CERTIFICATE OF REGISTRATION

ACR Electronics Inc.

5757 Ravenswood Drive
Ft. Lauderdale, FL 33312

Underwriters Laboratories Inc.® (UL) issues this certificate to the Firm named above after assessing the Firm's quality system and finding it in compliance with

ISO 9001:1994

EN ISO 9001:1994; BS EN ISO 9001:1994; ANSI/ASQC Q9001:1994

for the following scope of registration

3648 (US) : Lighting Equipment, Not Elsewhere Classified
3663 (US) : Radio and Television Broadcasting and Communications Equipment

The design, manufacture and repair of air, sea and land rescue and signaling products.

This quality system registration is included in UL's Directory of Registered Firms and applies to the provision of goods and/or services as specified in the scope of registration from the address(es) shown above. By issuance of this certificate the Firm represents that it will maintain its registration in accordance with the applicable requirements. This certificate is not transferable and remains the property of Underwriters Laboratories Inc.®

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Steve Bluttia
Vice President
Follow Up Services

Inter-office Memo from . . .

Operations

To: ISO-9001 Auditors

From: Ed Wolf, Director of Operations

Date: 04-27-98

Subject: ISO-9001 Management Representative

As the ISO-9001 Management Representative, I am leading the ACR effort to implement a Quality System in compliance with the ISO-9001 Quality Standard. Once the implementation phase is successfully completed, and ACR is registered, the Director of Quality will maintain this system, and as a result, take over the title as the Management Representative. Consequently, the ACR Quality Manual will refer to the Management Representative as the Director of Quality in anticipation of our successful registration effort later this year.

Edward A. Wolf
Director of Operations

Paul M. Frank
President

Subject:

Corporate Quality Manual Revision Record

Date	Section	Paragraph(s) Revised	Revision	Description	Approved By
7-15-91	All	All	C	Rewrite	William Smith
3-12-92	2200, 2300	All	D	Add sections	William Smith
2-5-95	All	All	E	General Update	Ed Wolf
9-26-95	All	All	F	Total Rewrite Include FAA ACSEP Include ISO Structure	Ed Wolf
10-10-97	All	All	G	Bldg 2 consolidation &Scheduled Updates	Josef Menashe
5-18-98	All	All	H	Incorporate ISO-9001	Ed Wolf / Josef Menashe
					01-QA-01-01 Rev. A

QUALITY MANUAL TABLE OF CONTENTS

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Serial Number	Location	Revision
Master	Quality Director	I
#1	Quality Manager	I
#2	FAA Representative	I
#3	Final / In-process Inspection	I
#4	Receiving Inspection	I
#5	DOD Representative	I
#6	Purchasing	I
#7	Sales & Marketing	I
#8	Engineering	I
#9	Production Planner / Inventory Management	I
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#11	Director of Operations	I
#12	ISO Auditor (Jim Tone)	I

CORPORATE QUALITY POLICY

"We will build quality products knowing they are used to save lives."

CORPORATE QUALITY INTRODUCTION

The Corporate Quality Manual defines quality policies, and establishes methods and procedures used by ACR Electronics, Inc. to assure high levels of product quality and reliability.

The Manual is intended to be consistent with the intent and general requirements of United States Department of Defense MIL-I-45208A, "Inspection System Requirements", and the Federal Aviation Agencies ACSEP program including FAR Part 21, (Subpart G, O, K, and AC21-303-1) and ANSI/ASQC Q9001-1994, which both outline the requirements of a Quality Assurance System. It is also consistent with corporate policies that are applicable to all company departments and operations, as well as outside sub-contractors and procedures.

ACR Electronics, has engaged in the designing, testing, and manufacturing of hardware for the Mercury, Gemini, Apollo, and other National Aeronautics and Space Administration (NASA) programs. Products are manufactured under rigid quality specifications. A government DCASR Quality Assurance Representative services our facility on a resident or itinerant basis, based on the present level of government contract activity at ACR Electronics, Inc.

The inherent reliability of ACR products is achieved through the application of the highest levels of design and development which address the physical laws governing the behavior of electronics and electro-mechanical components, assemblies and products under varying environmental conditions. Maintenance of the designed-in quality and reliability is assured through the implementation of the policies described herein. These policies are based on the principle of continuous monitoring and verification of ACR standards of quality and customer requirements throughout every operation contributing to the ultimate quality and reliability of products, from incoming inspection to shipment of finished products.

The Quality Manual outlines only the general philosophy and methods of ACR for attaining and maintaining the high quality and reliability of products. Detailed specifications, procedures, instructions, and processes are provided for general operation or are modified to reflect specific customer requirements. However, they will not supersede applicable government, FAA, or prime contractor specification requirements.

It is the mandated responsibility of the Director of Quality Assurance to ensure that all of these policies and supporting procedures are properly implemented and that the quality, reliability, and safety of ACR products are assured through the usage of adequate and proven manufacturing facilities, process standards, and quality controls.

The Quality policies outlined in this Manual may be modified only by the Director of Quality Assurance, with the approval of the Chief Operating Officer.

Josef Menashe
Director, Quality Assurance
ACR Electronics, Inc.

Paul M. Frank
President
ACR Electronics, Inc.

ISO 9001
ACR Quality Manual Cross Reference

This cross reference is an auditor's aid only and includes, but is not limited to the sections in the ACR Quality Manual that may be reviewed in an effort to answer the associated ISO 9001 questions in the Keeney Auditor's Companion.

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1.0 POLICY

1.1 ACR will define and document its policy for quality and will define the functions, responsibilities and authorities of each of the organizations within ACR Electronics to satisfy the corporate commitment to Quality. (1M2-2)

2.0 SCOPE

2.1 This procedures applies to the management staff of ACR Electronics, Inc.

3.0 REFERENCES

3.1	MIL-I-45208A	
3.2	ACSEP 8100	(Appendix 6)
3.3	01-MG-01-01	Management Organizational Chart
3.4	01-QA-01-01	Quality Organizational Chart
3.5	01-EN-01-01	Engineering Organizational Chart
3.6	01-MF-01-01	Manufacturing Organizational Chart
3.7	01-SM-01-01	Sales, Marketing & Customer Service Organizational Chart
3.8	01-FI-01-01	Finance Organizational Chart
3.9	01-PH-01-01	Purchasing Organizational Chart
3.10	01-HR-01-01	Human Resource Organizational Chart
3.11	01-TA-01-01	Technical Administration Chart
3.12	ANSI/ASQC Q9001-1994	
3.13	The ISO 9000 Auditor's Companion by Kent A. Keeney	

4.0 STATEMENT OF AUTHORITY

4.1 ACR Electronics has developed a comprehensive Quality System that establishes control of the product from Design to Delivery. The President of ACR has appointed the Director of Quality Assurance as the management representative. The President of ACR has delegated the responsibility and authority for ensuring full implementation of the Quality System to the Director of Quality Assurance. The only person authorized to overrule the Director of Quality Assurance is the President of ACR Electronics Inc. [4.1.2.3A] [4.1.2.3B]

4.1.1 See Figure 01-MG-01-01 (1M2-1) [4.1.2.1C] [4.1.21A] [4.1.2.1B]

5.0 RESPONSIBILITIES OF ADMINISTRATIVE MANAGEMENT [4.1.2.1A] [4.1.2.1B]

5.1 Management Reviews

5.1.1 The President of ACR is responsible for conducting management reviews at defined intervals. (a minimum of once per year) [4.1.3A] [4.1.3B]

5.1.2 Records of the meetings shall be maintained and utilized to ensure that the quality system is still suitable and effective in meeting the requirements of the Q9001 standard, the quality policy and the objectives of ACR. [4.1.3C] [4.1.3D]

5.1.3 The President shall provide direction, give support and provide people and budget for the management review program, and which will be used to evaluate the effectiveness and efficiency of the Quality system. [4.1.3E]

5.2 Management and Department Heads are responsible for the following:

5.2.1 The documentation of company policies for quality. [4.1.1A]

5.2.2 Ensuring that the quality policy and supporting procedures/work instructions are known and understood by staff at all levels. [4.1.1B]

5.2.3 Ensuring that the quality policy is relevant to ACR goals, expectations, and customer needs. [4.1.1C]

5.2.4 The identification and recording of any problems relating to the product, process and quality system and for the notification of the Director of Quality Assurance. [4.1.2.1D-1] [4.1.2.1D-2]

5.2.5 The resolution of quality problems and the implementation of preventative actions. [4.1.2.1D-3] [4.1.2.1D-4]

5.2.6 The adequate in-house resources for performing work and verification activities including internal audits. [4.1.2.2A]

5.2.7 The verification and monitoring of activities such as the implementation of inspection, product testing, and reviewing installation processes. [4.1.2.2B]

5.3 The Quality organization provides guidance, direction, and support to all functional organizations in fostering an environment of procedural compliance, innovation, and employee contributions, in an effort to satisfy the customer. (1Q1-3)

5.3.1 The Director of Quality Assurance is responsible for ensuring the creation, performance, and maintenance of quality plans and procedures for all inspection functions, supplier/vendor control, audits, non-conforming materials, corrective and preventative actions, calibration, record retention, revision control, and

distribution of the Corporate Quality Manual, and reporting to upper management on these activities when appropriate at the management review meetings. The Director of Quality Assurance has the authority to control further processing, delivery or installation of non-conforming product until the deficiency or unsatisfactory condition has been corrected. The Director of Quality Assurance, or designee, is also responsible for the Notification System and Reporting Requirements to the FAA including any changes to the Quality manual or to Quality Management and for maintaining the integrity of the FAA production approval certificate and it's exhibit. The Director of Quality Assurance is authorized to make changes to the Quality system and the FAA notification system with concurrence from upper management and the FAA representative respectively.
(4M1, 4M2, 1C2-2, 1Q2-2, 1C1, 1M1) [4.1.2.3C] [4.1.2.3D] [4.1.2.1]

5.3.2 See Figure 01-QA-01-01 (1C1-1, 1C2-1, 1Q1-2, 1Q2-1)

5.4 **The Engineering organization** provides research, development, and product reliability assessment to assure a continuous flow of innovative products that meet customer requirements and regulatory and corporate objectives. (1E1-2)

