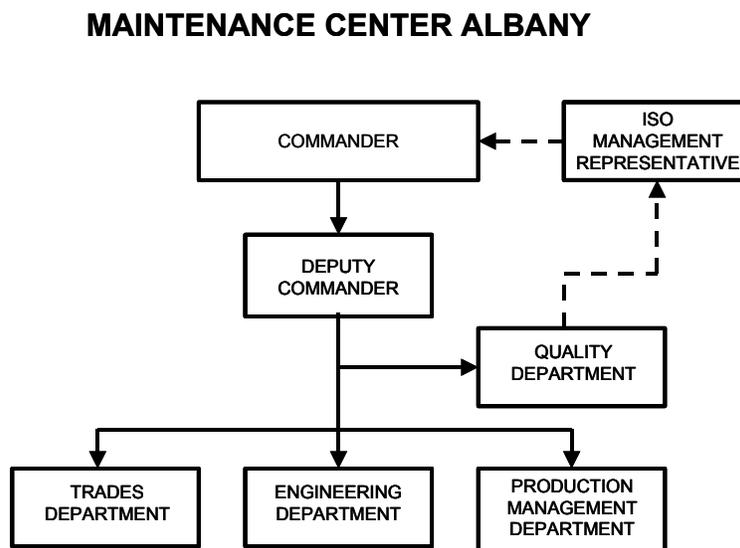


Figure 2. Maintenance Center Albany Organizational Chart

b. The Commander of the Maintenance Center Albany has the ultimate responsibility and final authority for quality. The QMS is the responsibility of all levels of management, but is led through the direction and leadership of top management. Its implementation involves all members and is communicated within the organization. The Deputy Commander reports directly to the Maintenance Center Commander.

c. Reporting to the Deputy Commander are the following functional Managers:

- Quality Department Manager
- Engineering Department Manager
- Production Management Department Manager
- Trades Department Manager

d. The Deputy Commander, as well as the manager of each department have the responsibility and authority and are committed to managing those key functions of the QMS under their direction.

MAINTENANCE CENTERS

Quality Manual

Maintenance Center, Barstow

a. The following organization chart defines the authorities and hierarchy of the functions, which manage, perform, and verify work-affecting quality.

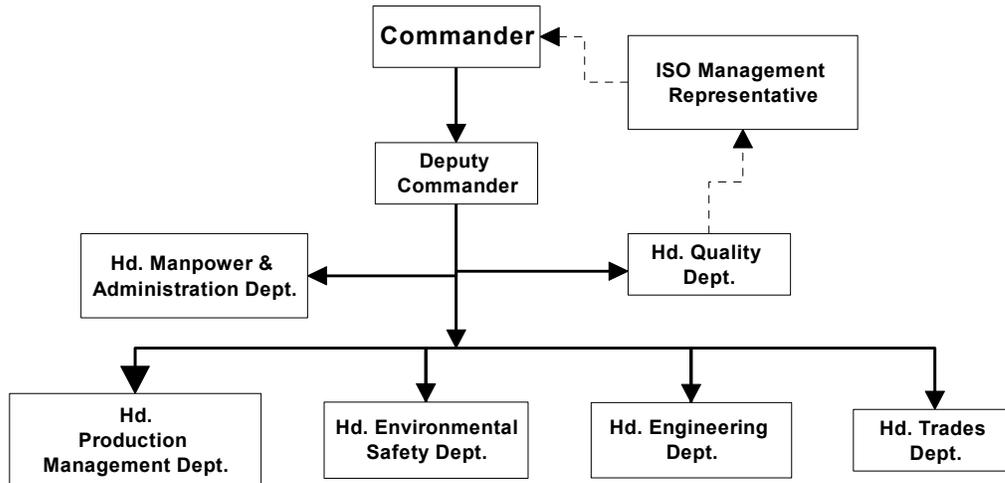


Figure 3. Maintenance Center Barstow Organizational Chart

b. The Commander of the Maintenance Center Barstow has the ultimate responsibility and final authority for quality. The QMS is the responsibility of all levels of management, but is led through the direction and leadership of top management. Its implementation involves all members and is communicated within the organization. The Deputy Commander reports directly to the Maintenance Center Commander.

c. Reporting to the Deputy Commander are the following functional Managers:

- Production Management Department Manager
- Engineering Department Manager
- Quality Department Manager
- Trades Department Manager
- Manpower & Administration Department Manager
- Environmental / Safety Office Manager

d. The Deputy Commander, as well as the manager of each department have the responsibility and authority and are committed to managing those key functions of the QMS under their direction.

e. MCA-QP5500 and MCB-SP5.0 procedures further describe quality responsibilities at the respective Maintenance Centers.

5.5.2 Management Representative. The Maintenance Center Commanders appoint a member of their management to fulfill the role of the Management Representatives. This is documented in an appointment letter authorized by the Commander. The Management Representative reports to the Commander on matters relating to Quality. The Management Representative, irrespective of other responsibilities, has the authority and responsibility that includes:

MAINTENANCE CENTERS

Quality Manual

- a. Ensuring that processes needed for the QMS are established, implemented and maintained. This appointment enhances effective and efficient operation and improvement of the QMS.
- b. Reporting to the Commander on the adequacy of measures that are used for continual assessment of the performance of QMS and any need for improvement..
- c. Ensuring the promotion of awareness of customer requirements throughout the organization.

Note: The responsibility of a management representative at each center also include liaison with customers and other external parties on matters relating to the QMS.

5.5.3 Internal Communication. The Commanders ensure that appropriate communication processes are established within the Maintenance Centers and that internal communications take place regarding the effectiveness of the QMS. Activities for communicating include:

- a. Management led communication in work areas; such as Leadership meetings and All Hands meetings.
- b. Team briefings and other meetings; such as the IPT meetings.
- c. Electronic media such as email and websites.
- d. Employee surveys and beneficial suggestion program.

5.6 Management Review

5.6.1 General.

a. The Maintenance **Centers** Commanders hold management review meetings at least semiannually to review the status of the QMS to ensure its continuing suitability, adequacy and effectiveness. This review also assesses opportunities, for improvement of the QMS and the need for changes to the quality policy and quality objectives. Management review is a platform for the exchange of new ideas, with open discussion and evaluation of the inputs being stimulated by the leadership of Commanders.

b. Special or more frequent reviews are scheduled as necessary for activities requiring special attention and /or exhibiting undesirable performance that may change the QMS.

- c. Records from management reviews are maintained (see 4.2.4).

5.6.2 Management Review Input. Management Review inputs evaluate efficiency as well as effectiveness of the QMS based on the current performance and improvement opportunities as they relate to:

- a. Assessment of the results of internal quality audits;
- b. Customer complaints and feedback;
- c. Process performance and product conformity;
- d. Corrective and preventive action processes, and opportunities to improve processes;
- e. Follow-up actions for corrective action items and for system deficiencies found in previous management reviews;
- f. Recommendations for improvement;

MAINTENANCE CENTERS

Quality Manual

- g. Potential changes that could affect the QMS,
- h. Other factors which may impact the organization, such as relevant statutory and regulatory changes.

5.6.3 Management Review Output.

- a. Management review outputs include decisions and action items related to:
 - 1. Improvement of the effectiveness of the quality management and its processes;
 - 2. Improvement of product related to customer requirements;
 - 3. Resource needs.
- b. MCA-QP5000 and MCB-SP5.0 provide further guidance regarding Management Review Meetings.

MAINTENANCE CENTERS

Quality Manual

6. Resource Management

6.1 Provision of Resources

a. The Maintenance **Centers** Commanders ensure the resources essential to implementation of strategy and achievement of the organization's objectives are identified and made available for operation and improvement of the QMS. The resources include employees, infrastructure, work environment, information, suppliers, partners, natural resources and financial resources to implement and maintain the QMS and continually improve its effectiveness as well as to enhance customer satisfaction by meeting customer requirements.

b. Issues considered in provision of resources may include as applicable:

1. Effective, efficient and timely provision of resources in relation to opportunities and constraints;
2. Tangible resources such as improved realization and support facilities;
3. Intangible resources such as intellectual property;
4. Resources and mechanism to encourage innovative improvement;
5. Organization structure, including project and matrix management needs;
6. Information management and technology;
7. Enhancement of competence via focused training, education and learning;
8. Use of natural resources and the impact of resources on the environment;
9. Planning for future resources needs.
10. Resources for safe and secure operating environment

6.2 Human Resources

6.2.1 General. The Maintenance Centers Managers ensure that personnel performing work affecting product quality shall be competent on the basis of appropriate education, training, skills and experience. They encourage the involvement and development of its employees by:

- a. Providing ongoing training to ensure that competency is maintained;
- b. Defining their responsibilities and authorities;
- c. Forecasting workload to assure that adequate workforce will be available to perform work;
- d. Facilitating open two-way communication of information;
- e. Communicating suggestions and opinions;

6.2.2 Competence, Awareness, and Training.

a. The Maintenance Centers:

MAINTENANCE CENTERS

Quality Manual

1. Determine the necessary competence for personnel performing work affecting product quality, including future demands related to strategic and operation plans and objectives and anticipated management and workforce succession needs;

2. Provide training or take other actions to satisfy these needs;

3. Evaluate the effectiveness of the actions taken;

4. Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and

5. Maintain appropriate records of education, training, skills, and experience (see 4.2.4).

b. The education and training provided is evaluated in terms of expectations and impact on the effectiveness and efficiency of the organization as a means of improving future training plans. Quality Procedures, MCA-QP6200 and MCB-SP6.0 describe how competence and awareness is managed at the Maintenance Centers.

6.3 Infrastructure

a. The Maintenance Centers management monitors the progress of on-going activities, to ensure that adequate capacity is available. They ensure that product requirements and applicable infrastructure is available to meet the product requirements such as:

1. Buildings, work space and associated utilities;

2. Process equipment (both hardware and software);

3. Supporting services (such as transportation and communication).

b. Infrastructure is periodically evaluated through internal audits and quality indicators are discussed at the management review meetings to ensure that it would meet the requirements of existing product processes as well as for those processes, which are anticipated in the near future.

c. Quality Procedures MCA-QP6300 and MCB-SP6.0 describe how infrastructure is managed. However at MCB, facility maintenance is outsourced to the Installation and Logistics (I &L) Division. Work performed by I &L is closely supervised for adequacy.

6.4 Work Environment

a. The Maintenance Centers regularly check the production areas and process equipment to ensure that these are clean, safe and secure and provide suitable working environment before the production begins. Management ensures that the work environment has a positive influence on motivation, satisfaction and performance of people in order to enhance the performance of the organization.

b. The Maintenance Centers comply with all applicable government and environment regulations, including those concerning handling, recycling, eliminating or disposing of hazardous materials to provide a safe working environment.

c. All work areas are periodically inspected and their conditions evaluated for discussion in the management review meetings for needed improvement, if any. Work areas are periodically evaluated through internal audits and quality indicators discussed at management review meetings.

MAINTENANCE CENTERS

Quality Manual

7. Product Realization

7.1 Planning of Product Realization. The Maintenance Centers have defined and developed the processes needed for product realization. Planning of product realization processes is consistent with the requirements of the other processes of the QMS. Management ensures that the validation of products demonstrate that they meet the needs and expectations of customers and other interested parties.

- a. During planning for product realization the following are considered as appropriate:
 1. Quality objectives and requirements for the product;
 2. The need to establish processes, documents, and provide resources specific to the product;
 3. Required verification, validation, monitoring, inspection and test activities specific to the product and the criteria needed for product acceptance;
 4. The records needed to provide evidence that the realization processes and resulting product meet requirements.
- b. The SOW process is described in MCQM1000, MCA-QP7200, MCB-SP7.1 and MCB-SP7.2.

7.2 Customer-Related Processes

7.2.1 Determination of requirements related to the product.

- a. The Maintenance Centers have considered the following in determining product requirements:
 1. Requirements specified by the customer, including the requirements for delivery and post delivery activities;
 2. Requirements not stated by the customer but necessary for specified or intended use, where known;
 3. Statutory and regulatory requirements related to the product;
 4. Any additional requirements determined by the Maintenance Centers.
- b. The planning process at each Maintenance Center addresses these requirements.