5.4.1 The Vice President of Engineering is responsible for ensuring the creation, performance, and maintenance of Engineering plans and procedures for research and development, product design, Engineering standards, drawing and change control, documentation control, and reporting to upper management on these activities when appropriate. The Vice President of Engineering is also responsible for notifying the FAA of any proposed major design changes to the FAA approved design data and notifying the Director of Quality Assurance of this occurrence. The Vice President of Engineering is authorized to make changes to the Engineering system with concurrence from upper management.
(1E2-2, 1M1-1,2)

5.4.2 See Figure 01-EN-01-01 (1E1-1, 1E2-1)

5.5 **The Manufacturing organization** provides the tools and processes for producing a reliable product to approved design data, quality requirements, and specifications to support corporate commitments and objectives. (1P1-2)

5.5.1 The Director of Operations is responsible for ensuring the creation, performance, and maintenance of manufacturing plans and procedures for production planning, inventory, material control, parts fabrication, test, receiving, shipping, factory service, maintenance, custodial duties, safety, security, and reporting to upper management on these activities when appropriate. The Director of Operations is authorized to make changes to the Manufacturing system with concurrence from upper management. (1P2-2, 1M1-1,2)

5.5.2 See Figure 01-MF-01-01 (1P1-1, 1P2-1)

5.6 **The Sales, Marketing, and Customer Service organization** provides the definition of new products, including quality, reliability, features, and customer repair, as a step in satisfying the needs of our customers from conception to delivery, while expanding the marketplace. (1S1-2)

5.6.1 The Vice President of Sales/ Marketing and Customer Service is responsible for ensuring the creation, performance, and maintenance of plans and procedures for market research, sales, commercial contracts, advertising, promotion, customer service, and reporting to upper management on these activities when appropriate. The Vice President of Sales, Marketing and Customer Service is also responsible for notifying the Quality department of any FAA related product returns or correspondence. The Vice President of Sales, Marketing and Customer Service is authorized to make changes to the Sales, Marketing and Customer Service system with concurrence from upper management. (1S2-2, 1M1-1,2)

5.6.2 See Figure 01-SM-01-01 (1S1-1, 1S2-1)

5.7 **The Finance organization** safeguards the assets of the corporation and monitors the integrity of financial transactions and records to provide the necessary direction and support to all functional areas to ensure that the corporation's financial goals are achieved.

5.7.1 The Controller is responsible for ensuring the creation, performance, and maintenance of plans and procedures for cash management, credit and collections, cost accounting, accounts payable, billing, material planning, communication systems, computer systems, and reporting to upper management on these activities when appropriate. The Controller is authorized to make changes to the Finance system with concurrence from upper management. (1M1-1,2)

5.7.2 See Figure 01-FI-01-01

5.8 **The Purchasing organization** provides a means of central communication with ACR vendors to allow for cost negotiation, a clear understanding of Purchase Orders and Contracts, including any changes that may follow, when ordering materials/ parts.

5.8.1 The Purchasing Manager is responsible for ensuring the creation, performance, and maintenance of plans and procedures for planning/ forecasting, selecting the vendor, material procurement, vendor rating, and reporting to upper management on these activities when appropriate. The Purchasing Manager is authorized to make changes to the Purchasing system with concurrence from upper management. (1M1-1,2)

5.8.2 See Figure 01-PH-01-01

5.9 **The Human Resource organization** provides guidance and support in maintaining a qualified work force in an environment of goodwill, safety, ethics, and fair and unbiased work practices in keeping with regulatory and corporate objectives.

5.9.1 The Director of Human Resources is responsible for the creation, implementation, and administration of departmental policies and procedures. The principal areas of responsibility are employment, payroll, employee benefits, compensation, employee communication, training, and legal compliance with regulatory agencies. The Director of Human Resources is authorized to make changes to the Human Resource system with concurrence from upper management. (1M1-1,2)

5.9.2 See Figure 01-HR-01-01

5.10 **The Technical Administration Organization** provides technical guidance and support to maintain the competitive position of the company.

5.10.1 The Vice President of Technical Administration is also responsible for concept definition, development of products, manufacturing tooling, automation definition, development and control of offshore contract manufacturing.

5.10.2 See Figure 01-TA-01-01

1.0 POLICY

1.1 ACR will establish the quality management principles and the structure of quality system procedural elements of ACR Electronics. The quality and reliability of the products/ services offered by ACR shall meet or exceed the expectations of our customers and our contractual requirements. (1Q1-1) [4.2.2A] [4.2.1A] [4.1.1A] [4.2.3A] [4.2.1B]

2.0 SCOPE

2.1 ACR's quality system applies to, but is not limited to, all functions within ACR that affect the quality of the goods or services provided.

3.0 REFERENCE

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 Work Instructions Matrix (02-QA-01-01)

3.4 ACSEP Cross Reference to QA manual (02-QA-01-02)

3.5 Documentation structure outline (Appendix I)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITIES

4.1 The Management of ACR Electronics is committed to reaching the objectives and goals set forth in this manual, and to provide the resources necessary.

4.2 The Director of Quality Assurance is responsible for ensuring the performance of the activities described within this procedure.

5.0 QUALITY SYSTEM PRINCIPLES / STRUCTURE

5.1 The quality loop within ACR Electronics applies to interactions among marketing, design engineering, product engineering, purchasing and procurement, process planning and process

control, production and manufacturing, inspection and testing, packaging and storage, sales and distribution, installation and technical support.

5.2 ACR Electronics quality assurance organization is responsible for ensuring the implementation and maintenance of the Quality system. Upper Management is responsible for establishing quality policies and for the implementation and maintenance of the quality system.

5.3 The structure for ACR documentation is outlined in Appendix 1 of this section. [4.2.1B]

5.4 Quality system procedures are maintained in the quality manual which is audited against the applicable standards several times annually. [4.2.2A][4.2.1B] [4.2.1C]

5.5 Quality plans are generically addressed by the overall quality system documentation, specifically the lower level work instructions. [4.2.2A] [4.2.3A] [4.2.3B] [4.2.1C]

5.6 ACR shall have procedures for updating quality control, inspection, testing techniques, development of new instruments and identification of measurement requirements. [4.2.3C]

5.7 Measurement requirements shall be identified in sufficient time for measurement techniques to be developed prior to production. [4.2.3D]

6.0 QUALITY RELATED COSTS CONSIDERATIONS

6.1 The quality system shall include the recording of specific quality costs when required by contract. The Director of Quality may use quality costs to determine areas that need improvement and/ or track the effectiveness of specific changes to the quality system in general. These costs may include the cost of prevention, appraisals, and failure. These summaries may be analyzed by management and the quality organization to determine the impact of these costs as they relate to the ability and responsibility of the company to meet its quality objectives and maintain the economic well being of the company.

7.0 QUALITY IN MARKETING

7.1 To meet customer expectations, it is the responsibility of the marketing organization to clearly evaluate, determine and communicate exactly what the customers are requiring and expecting. Customer requirements are communicated by the preparation of a product brief. Marketing, engineering, and quality shall cooperate in identifying quality requirements of all new contracts at the earliest possible stage. The initial quality planning phase shall include sufficient research to identify any special testing or inspection required and to ensure compatibility throughout manufacturing, inspection, and testing. The marketing element is also responsible for timely communication of customer feedback to the appropriate people within the organization. [4.2.3C]

8.0 QUALITY IN SPECIFICATION AND DESIGN

8.1 The Engineering organization of the company has the overall responsibility for translating customer expectations communicated by marketing's product brief into detailed technical designs and specifications. This will enable the company to manufacture products and provide services that comply with the customer and/or the contractual quality requirements at an acceptable and competitive price. Product designs and specifications and their associated processes shall be reviewed, tested and verified prior to production as an integral part of the quality system. Qualification and verification of designs shall include evaluation of performance, durability, safety, reliability and maintainability. Changes and/or modifications to designs and specifications shall be controlled and approved by the Engineering and Quality organizations. Engineering, with concurrence from Quality, shall issue detailed work instructions for performing the work and establishing acceptable workmanship standards. Quality shall verify that work instructions are properly used at all levels of the company and that obsolete instructions and specifications are removed. [4.2.3C]

9.0 QUALITY IN PROCUREMENT

9.1 The Purchasing and Quality organizations have the overall responsibility to ensure that all raw material, assemblies and components integrated into the end product offered by ACR Electronics are purchased/ procured only from approved sources who have demonstrated the ability to consistently meet the quality required. Purchasing and Quality shall conduct on-site audits of vendors manufacturing parts to ACR drawings when economically feasible, shall maintain a vendor's folder to assess their capabilities and shall maintain a receiving inspection program to further confirm and document that all incoming material does in fact comply with all quality requirements as well as to monitor vendor performance. The level of receiving inspection is commensurate with the vendor performance and rating. The Purchasing, Engineering and Quality organizations are responsible for providing suppliers with clear documentation, specifications, drawings, and quality requirements. Vendors who consistently fail to deliver required quality will be deleted from the approved supplier list. Quality and Purchasing shall ensure that all applicable contractual requirements are communicated to the suppliers, including the use of statistical methods and the use of an adequate calibration program for all instruments and equipment used by the vendor/supplier. When contractually required, Purchasing shall notify the vendor / supplier that the purchase order requires source inspection at the subcontractor's plant by a Government/ customer representative. Copies of purchase orders requiring source inspection shall be available to the designated Government/customer representative. [4.2.3C,D]

10.0 QUALITY IN PRODUCTION

10.1 All production and manufacturing shall be conducted under controlled conditions at all times. Controlled conditions include control of raw material, equipment, processes, personnel and environment. During production, the inspection status (acceptance/ rejection) shall be clearly indicated. Clear work instructions prepared by Engineering stating the acceptance/ rejection

criteria are provided at all stages of the manufacturing and inspection process. Nonconforming material shall be properly segregated to prevent intermingling with conforming material. [4.2.3C,D]