7.2.2 Review of requirements related to the product

- a. The Maintenance Centers review the requirements related to the product. This review is conducted prior to any commitment to supply a product to the customer (e.g. submission of tenders, acceptance of contracts or orders, acceptance of changes to contract or orders) and ensure that:
 1. Product requirements are defined;
 2. Contract or purchase order requirements differing from those previously expressed are resolved;
 3. The Maintenance Centers have the ability to meet the defined requirements.
 4. Records of the results of the review and actions arising from review are maintained (see 4.2.4).

MAINTENANCE CENTERS

Quality Manual

b. Where the customer provides no documented statement of requirements, requirements are confirmed by the Maintenance Centers before acceptance.

c. Where product requirements are changed, the Maintenance Centers ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements. When a product requirements change is to be implemented during the production cycle, it will be coordinated with the customer to ensure mutual satisfaction.

d. Procedures MCA-QP7200 and MCB-SP7.1 and MCB-SP7.2 address these requirements

7.2.3 Customer Communication

a. The Maintenance Centers determine and implement effective arrangements by communicating with customers in relation to:

1. Product information;
2. Enquires, contracts or order handling, including amendments;
3. Customer feedback, including customer complaints.

b. The Program Management Office at MCA and the Production Management Department at MCB are responsible for fulfilling these requirements and this process is performed in accordance with quality procedures MCA-QP8210 and MCB-SP7.2.3 – MCB-SP8.2.1 respectively.

7.3 Designs and Development. Neither Maintenance Center is engaged in the design of the vehicles they service. However at MCA only, Automated Test Support Unit engages in certain design activities. In addition, both centers also engage in Reverse Engineering and Facility design. Usually, the corresponding activities are performed by other USMC organizational elements for the MCB. These three activities are the only activities that pertain to this clause at either center.

7.3.1 Design and Development Planning

a. Responsible managers from the above department at MCA ensure that necessary design and development processes are planned and controlled to respond effectively and efficiently to the needs and expectations of its customers and other interested parties. Prior to the start of a design or development project a project plan is prepared. This plan documents:

1. For larger projects, the design and development stages;
2. The review, verification and validation that are appropriate to each design and development stage;
3. The responsibilities and authorities for design and development, and
4. The interfaces between different groups involved to ensure effective communication and clear assignment of responsibilities.

b. MCA ensures that planning output is updated as appropriate, as the design and development progresses.

7.3.2 Design and Development Input

a. MCA ensures that design and development inputs are defined and necessary records are maintained (see 4.2.4). These inputs include:

MAINTENANCE CENTERS

Quality Manual

1. Functional and performance requirements;
2. Applicable statutory and regulatory requirements;
3. Where applicable, information derived from previous similar designs, and
4. Other requirements essential for design and development.

b. The inputs are reviewed for adequacy and to ensure that requirements are complete, unambiguous and not in conflict with each other.

7.3.3 Design and Development Outputs. MCA ensures that outputs of design and development are provided in a form that enables verification against the design and development input and identifies personnel authorized to approve outputs prior to release. These processes ensure that design and development outputs:

- a. Meet the input requirements for design and development;
- b. Provide appropriate information for purchasing, production and for service provision;
- c. Contain or reference product acceptance criteria, and
- d. Specify the characteristics of the product that are essential for its safe and proper use.

7.3.4. Design and Development Review

a. MCA ensures that at suitable stages, systematic reviews of design and development are performed in accordance with project plans (see 7.3.1 above):

1. To evaluate the ability of the results of design and development requirements, and
2. To identify any problems and propose necessary actions.

b. The participants in such reviews include representatives of functions concerned with the project stage that is being reviewed. Records of the results of the reviews and any necessary actions are maintained.

7.3.5 Design and Development Verification. MCA ensures that verification is performed in accordance with project plans to ensure that design and development outputs have met the design and development input requirements. Records of the results of the verification and any necessary actions are maintained

7.3.6 Design and Development Validation. MCA performs design and development validation in accordance with project plans to ensure that the resulting product is capable of meeting the requirements for the specified application or intended use, where known. Wherever practical, validation is completed prior to the delivery or implementation of the product. Records of the results of validation and any necessary actions are maintained.

7.3.7 Control of Design and Development Changes

a. MCA identifies design and development changes, and maintains the appropriate records. The changes are reviewed, verified and validated, as appropriate, and approved before implementation. The review process for design and development changes include the evaluation of the effect of the changes on constituent parts and products or services already delivered.

b. Records of the results of the review of changes and any necessary actions are maintained.

MAINTENANCE CENTERS

Quality Manual

c. Quality Procedure MCA 7303 describes the design controls for ATSU design and development activities, QP 7301 controls the reverse engineering activities. Finally, process design and facilities upgrades are performed per QP 7302 and QP 6300.

7.4 Purchasing

7.4.1 Purchasing Process

a. The Maintenance Centers have defined documented procedures to ensure that purchased products (hardware, software, processed material, service, or a combination thereof) conform to specified requirements. The Maintenance Centers review and approve purchasing documents for adequacy of the specified requirements prior to release.

b. The Maintenance Centers evaluate and select suppliers based on their ability to provide product in accordance with the organization's requirements. The criteria for selection and re-evaluation are established and maintained. The Maintenance Centers establish and maintain records of results of evaluations and any necessary actions arising from evaluation (see 4.2.4) including acceptable suppliers and list of problem suppliers.

c. All purchasing and procurement is performed in accordance with applicable DOD, Navy or USMC policies and regulations.

7.4.2 Purchasing Information

a. The Maintenance Centers purchasing documentation contains data clearly describing the product ordered, including appropriate requirements for approval of product, procedures, process and equipment where applicable.

1. Requirements for approval of product, procedures, processes and equipment,
2. Requirements for qualification of personnel, and
3. QMS requirements.

b. The Maintenance Centers ensure the adequacy of specified purchase requirements prior to their communication to the qualified supplier.

7.4.3 Verification of Purchased Product

a. The Maintenance Centers purchased products used in the deliverable products are subject to receiving inspection and other activities necessary for ensuring that purchased product meets specified purchase requirements.

b. When the Maintenance Centers or its customers intend to perform verification at the supplier's premises, the Maintenance Centers state the intended verification arrangement and method of product release in the purchasing information. Where specified in the contract, the Maintenance Center's customer or the customer's representative is afforded the right to verify the product at the supplier's premises to ensure that the product conforms to specified requirements.

c. Quality Procedures MCA-QP7400 and MCB-SP7.4 document the control over suppliers, purchasing and receiving activities

7.5 Product and Service Provision

7.5.1 Control of Production and Service Provision. It is the policy of the Maintenance Centers to identify and plan its product realization processes so that work is carried out under controlled conditions.

MAINTENANCE CENTERS

Quality Manual

Note: Effective with the approval of this QM, all current equipment and processes, together with the work environment, are approved for use based on previously demonstrated capability and use.

a. Subsequent to a successful contract review and analysis, the SOWs requirements are finalized; they are funded and corresponding work is planned using the MRP system. (refer to MCA-QP7200 and MCB-SP7.5 procedures). [Theory of Constraints \(TOC\)](#) is also utilized for mapping processes to the Critical Chain. The [Production Management reviews planned work](#), and necessary materials are procured, allocated, picked and released for production under controlled conditions. Controlled conditions include:

1. The availability of information that specifies the service characteristics.
2. Use of documented work instructions as necessary.
3. Use of suitable equipment in a suitable work environment.
4. Monitoring and control of suitable product characteristics and process parameters and the availability and use of measuring and monitoring devices and systems (TMDE) as appropriate.
5. The implementation of defined processes for release, delivery and applicable post-delivery activities.

b. Controlled conditions are further detailed in MCA-QP7500, MCA-QP7501, MCA-QP8240 and MCB-SP7.5.