11.0 CONTROL OF PRODUCTION

11.1 Conditions involving quality from raw material to finished product are controlled during the entire manufacturing cycle to ensure conformity to all applicable specifications. Approved or rejected products are clearly identified as to their inspection status. Process control and equipment's preventive maintenance are maintained to ensure continued process capabilities. The Engineering and Quality organizations control, review and approve any proposed process changes and verify the effect such changes may have on the end product. When manufacturing involves more complex processes, Quality shall ensure that more detailed work instructions are issued and that proper personnel training or certifications are provided. Quality is responsible for ensuring that only current instructions and specifications are used in the production process. [4.2.3C,D]

12.0 PRODUCT VERIFICATION

12.1 The quality system shall provide three stages of product verification beginning with receiving inspection, followed by in-process inspection and completed product final inspection and testing. During each stage, the inspection status of each item shall be clearly indicated as to conformance or nonconformance. The extent and level of product verification is based upon contractual and customer requirements. Should a product be found to be deficient, and it was reworked or repaired, it shall be fully reinspected and tested. [4.2.3C,D]

13.0 CONTROL OF MEASURING AND TEST EQUIPMENT

13.1 One of the most critical elements of the quality system is the continuous control of measuring and test equipment used in product inspection, verification and acceptance. Management shall provide the resources necessary for quality to have adequate MT&E to perform product verification and acceptance. Quality maintains an adequate calibration program, traceable to the National Institute of Standards & Technology (NIST), to control all MT&E and insure that all equipment is operated within specified tolerances. A maintenance and traceability program is implemented to eliminate the possibility that out of tolerance equipment is used. A recall procedure is implemented so that in the event of out-of-tolerance conditions are found, customers can be promptly notified and the product recalled if necessary. The Quality organization shall make the necessary equipment and personnel available to Government or customer representatives when final inspection and acceptance is conducted at the company's plant or otherwise contractually required to do so. Furthermore, with DOD contracts, the Director of Quality shall notify the Government representative immediately when a contract requires precision measurements that exceed state of the art technology. [4.2.3D]

14.0 NONCONFORMITY

14.1 The quality system shall provide an effective and positive method for the identification and segregation in a holding area of all nonconforming material and product awaiting disposition. Upon detecting a nonconformity, Quality shall make a determination to rework, repair or scrap the item in accordance with approved written procedures and such nonconforming material shall be clearly identified and held in a holding area pending disposition. When contractually required, such rework/repair shall be approved by the appropriate Government/customer representative and required documentation maintained. Nonconformities shall be documented and evaluated to prevent recurrence. Costs associated with repair/ rework and scrap shall be documented and maintained for review by management and Government/ customer representatives.

15.0 CORRECTIVE ACTION

15.1 Upon detecting a quality problem and determining its importance, the Quality organization shall take the necessary steps to request that the responsible organization within the company take the necessary corrective action to prevent recurrence. Quality shall regularly appraise management as to the status of corrective action and disposition of nonconforming material and product. Each Corrective Action Request shall be investigated, documented and analyzed by Quality and appropriate preventive action taken. Corrective actions shall be reviewed by management and, when required, by the customer.

16.0 HANDLING AND POST-PRODUCTION FUNCTIONS

16.1 As part of the quality system, the Engineering and Quality organizations shall obtain and maintain adequate procedures and issue specific work instructions to handle, store, identify, package, clean, preserve, install and deliver accepted end products to maintain quality integrity and prevent damage. Products in storage shall be periodically inspected to prevent deterioration or damage. Items with limited shelf life shall be monitored closely. Proper instructions and procedures shall be provided for field assembling, installation and use. Marketing shall notify Quality of reports of product failure after delivery so that appropriate action may be taken.

17.0 QUALITY DOCUMENTATION AND RECORDS

17.1 As part of its quality management program, ACR Electronics has established a procedure for the identification, collection, indexing, filing, storage, maintenance, retrieval and disposition of pertinent quality records essential to establish objective evidence of quality and the integrity of the quality system. The Director of Quality shall have overall responsibility to maintain quality records to be used in the effective management of the quality system. Inspection records and work instructions shall indicate the quantitative degree of acceptance

and/ or rejection of product and workmanship. Company and Quality management shall utilize these quality records in the evaluation of the effectiveness of the quality system. Records shall be retained for periods consistent with customer/ contract requirements and shall be made available to Government and/or customer representatives when contractually required.

18.0 GOVERNMENT / CUSTOMER PROPERTY

18.1 The quality system shall provide for strict control of all Government/ customer furnished material such as tooling, raw material, machinery, measuring and testing equipment. Upon receiving such material necessary for the performance of a contract, the Quality organization shall examine and inspect said material for damage and completeness. Periodic inspection shall be conducted and adequate storage provided to prevent damage and/ or deterioration. As required, functional testing shall be conducted to determine satisfactory operation. Detailed inventory and condition reports shall be maintained and provided to the Government/ customer representative for review when requested. All Government/ customer furnished material shall be used only for the specific contract or purchase order for which it is provided.

19.0 USE OF STATISTICAL METHODS

19.1 In achieving its quality goals and objectives, the company shall use modern statistical methods in all phases of the quality loop. The Quality, Engineering, Production, Purchasing, Human Resources and Marketing organizations within the company shall develop and utilize statistical techniques appropriate to control and verify the quality of their work as it relates to the quality of the end products manufactured by ACR Electronics. Contractually required sampling plans shall be in accordance with, and approved by the Government/ customer representative.

20.0 PRODUCT SAFETY AND LIABILITY

20.1 The quality system shall ensure the safety and reliability of its products by optimizing quality during all phases of the manufacturing process. The objective is to ensure the safety of our products' users and reducing the product liability factor which could be detrimental to the company. Quality, Engineering and Safety shall ensure that all products are in compliance with all applicable safety standards.

21.0 PERSONNEL

21.1 Management recognizes the need for maintaining an adequate training program at all levels as part of the company's quality system. New employees shall receive indoctrination into the quality and safety policies and procedures of the company. When required, special qualification and/ or certification training shall be provided to comply with specification and

customer requirements. ACR Electronics management further states its commitment to providing proper motivation and quality awareness to its personnel as part of the quality system.

22.0 COMMUNICATION WITH THE FAA

22.1 The Quality and Engineering departments shall maintain communication with the FAA in all functions relating to the FAA including 24 hour notification in the event of failures, malfunctions, and/ or defects, and the approval of minor design changes to PMA and TSO products, major design changes, including changes to manufacturing and special process specifications, and proposed major design changes to PMA and TSO products, changes resulting from the incorporation of AD's (including the distribution of changes to Instructions for Continued Airworthiness), and changes which may contribute to the safety of the product. In the event that the approved manufacturing facility is relocated or additional facilities are added at other locations or changes in the Quality management, the Quality department shall notify in writing to the FAA, within 10 days. (2C1,2,3,4,5-14C4)

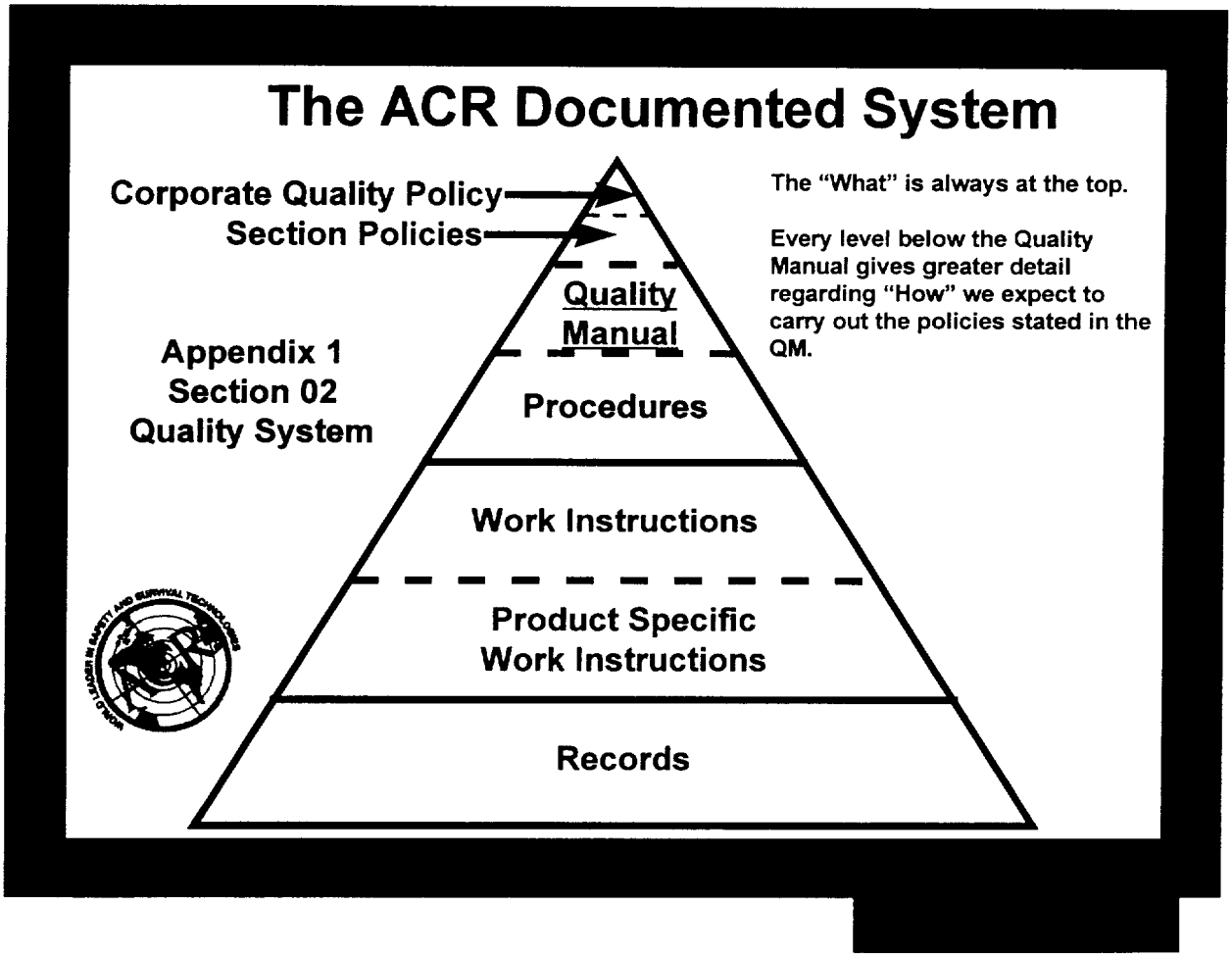
23.0 GLOBAL PRODUCTION

23.1 The Quality department will provide an interface quality document to any international manufacturing facility contracted to produce a product for ACR Electronics and to be sold to the FAA. Products manufactured by these facilities will be controlled and data collected to evaluate their performance. The quality department shall submit applications for all products to be exported and a list maintained of the products receiving export airworthiness approvals. All exported products shall meet the special requirements of the importing country and if deviations are requested and approved, an annotation on the exporting documentation and the letter of acceptance from the importing country shall be included. Airworthiness Approval Tags and Export Certificates of Airworthiness shall be issued and copies retained by the quality department. (16Q1,2,3,4)

24.0 CHANGES TO PROCEDURES

24.1 Changes to the following procedures / Work Instructions including drawings, shall be processed in accordance with document control work instructions.