7.5.2 Validation of Processes for Production and Service Provision

a. The Maintenance Centers validate processes for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement. This includes any processes where deficiencies become apparent only after the product is in use or the service has been delivered. Validation demonstrates the ability of these processes, including as applicable:

1. A defined criteria for review and approval of processes;
2. Approval of equipment and qualification of personnel;
3. Use of specific methods and procedures;
4. Requirements for records (See Section 4.2.4), and
5. Revalidation

b. Such processes are periodically validated and only qualified persons are allowed to work on them. SOW specifies use of specific methods and procedures to be used during the entire realization process and only properly qualified persons are assigned to work on processes where the resulting output cannot be verified by subsequent monitoring or measurement.

7.5.3 Identification and Traceability

a. Where appropriate, the Maintenance Centers have established and maintain documented procedures for identifying the product from receipt and during all stages of production, delivery, and installation. The maintenance centers identify the product status with respect to monitoring and measurement requirements throughout the entire product realization process.

b. Where and to the extent that traceability is a specified requirement, the Maintenance Centers establish and maintain documented procedures for unique identification of individual product or batches. This identification is

MAINTENANCE CENTERS

Quality Manual

recorded. Records are maintained denoting product configuration and approved changes and serialization, as applicable (see 4.2.4). Controls over identification and traceability are described in MCA-QP7530 and MCB-SP7.5.

7.5.4 Customer Property

a. The Maintenance Centers exercise care with customer property while it is under its control or being used by the organization. All CFP/M are handled in a controlled manner in all phases of receiving, storage, production and shipment to ensure conformity to specified requirements. The Maintenance Centers identify, verify, protect and safeguard customer property provided for use or incorporation into the product. If any customer property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to the customer and records maintained (see 4.2.4). Customer owned tools, manufacturing, test, inspection tooling and equipment are permanently marked so that the ownership of each item is visible and can be determined.

b. Customer property includes intellectual property, including customer furnished data used for design, production and/or inspection.

c. CFP/M controls are further described in procedures MCA- QP7540 and MCB-SP7.5.4.

7.5.5 Preservation of Product

a. The Maintenance Centers have documented procedures for handling, storage, packaging, preservation and delivery of product. Methods and means of handling that prevent product damage and/or deterioration are specified. Deliveries to and from storage are controlled. The condition of specified products is assessed regularly. Products are protected prior to and during delivery. Proper and specified methods are used to maintain the integrity and preclude degradation of the final product including constituent parts of the product.

b. Preservation of product at the Maintenance Centers also include, where applicable in accordance with product specifications and/or applicable DOD, Navy and USMC regulations, provisions for:

1. Cleaning;
2. Prevention, detection and removal of foreign objects;
3. Special handling for sensitive products;
4. Marking and labeling including safety warnings;
5. Shelf life control and stock rotation;
6. Special handling for hazardous materials.

c. In order to detect deterioration, the condition of product in stock is assessed at appropriate planned intervals.

d. The Maintenance Centers use an MRP system to assure stock rotation.

e. Obsolete product is controlled in a similar manner to nonconforming product

f. Product preservation controls are further described in procedures MCA-QP7550 and MCB-SP7.5.

g. The Maintenance Centers ensure that documents required by the SOW to accompany the product are present at delivery and are protected against loss and deterioration.

7.6 Control of Monitoring and Measuring Devices

MAINTENANCE CENTERS

Quality Manual

a. The Maintenance Centers shall determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements. TMDE is used in a manner that ensures that the measurement uncertainty is known and is consistent with the required monitoring and measurement capability.

b. All TMDE that can affect product quality is calibrated prior to use and recalibrated at prescribed intervals against certified standards. Where no such standards exist, the basis used for calibration is documented and recorded. The basis of such calibration is submitted for review and approval per TI-4733-15/D prior to first use.

c. All TMDE is adjusted or readjusted as necessary.

d. All TMDE is identified with a calibration label and/or tag to show the calibration status.

e. Precautions are taken to safeguard TMDE from adjustment that would invalidate the calibration setting.

f. The handling, maintenance, preservation and storage of TMDE are such that the accuracy and fitness for use are maintained.

g. Records of the results of calibration and verification are maintained. A record keeping system has been established and is maintained that identifies all gauges, measuring and test equipment, including customer-owned gauges, as applicable:

1. Serial number

2. Model number

3. Responsible custodian

4. Status of certification

5. Pertinent calibration data

6. Mandatory recalibration dates

7. Equipment identification including the measurement standard against which the equipment is calibrated, and

8. Revisions following engineering changes.

h. In addition, the Maintenance Centers assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements. They take appropriate action on the equipment and any product affected. Records maintained include, any out of specification readings as received for calibration/ verification, assessment of the impact of out of specification condition, statements of conformance to specification after calibration/ verification, notification to the customer if suspect product or material has been shipped.

j. When used in the monitoring and measurement of specified requirements, the ability of computer software to satisfy the intended application is confirmed. This is undertaken prior to initial use and reconfirmed as necessary.

k. Calibration at the Maintenance Centers is performed by internal organizations that meet the requirements of the ANSI/NCSL Z540-1-1994 standard, or by authorized subcontractors that have been determined to meet Marine Corps requirements. The list of authorized subcontractors can be found on the Marine Corps Test, Measurement, and Diagnostic Equipment website. (<https://tmde.matcom.usmc.mil/tmde/>)

l. TMDE controls are further described in MCA-QP7600 and MCB-SP7.6 procedures.

MAINTENANCE CENTERS

Quality Manual

8.0 Measurement, Analysis and Improvement

8.1 General.

a. The Maintenance Centers plan and implement the monitoring, measurement, analysis and improvement processes needed to:

1. Demonstrate conformity of the product;
2. Ensure conformity of the QMS, and
3. Continually improve the effectiveness of the QMS.

b. Statistical techniques are employed, where appropriate, to provide data for defect prevention, rather than defect detection. When statistical techniques are identified to monitor process capability and product characteristics, procedures are established to implement and control their application. The application of statistical techniques is changed or discontinued based on needs and/or results.

c. Procedures MCA-QP8400 and MCB-SP8.4 and work instruction MCB-620-024 describe the use of statistical techniques at each center.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

a. The Maintenance Centers shall take proactive actions to determine customer perception as to whether it is meeting customer requirements. Customer concern is analyzed and corrective action is taken to eliminate the root cause of problem and to prevent recurrence. The effectiveness of the QMS is continuously monitored and measured by management

b. Procedures MCA-QP8210 and MCB-SP7.2.3 - MCB-SP8.2.1 describe the customer satisfaction processes at each center.

8.2.2 Internal Audits

a. The Maintenance Centers conduct comprehensive, planned, systematic and documented internal audits throughout the year to assess the strength and weaknesses and verify whether the QMS:

1. Conforms to the planned arrangements (see 7.1), the requirements of Maintenance Center's QMS and the requirements of ISO 9001;

2. Is effectively implemented and maintained.

b. The Maintenance Centers have documented procedures for planning and implementing internal quality audits. Audits are scheduled on the basis of the status and importance of the activity. All audits and audit findings are documented and their records retained. When nonconforming conditions are identified during an audit, the manager for the responsible activity implements and documents corrective action. The implementation and effectiveness of the corrective action is verified by follow-up activities.

c. Only qualified personnel that are independent of the activities being audited are assigned to conduct audits. All audits are performed in an unbiased and objective manner in accordance with applicable audit checklists. Follow-up activities are carried out to verify the actions taken and for reporting the verification results (see 8.5.2).

MAINTENANCE CENTERS

Quality Manual

- d. Internal Audits are conducted per MCA QP 8220 and MCB SP8.2.2

8.2.3 Monitoring and Measurement of Processes

a. The Maintenance Centers apply suitable methods for monitoring and, where applicable, measurement of the QMS processes. These methods demonstrate the ability of the processes to achieve planned results. Measurements are used for managing daily operations, for evaluation of the processes for continual improvements and to cover the needs and expectations of interested parties in a balanced manner. When planned results are not achieved, corrective and preventive action is taken, as appropriate, to ensure conformity of the product.

b. Processes are periodically reviewed, revalidated and optimized as described in procedures MCA-QP7500 and MCB-SP7.5