- Work Instructions
- Procedures
- Forms
- Drawings


The ACR Documented System
Corporate Quality Policy
Section Policies
Quality Manual
Procedures
Work Instructions
Product Specific Work Instructions
Records
Appendix 1
Section 02
Quality System
The "What" is always at the top.
Every level below the Quality Manual gives greater detail regarding "How" we expect to carry out the policies stated in the QM.

1.0 POLICY

1.1 ACR will provide a system for establishing the criteria used for reviewing contracts and all documents associated with the goods and services that ACR provides. [4.3.1A]

2.0 SCOPE

2.1 This procedure applies to all contracts requiring the sale of ACR products or services.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 ANSI/ASQC Q9001-1994

3.4 The ISO 9000 Auditors Companion by Kent A. Keeney

4.0 DEFINITIONS

4.1 Bilateral Airworthiness Agreement (BAA): A Government to Government executive agreement between the USA and the government of another country to facilitate the airworthiness approval or acceptance of civil aeronautical products exported from one country to another. BAA's are not trade agreements, rather they are technical cooperation agreements, intended to provide a framework for the airworthiness authority of the importing state to give maximum practicable credit to airworthiness certification functions performed by the airworthiness authority of the exporting state using its own domestic certification system.

4.2 FAA Export Airworthiness Approval procedures list all of the bilateral export agreements.

5.0 RESPONSIBILITY

5.1 The Vice President of Sales and Marketing is responsible for ensuring the performance of the activities described within this procedure.

6.0 GENERAL

6.1 All contracts shall be reviewed at the earliest possible phase of customer interface.

7.0 PROCEDURE

7.1 Procedures shall be established which will incorporate the following criteria:

7.1.1 An established work team which should include Sales Managers, lead discipline engineers, manufacturing managers, and a quality assurance representative. If the contract content requires additional support such as product support, purchasing, or scheduling they should also be part of the work team.

7.1.2 A detailed review of the scope of work to be accomplished.

7.1.3 All applicable specifications and standards are available and at the latest revision.

7.1.4 A check that all materials are available including the appropriate size and quantity.

7.1.5 A review of all test and inspection requirements, including the certification process.

7.1.6 A review of manufacturing processes, including internal capabilities to meet accepted tender, contract, and order requirements. [4.3.2A] [4.3.2D]

7.1.7 A review of the requirements for a Bilateral Airworthiness Agreement when applicable.

7.1.8 The resolution of differences. [4.3.2A]

7.1.9 Acceptance of non-standard orders (verbal or documented). [4.3.2B]

7.1.10 The method of communication and interface with the customer for resolving contractual matters. [4.3.4A]

7.2 Special/specific requirements shall be clearly identified and communicated to the Engineering, Purchasing, Manufacturing and Quality organizations when applicable. (4P3)

7.3 Amendments to a contract or changes to a verbal order shall be communicated to the proper departments and documented. [4.3.2C] [4.3.3A]

7.4 Records of contract reviews are maintained. [4.3.4B]

7.5 See Section 16 for the requirements of retention, maintenance, and storage of records. [4.3.4.B]

1.0 POLICY

1.1 To establish and maintain procedures used for Design control and Design Review planning from conception to delivery of the completed product.

2.0 SCOPE

2.1 This procedure applies to all ACR designed products.

3.0 REFERENCES

3.1 ACSEP 8100 (Appendix 6)

3.2 SECTION 05 (Documentation Control)

3.3 ANSI/ASQC Q9001-1994

3.4 The ISO 9000 Auditor's Companion by Kent A. Keeney

3.5 MIL-I-45208A

4.0 DEFINITIONS

4.1	Airworthiness Directive-	AD is a document issued by the FAA to the operator of the equipment requiring corrective or preventive action of a known or suspected deficiency.
4.2	Type Certificate (TC)-	The FAA design approval document for aircraft, engines, and propellers.
4.3	Supplemental Type Certificate (STC)-	FAA design approval for changes to TC's as well as stand-alone. FAA design approval for after market equipment & components.
4.4	Parts Manufacturer's Approval (PMA)	A production approval issued from the FAA to manufacturers who produce parts, equipment, and components under the design authority of a TC or STC either through direct ownership of design or through a licensing agreement.
4.5	Production Certificate (PC)-	The FAA production approval issued to qualified manufacturers of aircraft, engines, and propellers.
4.6	Technical Standard Order-	TSO's are FAA design specifications for specific equipment or components.

4.7	Technical Standard Order-Approval (TSOA)	A design and production approval for products designed in accordance with a TSO.

5.0 RESPONSIBILITY

5.1 The Vice President of the Engineering department is responsible for the performance of the activities described in this procedure.

5.2 The Vice President of the Engineering department is responsible for ensuring that the Engineering procedures are fully implemented and that specified requirements are met. [4.4.1B]

6.0 GENERAL

6.1 The Engineering department is responsible for designing products that meet customer requirements by using recognized industry design standards to meet known and defined specifications.

7.0 PROCEDURE

7.1 ACR shall establish and maintain documented procedures to control and verify the design of products in order to ensure that the specified requirements are met. These procedures are available at all points of use. [4.4.1A] [4.4.1.B]

7.2 ACR shall prepare plans for each design and development activity. The plans shall describe or reference these activities and define responsibility for their implementation. The design and development activities shall be assigned to qualified personnel equipped with adequate resources. The plans shall be updated as the design evolves. [4.4.2A,B]

7.3 ACR shall define technical interfaces between different groups which input into the design process, and the necessary information documented, transmitted, and regularly reviewed. [4.4.3ABCD]

7.4 Design-input requirements relating to the product, including applicable statutory and regulatory requirements, shall be identified, documented, and their selection reviewed by Engineering personnel supplier for adequacy. Incomplete, ambiguous, or conflicting requirements shall be resolved with those responsible for imposing these requirements. [4.4.4A,B]

Design input shall take into consideration the result of any contract-review activities. [4.4.4C]

7.5 Design output shall be documented and expressed in terms than can be verified against design-input requirements and validated. (see 7.8). [4.4.5A]

Design output shall:

a) meet the design-input requirements;
b) contain or make reference to acceptance criteria;
c) identify those characteristics of the design that are crucial to the safe and proper functioning of the product (e.g., operating, storage, handling, maintenance, and disposal requirements.)
d) Complies with the appropriate regulatory requirements. [4.4.5B]

Design-output documents shall be reviewed before release. [4.4.5B]

7.6 At appropriate stages of design, formal documented review of the design results shall be planned and conducted. Participants at each design review shall include representatives of all functions concerned with the design stage being reviewed, as well as other specialist personnel, as required. Records of such reviews shall be maintained. (see section 16). Note: see 7.10 for more on design review [4.4.6A,B]

7.7 At appropriate stages of design, design verification shall be performed by competent personnel to ensure that the design-stage output meets the design-stage input requirements, including safety consideration, compatibility of facilities and validation of software. The design-verification measures shall be recorded. (see section 16). [4.4.7 A,E,F,G]

In addition to conducting design review, design verification may include activities such as performing alternate calculations, comparing the new design with a similar proven design, if available, undertaking tests and demonstrations, and reviewing the design-stage documents before release. These activities shall be controlled and recorded. [4.4.7 B,C,D]

7.8 Design validation shall be performed to ensure that product conforms to defined user needs and/or requirements.

- Design validation follows successful design verification.
- Validation is normally performed under defined operating conditions.
- Validation is normally performed on the final product, but may be necessary in earlier stages prior to product completion.
- Multiple validations may be performed if there are different intended uses. [4.4.8A]

7.9 All design changes and modifications shall be identified, documented, reviewed, and approved by authorized personnel before they are implemented. [4.4.9A,B]

7.10 ACR shall provide procedures for design review using the following criteria:

7.10.1 Identification of Airworthiness Directives incorporated into the FAA approved design, when applicable. (2E4)

7.10.2 Design changes which affect the content of Instructions for Continued Airworthiness are incorporated into the FAA approved design, when applicable. (2E5)

7.10.3 The Type Certificate process must be completed prior to submitting a Supplemental Type design for approval. (2E10)

7.10.4 A method to provide for the incorporation of Airworthiness Directives when applicable (13E1)

7.10.5 A method to provide for the identification, tracking, and compliance to Airworthiness Directives and for furnishing the customer with AD status when the product is delivered. (13E1)

7.11 Records:

7.11.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a system for establishing the method used for the maintenance, retention, distribution, retrieval, and storage of the Drawings and Document Control functions.

2.0 SCOPE

2.1 This procedure applies to all documents and data that relate to the requirements of the ACR quality system, including, to the extend applicable, documents of external origin such as standards and customer drawings.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 04 (Design Review)

3.4 SECTION 06 (Purchasing)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 This ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 DEFINITIONS

4.1 Major Design Change- Has a significant effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the safety (airworthiness) of the product.

4.2 Minor Design Change- Any change which is not considered a Major change.

4.3 Technical Data Package- A package that might include drawings, technical specifications, technical instructions, test instructions, software, and any other related technical data.

4.4 External Documents- Any documents developed externally to ACR such as customer drawings, quality standards, etc.

5.0 RESPONSIBILITY

5.1 The Vice President of the Engineering department is responsible for the performance of the activities described in this procedure.