8.2.4 Monitoring and Measurement of Product

a. The Maintenance Centers monitor and measure the characteristics of the product to verify that product requirements have been met. This is carried out at appropriate stages of the product realization process in accordance with the planned arrangements (see Section 7.1).

b. Evidence of conformity with the acceptance criteria is maintained. Records indicate the person(s) authorizing the release of product (see Section 4.2.4).

c. Product release and service delivery does not proceed until the planned arrangements (see Section 7.1) have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

d. Procedures MCA-QP8240 and MCB-SP8.2.4 describe the product monitoring and measurement controls at each center.

8.3 Control of Nonconforming Product

a. The Maintenance Centers have established and maintain documented procedures (MCA-QP 8300 and MCB-SP8.3) to ensure that a product that does not conform to specified requirements is prevented from unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product identification, segregation and disposition in order to prevent misuse are defined in these procedures.

b. The Maintenance Centers deal with nonconforming product in one or more of the following ways:

1. The Maintenance Centers have established and maintained documented procedures to ensure that actions are taken to eliminate the detected nonconformity in product that does not conform to specified requirements. The responsibility for review and authority for disposition of nonconforming product is defined.

2. By authorizing its use, release or acceptance under concession by a relevant authority and, where applicable, by the customer.

3. The description of the nonconformity that has been accepted is recorded. Action is taken to preclude its original intended use or application.

c. Records of the nature of nonconformities and any subsequent actions taken, including concessions obtained are maintained (see Section 4.2.4).

d. When nonconforming product is corrected, it is subject to re-verification/inspection to demonstrate conformity to the requirements.

MAINTENANCE CENTERS

Quality Manual

e. When nonconforming product is detected after delivery or use has started, the Maintenance Centers take appropriate action to the effects, or potential effects, of the nonconformity.

8.4 Analysis of Data

a. The Maintenance Centers determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the QMS and to evaluate where continual improvement of the effectiveness of the QMS can be made. This includes data generated as a result of monitoring and measurement and from other relevant sources.

b. The analysis of data provides information relating to:

1. Customer satisfaction (see section 8.2.1);
2. Conformity to planned requirements (see Section 7.1 and 7.2);
3. Characteristics and trends of processes and products including opportunities for preventive action, and
4. Suppliers.

c. Procedures MCA-QP8400 and MCB-SP8.4 address the analysis process.

8.5 Improvement

8.5.1 Continual Improvement. The Maintenance Centers continually improve the effectiveness of the QMS through the use of the quality policy, quality objectives, periodic audits results, analysis of data, corrective and preventive actions and management review. The Maintenance Centers have these processes in place to identify and manage improvement activities, which result in necessary changes to the product, or processes and even to the QMS.

8.5.2 Corrective Action

a. The Maintenance Centers take actions to eliminate the cause of nonconformities in order to prevent recurrence. Corrective actions are appropriate to the effects of the nonconformities encountered.

b. The Maintenance Centers have established and maintained documented procedures for defining requirements for:

1. Reviewing nonconformities (including customer complaints);
2. Investigating and analyzing the root causes of nonconformities;
3. Evaluating the need for action needed to ensure that nonconformities do not recur;
4. Determining and implementing action needed;
5. Recording the results of action taken (see 4.2.4); and
6. Reviewing corrective action taken.

c. Procedures MCA-QP8520 and MCB-SP8.5 (section 8.5.2) address corrective action controls.

8.5.3 Preventive Action

MAINTENANCE CENTERS

Quality Manual

a. The Maintenance Centers determine actions to eliminate the causes of potential nonconformities in order to prevent their occurrence and ensure that preventive actions are appropriate to the effects of the potential problems. The procedure for preventive action includes the following requirements:

1. Determining potential nonconformities and their causes;
2. Evaluation of the need for action to prevent occurrence of nonconformities;
3. Determining and implementing action needed;
4. Records of results of action taken (see 4.2.4), and
5. Reviewing preventive action taken.

b. Procedures MCA-QP8530 and MCB- SP8.5 (section 8.5.3) address preventive action processes at each center.