5.2 The Vice President of Engineering is responsible for ensuring the control of supplier design data and all changes. (10E1)

5.3 The Director of Operations is responsible for ensuring that the manufacturing department reviews all design and technical data changes. (2P1)

5.4 The Director of Quality Assurance is responsible for ensuring that the quality department reviews all design and technical data changes. (2Q1)

5.5 The Vice President of Sales and Marketing is responsible for ensuring that the Customer Service department reviews all design and technical data changes when applicable. Changes to instructions for airworthiness will be made available to the appropriate personnel. (2S1)(2S2)

6.0 GENERAL

6.1 Under no circumstances shall a drawing or document be released for production without the documented approval of the Change Control Board (CCB) [4.5.2A]

7.0 PROCEDURE

7.1 **Procedures shall be established for the Control of Drawing and Document Changes (including external documents) incorporating the following requirements:**(2E2)[4.5.1A]

7.1.1 A method which will identify/document intended design documentation changes, including design changes. (2E1-A1) [4.5.3C]

7.1.2 A description of the change approval cycle. (2E1-A2) [4.5.2B] [4.5.3A] [4.5.3B]

7.1.3 Personnel identified who are authorized to approve changes. (2E1-A2)

7.1.4 To define a method for appropriately documenting and approving changes to technical data, specifications, installation instructions, and airborne software documentation. (2E3)

7.1.5 A method for classifying design changes as either Minor or Major. (2E8)

7.1.6 All drawings/ documents shall be identified using an established system to ensure adequate, complete, accurate, and legible documentation. (2E2-A1,2) [4.5.1B] [4.5.2A] [4.5.3A] [4.5.3B]

7.1.7 There shall be an indication of drawing, document, and data approval, including FAA approval when applicable, for ensuring adequacy by authorized personnel prior to issue. (2E2-A3) [4.5.3A] [4.5.3B] [4.5.1A] [4.5.2A] [4.5.1B]

7.1.8 All Manufacturing/ Inspection procedures/ work instructions shall be controlled with a revision level and continuing sequentially with each approved change and a record kept of the current revision levels and changes. (9E2, 4P1) [4.5.3A] [4.5.3B]

7.1.9 All deliverable product Test procedures shall be approved and controlled through the Change Control Board (CCB) system. (8E2, 8P1, 8Q1)

7.1.10 Documents which are used to enhance the procedures/work instructions i.e.: tags, forms, etc., are to have samples and instructions available for use. Any changes to these documents shall be controlled and documented through Document Control. (1Q5)

7.1.11 Manufacturing/ Inspection process procedures and work instructions shall be evaluated and approved by manufacturing, quality, and engineering as a minimum to verify that the required steps, including tests, are taken to confirm that the approved design data and all related technical specifications including Airworthiness Directive's (if applicable) can be accomplished for product quality. Any changes to the documents after the approval must be resubmitted. (9Q3, 9E1, 4P1, 4P2, 4P3, 4E2) [4.5.3A] [4.5.3B] [4.5.3C] [4.5.3D]

7.1.12 Any design changes made as a result of AD incorporation or improvements which contribute to the safety of the product shall have the descriptive data and information available to all users of the product. (2S3)

7.1.13 A defined method of identifying minor design changes which is approved by the FAA. (2C1)

7.1.14 A defined method of handling major design changes, including process specification changes, changes resulting from AD's, and changes made to contribute to the safety of the product, which is submitted to the FAA for approval. (2C2)

7.1.15 If changes are made to established procedures for distributing changes to the FAA regarding Instructions for Continued Airworthiness, these procedural changes shall be submitted to the FAA for approval. (2C3)

7.1.16 Procedures provide for the type of data to be submitted to the FAA when minor changes are made to the TSO article, these procedures agree with the part number specified in the original application. (2C4)

7.1.17 Procedures provide for assignment of a new type or model designation to the changed article and for prompt application for a new TSO authorization as a result of a major design change to the original TSO. (2C5)

7.1.18 A master list for all forms, drawings, documented procedures and work instructions, including the associated current revision. [4.5.3D][4.5.3E]

7.1.19 Procedures provide for use of special processes identified and documented in FAA approved design data. (5E1.A1)

7.1.20 External documents shall be reviewed, approved, and controlled. [4.5.1A] [4.5.2A]

7.2 Procedures shall be established which will provide for a system of controlling the issuance, distribution, and retrieval of all drawings, changes, and technical design data incorporating the following requirements: (2E7) [4.5.2B]

7.2.1 Responsibility for design and technical data document control. (2E7-A1)

7.2.2 Control of, and persons authorized to obtain documents, including the retrieval of obsolete documents. (2E7-A2)

7.2.3 A method for notifying employees of changes in technical data or drawings. (2E7-A3)

7.2.4 Verification that correct documents are in use for the product being produced. (2E7-A4)

7.2.5 Current design and technical data document distribution lists. (2E7-A5)

7.2.6 A method of controlling the issuance and distribution of design changes. (2E1-A3)

7.2.7 All drawings/ documents shall be maintained and secured. (2E2-A4)

7.2.8 A system for allowing only current drawings to be in use. (2E2-A5) [4.5.2C]

7.2.9 List of drawings and specifications to define configuration of the FAA approved design. (2E2-A6)

7.2.10 Control of preliminary/ experimental drawings. (2E2-A7)

7.2.11 Obsolete documents retained for legal preservation are suitably identified. [4.5.2C]

7.3 Procedures provide for the Control of Software incorporating the following requirements:

7.3.1 Integration of software with hardware to specify a unique version for incorporation into the product. (2E2-A8)

7.3.2 Combination of software for more than one processor within one product. That combination of software with associated hardware permits the specification of a unique version for incorporation into the product. (2E2-A9)

7.3.3 Cross-reference of software documents to their associated software. (2E2-A10)

7.3.4 Software verification methods that permit verification of the software configuration in the completed product. The drawing control system includes software identification methods at the media level and at the product level. The media level identification is incorporated into the software, and the product level identifications are marked on the outside of the product indication software configuration. (2E2-A11)

7.3.5 Changes to specifications and installation instructions are appropriately documented and approved, when applicable. (2E3-1)

7.3.6 Identification of software for an application. (3BE1-1)

7.3.7 Control of approved versions for product acceptance. (3BE1-2)

7.3.8 Control of obsolete and non-current software. (3BE1-3)

7.3.9 Identification of software with a Software Configuration Identification. (3BE1-4)

7.3.10 Procedures provide for a method to change and approve product acceptance software, providing a record showing reason for change, revisions to the software, approvals, and effectivity. (3BE2-1)

7.3.11 A method for reporting, tracking, and resolving software-related product acceptance problems. (3BE3)

7.3.12 Methods for the control of product acceptance software to prevent unauthorized changes and limited access to software files. (3BE4-1,2)

7.3.13 A method for keeping separate archives for masters and duplicates, and that masters and duplicates are not available for corruption in the same machine at the same time. (3BE4-3,4)

7.3.14 An independent means to verify product acceptance software, and subsequent revisions, to ensure that it accomplishes its intended function. (3BQ1-1)

7.3.15 A method of verifying software/ firmware/ hardware is capable of discriminating between good and bad parts or assemblies. (3BQ1-21)

7.3.16 A formal means of identifying approved product acceptance software. (3BQ1-3)

7.3.17 Configuration control of the product acceptance software as it relates to the product being accepted. (3BQ1-4)

7.4 Records:

7.4.1 All design documents (including magnetic media, if applicable), shall be stored, maintained, and protected to preserve their integrity. (2E6)

7.4.2 A complete and current file of technical data, including design drawings and specifications shall be established and maintained. (2E9)

7.4.3 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a system to control, maintain, and document the procurement of materials and parts, and for the evaluation and control of suppliers and subcontractors to meet the approved design data, specifications, and contractual requirements as applicable for all ACR products. [4.6.1A]

2.0 SCOPE

2.1 This procedure applies to all ACR products.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 10 (Inspection & Test)

3.4 SECTION 16 (Records)

3.5 SECTION 17 (Audits)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Purchasing Manager is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Purchasing Manager is responsible for ensuring that the Quality Director is notified of any communication with a vendor/ supplier regarding quality related issues. (10Q7)

4.3 The Purchasing Manager is responsible for ensuring that the Purchase Order documents are submitted to quality for review and approval prior to issue. (10Q6)

4.4 The Purchasing Manager is responsible for ensuring that the supplier/ vendor is notified of any forthcoming survey/ audits and making arrangements for the visits.

4.5 The Purchasing Manager is responsible for ensuring that a clause stating Government / Customer source inspections required is on the Purchase Order when requested by the Government / Customer and that all documents are available for review and copies available when requested. [4.6.4.2A]

4.6 The Director of Quality Assurance is responsible for ensuring that the Purchasing Manager is notified of any planned Supplier Quality System Survey/ Audits.

4.7 The Director of Quality Assurance is responsible for reporting to the FAA of any:

1. Delegation of authority to suppliers to perform major inspections of products/ parts.
2. New suppliers located in other countries and of their first articles upon receipt.
3. Authorizations for suppliers from other countries to direct ship. (10C1, 10C2, 10C3)

4.8 The Director of Quality Assurance is responsible for ensuring the notification of the Government / Customer representative of defects found at source and for coordinating the flow of the corrective action through the supplier/ vendors and Government / Customer representative.

4.9 The Vice President of Engineering is responsible for ensuring the control of supplier design data and all changes through the use of specification and source control drawings. (10E1)

5.0 PROCEDURE

5.1 Control of Purchased Material shall be accomplished by the Selection and Control of suppliers using the following established criteria: [4.6.2A]

5.1.1 Initial and periodic evaluations of suppliers to determine their capability to meet requirements. (10Q1-1)

5.1.2 Methods established for determining the extent of evaluations, dependent on the type, complexity, method of control, and importance of products or services procured, and provide for on-site evaluation, process reviews, document reviews, or independent product evaluations. (10Q1-2) [4.6.2B]

5.1.3 Implementing and documenting effective corrective action when deficiencies are found. (10Q1-3) [4.6.2B]

5.1.4 Criteria is established for supplier acceptability, based as a minimum on evaluation results and quality performance history for the commodities or services provided. (10Q2-1) [4.6.2B]

5.1.5 Suppliers quality performance data shall be collected, evaluated and reported on. (10Q2-2)

5.1.6 A list shall be created and maintained for all suppliers who have been reviewed and evaluated and found to be acceptable which shall include the suppliers name, address, telephone numbers, fax numbers, name of contact person, list of the products or services they have been approved to supply, the quality level at which they were approved, the country, and dates of the last and next audits, when applicable. (10Q2-3,4,5)

5.1.7 A method of procurement shall be established for suppliers that require special control. (10Q2-6)

5.1.8 Suppliers of sub tier sources that were evaluated by ACR, shall be furnished a current list of approved suppliers. (10Q2-7)

5.1.9 Procedures shall provide a method for reviewing and approving a priority part supplier's quality system data. (10Q3)

5.1.10 The following technical data and quality requirements shall be included in the purchase documents as applicable:

1. Special processing specifications/ engineering requirements for suppliers performing special processing.
2. Calibration traceable to a national standard and submittal of certificates for suppliers performing calibration services.
3. Software specification requirements for suppliers providing software.
4. Submittal of certification test reports for shipments of raw material.
5. Identification of raw and process material in accordance with industry and/or customer specifications.
6. Appropriate identification and marking of products and parts.
7. Identification of the actual manufacturers of the supplies provided by warehouses and distributors.
8. Delegation of authority for major inspections or material review (see Section 13).
9. Authorization and requirements for direct shipment when applicable.
10. Supplier shipping document requirements for direct shipment shall include:
    1. Declaration that parts were produced under the terms of the production approval.
    2. Identification of the product on which the part is eligible for installation.
11. Special packaging and preservation requirements, when warranted for material protection.
12. Identification of appropriate technical requirement revision levels.
13. Notice of FAA review of supplier's facilities and products as necessary.
14. Incorporation of design changes as specified.
15. Notification to the evaluated facility of any latent defects in products or parts previously supplied.
16. A formalized SQC policy when required.
17. Requests for copies of control charts and other pertinent statistical data applicable to the time period during which the supplied product/ parts were produced.
18. Submittal of supplier design and changes to the evaluated facility for approval prior to incorporation, when required.
19. Submittal of changes to a supplier's quality system that may affect inspection, conformity, or the airworthiness of the product.

20. Record retention requirements.
21. Use of the English language for quality data e.g., supplier quality procedures, certificates, reports, or other similar data as required by ACR. (10Q5) [4.6.3A]

5.2 Purchasing Data:

5.2.1 Purchasing documents should provide specifications or other design data in the detail necessary to procure articles or services that meet approved design data. [4.6.1A]

5.2.2 Purchasing documents shall be reviewed and approved for adequacy of specified requirements prior to release. Quality will document that the review was successfully completed. [4.6.3B]

5.3 Verification of Purchased Product:

5.3.1 See Section 10 Inspection & Testing [4.6.1A]

5.3.2 When applicable the method of product release from the subcontractors premise shall be documented in the purchase document and the verification of the product specified. [4.6.4.1A]

5.3.3 None of our customers specify visits to our subcontractors, however, should a customer specify to visit our subcontractors in their contract it would be coordinated in accordance with Section 3, Contract Review. [4.6.4.2A] [4.6.4.2B]

5.3.4 ACR is responsible for providing an acceptable product even in the event our customer verifies our processes and or our product at our facility or our subcontractor facility. [4.6.4.2C]

5.4 Direct Shipment from Suppliers:

5.4.1 The authority to direct ship will be based on past performance over a predetermined length of time, or quality source inspection. Direct ship will not be allowed at the beginning of a program.

5.4.2 Each FAA part which is direct shipped must be accompanied by a shipping ticket, invoice, or other document containing a declaration that the individual part was produced under the production approval and is authorized to direct ship.

5.4.3 See para. 5.1.10, number 10, for shipping documents data requirements.

5.5 Records

5.5.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 PURPOSE

1.1 ACR will provide a system for the inspection, storage, and maintenance of Government or Customer furnished property.

2.0 SCOPE

2.1 This procedure applies to all customer/government furnished property/material.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 11 (Calibration)

3.4 SECTION 13 (Nonconforming Material)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the performance of the activities described within this procedure.

4.2 The Director of Quality Assurance is responsible for ensuring the availability of all records to the Government or Customer upon request.

5.0 PROCEDURE

5.1 **Receipt** of Government or Customer furnished property shall be inspected and verified by the following requirements: (10Q4) [4.7A]

Note: For GFP the government QAR will be notified prior to inspection.

1. The Materials shall be examined for damage during transit.

2. The Material shall be examined for completeness and proper type.

3. The Materials shall be examined for proper identification.

4. The quantity of the Materials shall be verified.

5. The Materials shall be functionally tested **if** contractually required.

6. The Materials shall be examined for conformance to FAA design data (if applicable)

7. The Materials shall be identified prior to storage.

8. The Materials shall be properly protected when stored.

5.2 **Storage** of Government or Customer furnished property shall be controlled following the criteria listed below: [4.7A]

1. Stored Materials shall be examined periodically to detect any signs of deterioration, mishandling, shelf life limitations, and assure maintenance of storage conditions.

2. Stored Materials shall be protected from unauthorized use.

5.3 Prior to **installation** or use of Government or Customer furnished property the following requirements shall be considered:

1. Does the contract or specifications require functional testing **prior** to installation or use?

2. Does the contract or specifications require functional testing **after** installation or use?

3. Does the contract or specifications require functional testing **prior to and after** installation or use?

5.4 Damaged, lost or unsuitable Government or Customer furnished property shall be recorded to include the probable cause, and the Government or Customer notified. [4.7B]

5.4.1 See Section 13 for nonconforming material procedures.

5.5 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 To provide guidelines for the systematic approach with respect to the identification and traceability of materials/ products from receipt through delivery. [4.8B]

2.0 SCOPE

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 09 (Process Control)

3.4 SECTION 15 (Handling, Storage, Packaging, Preservation, and Delivery)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Operations is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Director of Operations is responsible for ensuring the creation and maintenance of documentation which will fulfill the manufacture, inspection and test product identification and traceability requirements.

4.3 The Vice President of Engineering is responsible for ensuring the preparation and distribution of guidelines for the interpretation and application of approved data, standards, and specifications to the manufacturing of a product. (4E1)

5.0 GENERAL

5.1 All materials / products / parts shall be identified from receipt of acceptance through installation (if applicable), using tags, travelers/ work orders, or markings directly on the part to identify the material / product / part by part number, or date code, and Quality acceptance.

5.2 Whenever possible serial numbers should be applied as early as possible in the build cycle for traceability to a work order, tag, traveler, etc..

5.3 The Part number is referenced by the associated drawing.

6.0 PROCEDURE

6.1 Product Identification shall be incorporated and maintained using the following criteria: [4.8A]

6.1.1 All products shall be identified with a part number, revision level, or date code and indication of quality acceptance as a minimum.

6.1.2 Parts shall be identified by one of three methods.

1. Part number, date, QC acceptance stamp directly on the product.
2. Part number, date, QC acceptance stamp on a tag attached to the part. *(tags to be removed by authorized quality personnel only)
3. Part number, date, quantity and/ or serial number, QC acceptance stamp applied to the work order/ traveler, or QC card.

6.1.3 Products manufactured under a PMA (Parts Manufacturer Approval) shall be permanently marked with the following information: (4P9-5)

1. Part Number
2. Letters *FAA-PMA*
3. Name of the holder of the PMA.
4. Name and model designation of Type-Certified product on which the part is eligible for installation.
5. Indication of inspection acceptance.

6.1.4 Products manufactured under a TSO (Technical Standard Order) shall be identified by the following information: (4P9-4)

1. Name and address of the manufacturer.
2. Name, type, part number, or model designation of the product.
3. Serial number or date of manufacture of the product, or both.
4. TSO number.
5. Indication of inspection acceptance.

6.1.5 All identification marking on parts shall be verified for accuracy and legibility prior to stock or delivery to customer. (4P9-B2)

6.1.6 All critical components are permanently and legibly marked with a part number (or equivalent), and a serial number (or equivalent). (4P9-6)

6.1.7 Identification of complete and accepted products in accordance with approved design and quality data requirements. (4P9-b1)

6.2 In-Process Identification shall be incorporated and maintained using the following criteria: [4.8A]

6.2.1 Shall include predetermined areas of inspection based on the types of process being employed to manufacture the product.

6.2.2 Any step required in the manufacture of a product that will inherently cover up a previous step shall constitute an inspection step.

6.2.3 All manufacture and inspection steps shall be referenced to a specific product or lot by part number, revision, serial number or quantities on tags or work order/ travelers.

6.2.4 Nonconforming material must be indicated on the identification documentation referencing the MRN number for indication of status.

6.2.5 Appropriate inspection marking shall be accomplished for products and parts throughout the manufacturing cycle including acceptance, rejection, nondestructive test processes, etc.. (4Q10)

6.3 Product Traceability shall be incorporated and maintained using the following criteria: [4.8A]

6.3.1 The most common method of traceability is the Part Number and Serial Number combination. Date codes and batch numbers are also used for traceability when narrowing down the time period in which the product was manufactured. This may include the shop order the product was associated with during the build cycle. [4.8C,D]

6.3.2 Engineering will determine when a date code or serial number is required on the product, and document this appropriately. [4.8B]

6.3.3 Serial Numbers shall be applied to all applicable documentation for a direct link to the products.

6.3.4 If the product is too small for permanent identification, a tag may be used and applied to the packaging of the product. *Note-For FAA deliverables this method must be approved by the FAA prior to implementation.

6.3.5 This paragraph has been intentionally left blank.

6.3.6 Nonconforming material must be documented by part number and serial number (if applicable) on the nonconforming material reports.

6.3.7 Split lot traceability must be maintained for accountability of the product through the completion of manufacturing and inspection operations, including accountability for shortages and overages as successive operations are performed. (4P8)

6.3.8 Should ACR be required to provide traceability beyond the standard Quality system, it shall be identified in assembly records. (4Q8)

6.3.9 Products requiring traceability shall be documented to allow for traceability from the completed part to issue of raw material through the marking of the parts and record keeping requirements. (4Q9-1,2)

6.3.10 Provisions shall be made for the handling of rejected and scrapped traceable parts. (4Q9-3)

6.4 Records

6.4.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 To provide a system for the identification and planning of production processes which directly affect quality, and to ensure these processes are carried out under controlled conditions. [4.9A,E]

2.0 SCOPE

2.1 This procedure applies to all manufacturing processes used to build ACR products.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 08 (Product Identification and Traceability)

3.4 SECTION 10 (Inspection and Test)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 DEFINITION

4.1 **Special Processes -** Where the results of processes 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, the process shall be carried out by qualified operators and/or shall require continuous monitoring and control of process parameters to ensure that the specified requirements are met, for confirmation of acceptability of the final product. [4.9G]

5.0 RESPONSIBILITY

5.1 The Director of Operations is responsible for ensuring the performance of the activities described in this procedure.

5.2 The Director of Operations is responsible for ensuring the creation and maintenance of documentation which will fulfill the inspection and test product acceptance criteria. (4P2) [4.9B]

5.3 The Director of Operations is responsible for ensuring that all process changes are approved and controlled by authorized personnel. (4P1) [4.9B]

5.4 The Vice President of Engineering will be responsible for distributing guidelines interpreting the applications of design data to the manufacturing and quality departments to support them in generating accurate procedures/ work instructions when applicable. (4E1)

5.5 The appropriate Engineering personnel shall provide for verification/ testing of new or changed manufacturing processes to ensure the process will produce what the design requires. (4E2)

6.0 GENERAL

6.1 All processes which employ multiple steps to manufacture an ACR product, or directly affect the quality of, will be defined in a work instruction to benefit the overall manufacturing/ inspection/ test system in evaluating, improving, and identifying products which are produced at ACR Electronics. [4.9A, D]

6.2 The instructions may be generic or detailed depending on the contractual requirements, but must allow for inspection steps prior to assembly which would cover up previous work. [4.9D]

6.3 All cleaners, solvents, and other fluids used in the work area shall be identified and in the case of misuse of a chemical on a product, the product shall be submitted to the MRB. (4Q6)

7.0 PROCEDURE

7.1 The creation of manufacturing work instructions shall include the following criteria:

7.1.1 The work instructions shall reflect the approved technical data including the appropriate revision level, specific requirements, etc., and any purchase order requirements if applicable. (4P3)

7.1.2 The work instructions shall adequately control the manufacturing process which includes the following: [4.9C]

1. The function to be performed.
2. The sequence of operations.
3. Inspection points. [4.9D]
4. Accept/ reject criteria.
5. Tools, gauges, and inspection equipment.

6. The drawing number and revision level.

7. Workmanship criteria.

8. Inspection methods.

9. Tolerance limits.

10. Environmental conditions.

11. Sampling plans.

12. Special drawing notes.

13. Whether or not skilled (certified) personnel is required.

14. Any special precautions for critical product protection.

15. Part marking and identification, and part stamp location requirements, when defined by approved data. (4P4) [4.9C,D,G]

7.1.3 The work instructions shall be reviewed, approved, controlled, and documented, including a system to control changes, and temporary changes, and the number of revisions allowed before incorporation. (4P5) [4.9B]

7.1.4 The manufacturing employees must be familiar with the specifications affecting the jobs they perform and have them available for use. (4P6)

7.1.5 Special identification and control methods for parts which are introduced into production prior to full acceptance from incoming inspection. To be used for "critical need" only. (4P7)

7.1.6 The work instructions may be individually written for the different types of applications as described below (7.1.7), but must include provisions for indicating acceptance or rejection of the product at any given process. (5Q4) [4.9D,E]

7.1.7 The written work instructions will generate records which will provide as a minimum:

1. nature and number of observations [4.9E]
2. number and type of discrepancies found
3. lot identity and size
4. sample sizes (if applicable)
5. corrective action (if applicable)
6. results of inspection and tests for first production configuration articles
7. inspection/ test product acceptance
8. in-process inspection steps

9. final inspection acceptance
10. periodic inspection and controls of tools used for inspection
11. test data directly traceable to the material, parts or products tested (4Q5)
12. complete and continuous monitoring of special processes (5Q4) [4.9D,E,F]

7.2 Routine Processes:

7.2.1 Daily processes used to manufacture products include but are not limited to:

1. Solder techniques
2. Component preparation and installation
3. Wire preparation (cutting, stripping, tinning)
4. Potting, RTV, Epoxies (shelf-life)
5. Mechanical assembly (loctite, torque)
6. Marking
7. Packaging
8. Cleaning and Pre-cleaning methods

7.2.2 There should be an indication of inspection status that relates to each of these processes determined by the contractual requirements or specifications. [4.9E]

7.2.3 The identification and monitoring of environmental conditions and the responsibility for enforcing these conditions shall be recorded. (4Q7)

7.3 Special Processes shall be identified, defined, and detailed in process specifications:

7.3.1 Special processes used to manufacture products might include but are not limited to: [4.9F,G]

1. Welding
2. Anodizing
3. Painting
4. Ultrasonic

7.3.2 Special processes need specific detailed work instructions prior to being used in the manufacture of the product. (5E1) [4.9F]

7.3.3 Equipment and environmental conditions must be closely monitored when using special processes.

7.3.4 Tools, and equipment must be identified and available for controlling and monitoring special processes. (5Q1) [4.9G]

7.3.5 Periodic review of processes to qualify them including the equipment, and ensure specification compliance. These qualifications are documented and maintained. (5Q2) [4.9E,F,G]

7.3.6 Periodic review of personnel certifications to ensure qualified operators are performing special processing tasks. (5Q2) [4.9,G]

7.3.7 Completion of all requirements listed in process specifications. (5Q3-1)

7.3.8 Criteria for distinguishing between acceptable and unacceptable products. (5Q3-2) [4.9,F,G]

7.3.9 Control of monitoring equipment and/ or personnel when physical inspection of processed material is impossible or disadvantageous. (5Q3-3)

7.3.10 Personnel is assigned inspection approval authority. (5Q3-4)

7.3.11 Corrective action is taken when a process is found to be out of control. (5Q5-1)

7.3.12 An investigation is implemented to ensure the acceptability of products produced while the process was out of control. (5Q5-2)

7.3.13 A corrective action is implemented as a result of the analysis of trends in process, to prevent nonconforming material. (5Q5-3)

7.4 Supplier Processes:

7.4.1 All suppliers, manufacturing products for ACR, will be approved or disapproved based on quality and delivery, and/ or evaluation of the following:

1. The specific process.
2. Equipment condition and capability.
3. Personnel training and abilities.
4. Records indicating the above criteria.

7.4.2 For suppliers that are not easily accessible, it is recommended that a minimum of a capabilities folder and a Quality survey, or Quality Manual, be kept on file in the Quality department.

7.5 Preventive Maintenance

7.5.1 Equipment used to manufacture ACR products shall be properly maintained in an effort to reduce deterioration or the potential cause of nonconforming product. [4.9]

7.6 Records

7.6.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a system for the inspection and testing of a product to verify that it conforms to the approved design, specifications, and contractual requirements.

2.0 SCOPE

2.1 This procedure applies to all ACR products. For products manufactured external to ACR only the final inspection and test methods apply.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 12 (Inspection and Test Status)

3.4 SECTION 16 (Records)

3.5 SECTION 18 (SQC)

3.6 SECTION 20 (Training)

3.7 ANSI/ASQC Q9001-1994

3.8 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Director of Quality Assurance is responsible for ensuring that the quality department reviews test instructions and procedures.
(8Q1)

4.3 The Director of Operations is responsible for ensuring the creation and maintenance of documentation which will fulfill the inspection and test product acceptance criteria.
(4P2)

4.4 The Director of Operations is responsible for ensuring that the manufacturing department reviews test procedures and instructions prior to release to ensure that the product can be tested in conformity to FAA approved design. (8P1)

4.5 The Vice President of Engineering is responsible for ensuring the preparation and maintenance of Test procedures and instructions. (8E1)

4.6 The Vice President of Engineering is responsible for ensuring that the engineering department reviews inspection processes to ensure conformance to approved design data, including FAA approved design data, and/ or purchase order requirements if applicable. (9E1)

5.0 GENERAL

5.1 The inspection/ test records generated will be used by the Quality department with support from associated departments to evaluate the inspection/ test system to determine if adjustments need to be made in an effort to produce a more reliable product and efficient system. (1Q7)

5.2 Statistical sampling plans will be based on minor, major, and critical product characteristics which will be identified by specifications in the approved design data. (6Q1)

5.3 Materials that are to be used for deliverable products shall be inspected and documented at incoming inspection. [4.10.2.3A]

6.0 PROCEDURE

6.1 Procedures and/ or instructions for inspection shall include the following requirements:

6.1.1 Inspection/testing processes shall be documented and controlled, so as to verify that specific requirements for products are met. (9E2) [4.10.1B] [4.10.1A] [4.10.5A]

6.1.2 Inspectors shall have qualification testing prior to issuance of stamps and be requalified on a predetermined schedule. (9Q1-1,2)

6.1.3 Inspectors shall have a vision test and be retested on a predetermined schedule. (9Q1-3)

6.1.4 Inspectors shall provide identification of the various levels of qualifications and various levels of expertise. (9Q1-4)

6.1.5 Inspectors shall be qualified by authorized personnel only. (9Q1-5)

6.1.6 Identification and notification when requalification and vision tests are required and documentation of the employee's qualification. (9Q1-6,7)

6.1.7 Appropriate decertification methods for operators failing to maintain qualifications. (9Q1-8)

6.1.8 Only qualified operators may conduct tests and interpret the results, or write test reports. (9Q2)

6.1.9 Inspection personnel shall use controlled and detailed methods of inspection for each area of application. (9Q3)

6.1.10 Tanks and solutions shall be sampled on a periodic basis to ensure compliance with operating specifications. (9Q4)

6.1.11 Test pieces and samples shall adequately reflect the part configuration. (9Q5-1)

6.1.12 Test pieces and samples containing minimum size anomalies, as required, that would cause rejection of the part, as applicable. (9Q5-2)

6.1.13 A method of identifying samples with known defects to prevent their introduction into the production system. (9Q6)

6.1.14 Special holding fixtures to facilitate inspection methodology, if necessary. (9Q7-3)

6.1.15 The selection of solutions that will preclude rust or corrosion. (9Q7-1)

6.1.16 The retention of protective covers on parts, such as caps, plugs, plates, etc., while in the inspection process and to reinstall the protective covers once the inspection is complete to prevent contamination, damage, or corrosion. (9Q7-2)

6.1.17 Acceptance/ rejection criteria shall be coordinated with the approved design data, or FAA approved design data or PAH, if applicable. (9Q8-1)

6.1.18 Additional review of marginal inspection results by authorized personnel prior to acceptance. (9Q8-2)

6.1.19 The use of acceptance/ rejection criteria during inspection to identify non-conforming material. (9Q8-3) [4.10.3D]

6.1.20 Control of the revision level and removal of obsolete acceptance/ rejection criteria. (9Q8-4) [4.10.3D]

6.1.21 The identification of personnel authorized to review and update acceptance/ rejection criteria. (9Q8-6)

6.1.22 The implementation of a corrective action and an investigation to ensure continued acceptability of products accepted while an inspection process was out of control. (9Q10)

6.1.23 The location and type of inspection stations shall be identified and established. (4Q2)

6.1.24 In determining the amount and nature of Receiving/Inspection ACR shall take into consideration the amount of control exercised at the subcontractors location and the recorded evidence of conformance available. This consideration shall also take place prior to product release verification. [4.10.2.2A] [4.10.2.3B]

6.2 Instructions for test/inspection shall include the following requirements:

6.2.1 Preparation and maintenance of test/inspection instructions applicable to the products/ parts produced to ensure that each article conforms to the approved design data, and FAA approved design data when applicable. (8E1) [4.10.1B] [4.10.1A] [4.10.5A]

6.2.2 Changes to test/inspection instructions are approved and controlled by authorized personnel. (8E2-1) [4.10.1A]

6.2.3 Review and verification of test/inspection instruction changes to ensure specific requirements for products are met. (8E2-3) [4.10.1A]

6.2.4 Requirements for changing test/inspection procedures and instructions and documentation of the change history by authorized personnel. (8E2-2,4)

6.2.5 The identification of inspection/test points that ensure conformity to the approved design data, and FAA approved design when applicable. (8Q1-1a)

6.2.6 Inspection/test equipment is available to verify conformity to approved design, including FAA approved design when applicable, and which can be controlled for accuracy, when required. (8Q1-1b)

6.2.7 Only approved quality personnel to authorize additions, deletions, or changes to inspection points in the test/inspection instructions or procedures, based upon inspection results. (8Q1-2)

6.2.8 Products/ parts which have been adjusted or reworked after test acceptance shall be retested/reinspected to approved procedures when the rework or adjustment could have an impact on the performance of the products/ parts. (8Q4)

6.3 Incoming Inspection and Testing shall be accomplished incorporating the following requirements:

6.3.1 New suppliers of ACR designed products will have first article inspections and tests performed prior to acceptance to ensure requirements are met. (10Q10) [4.10.2.1A]

6.3.2 Incoming materials which are accepted must be identified or segregated from items not inspected. (10Q11) [4.10.2.2B]

6.3.3 Raw material (including process material) will be examined using statistical data, test reports, Certificate of Conformance (C of C), verification of identification, shelf-life, approved design data, specifications, and contractual requirements as applicable to ensure conformance to specified requirements. (10Q8, 10Q9, 10Q10) [4.10.2.1A]

6.3.4 Materials found to be nonconforming shall be segregated and identified to be evaluated by the Material Review Board for disposition. [4.10.2.2B]

6.3.5 A Corrective Action will be addressed when a nonconformance is found during incoming inspection and is submitted to the Material Review Board (MRB) for disposition. A follow-up on the corrective action taken will be performed. (10Q1)

6.3.6 Materials received which require additional testing out of the scope of incoming inspection shall be submitted to the Test department or Engineering. The Test department or Engineering will return the materials along with the acceptance data after performing the tests.

6.3.7 Records shall be generated to contain the information from the criteria included in this procedure. Records shall contain as a minimum per product or material inspected: nomenclature, part number, supplier name, date accepted/ rejected, inspector, lot size, sample size, number of inspections made, conformance or nonconformance quantity, description of non-conformances, and action taken. (10Q12)

6.3.8 Any incoming products released for urgent production purposes shall be identified and recorded, for traceability, to enable a recall and replacement due to non-conformance to specified requirements. A sample will be held for incoming inspection to verify product conformance. [4.10.2.3A]

6.4 In-process Inspection and Testing shall be performed incorporating the following requirements:

6.4.1 In-process inspection will involve all steps taken to manufacture a product after the material is accepted through incoming inspection. As a rule, in-process inspection shall be performed when a particular characteristic cannot be verified at final inspection, such as: prior to closing an area, prior to application of a surface treatment or covering, prior to bonding processes, during torque verifications, or any other instance in which later discovery could have an adverse effect on the quality or safe operation of a product. [4.10.3B]

6.4.2 Documentation which defines the responsibility for compliance to approved design/technical data and for determining the appropriate inspection methods, attributes/ characteristics. (4Q1-1,2) [4.10.3B]

6.4.3 Physical inspection and process control methods whenever either method alone is not capable of determining the quality of parts. (4Q1-3) [4.10.3B]

6.4.4 Controls of the manufacturing system when physical inspection of parts is impossible. (4Q1-4) [4.10.3B]

6.4.5 In-process inspection at points where accurate determinations can be made. (4Q1-5) [4.10.3B]

6.4.6 Inspection work instructions shall be evaluated and approved by manufacturing, quality, and engineering as a minimum to verify that the required steps, including tests, product identification/verification are taken to confirm that the product conforms to the approved design data and shall not be released until all inspection/test documentation has been completed. Records of inspection shall be maintained. (9Q3, 9E1, 4P1, 4P2, 4P3, 4E2) [4.10.3A,B] [4.10.3C]

6.4.7 Periodic samples of tank solutions to ensure compliance to operating specifications. (9Q4)

6.4.8 During inspection products are handled in such a way as to prevent damage, corrosion, contamination, foreign objects, etc. (9Q7)

6.5 Final Inspection and Test shall be performed incorporating the following requirements:

6.5.1 Final inspection shall verify that all previous inspections and tests are complete and have been accepted and documented providing evidence of product passing inspection and/or test. Inspection records shall be kept for this activity.
(4Q12) [4.10.4A] [4.10.4B][4.10.5A]

6.5.2 All Final inspection and test criteria shall be planned and documented to ensure they meet specified requirements and to preclude the shipping of finished product until all inspection/test activities are completed. [4.10.4A] [4.10.4B] [4.10.4C] [4.10.5A,B]

6.5.3 All assemblies shall have been inspected prior to closure to verify that no foreign objects have been entrapped in the assembly. (4Q11-1)

6.5.4 Verification that parts or assemblies which have been reopened, disassembled, or tampered with after established inspection and test points, have been re-inspected and tested if required. (4Q11-2)

6.5.5 Inspection and/or test parameters will be clearly defined to ensure compliance of product specifications. [4.10.5B]

6.5.6 Only Inspectors shall be authorized for release of product. Records shall be kept for this activity. [4.10.5C]

6.6 Records: [4.10.5A,C]

6.6.1 All records generated shall be legible, accurate, and complete.

6.6.2 Inspection records shall be generated and maintained to accurately reflect compliance with specification requirements and shall include the following criteria:[4.10.5A] (9Q9)

1. The contents of each record used.
2. Record legibility, completeness, and accuracy.

3. Acceptance of material.
4. Inspector responsible for each area of test.
5. Date of acceptance.
6. Lot or serial number.

6.6.3 Qualification records for inspectors shall include the following criteria as applicable:

1. Level of certification.
2. Educational background and experience.
3. Statement of satisfactory completion of training.
4. Results of most recent visual acuity examination.
5. Actual grades obtained in each examination.
6. Percentile weight assigned to each examination.
7. Composite grade of all examinations.
8. Date of certification or recertification, or both.
9. Signature of examiner.

6.6.4 See Section 16 for the requirements of maintenance, retention, and storage of records.

1.0 POLICY

1.1 ACR will establish and maintain documented procedures to control, calibrate and maintain all inspection, measuring and test equipment, including test software, that is used to demonstrate the conformance of its products to the specified requirements. This includes control of the facilities, handling, storage, and environment. [4.11.1A]

2.0 SCOPE

2.1 This procedure is only applicable to measuring and test equipment used to demonstrate conformance to specified product requirements.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 MIL-STD-45662

3.4 SECTION 16 (Records)

3.5 ANSI/ASQC Q9001-1994

3.6 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance shall be responsible for the performance of the activities described within this procedure.

4.2 The Director of Quality Assurance shall be responsible for ensuring that the Engineering department is involved in the selection of precision measuring devices used in fabrication, inspection, and test. (7E1)

4.3 The Vice President of Engineering shall be responsible for notifying the Quality Director when tools or equipment are designed for use in the manufacture of products. (7E1)

4.4 The Vice President of Sales, Marketing, and Customer Service is responsible for participating in the investigations of significant out-of-tolerance conditions involving quality or safety. (7S1)

5.0 GENERAL

5.1 All tools and gauges used for product acceptance shall be approved, inspected, and calibrated.

5.2 All calibration shall be performed by qualified, authorized personnel only. (7Q2-4)

5.3 Inspection, measuring and test facilities, including test hard/software, shall be safe-guarded from adjustments that would invalidate calibration settings. [4.11.2G]

6.0 PROCEDURE

6.1 Measurement Methods and Standards shall be incorporated into the Calibration methodology as follows: [4.11.2G]

6.1.1 All calibrations are traceable to the National Institute of Standards and Technology, or a recognized national standard, and if no standard exists the basis for calibration is documented. (7Q4) [4.11.2B]

6.1.2 Standards used for calibration have an accuracy rate of at least 4 times more better than the calibrated gauge. (7Q5)

6.1.3 A list of measurement devices and test equipment used to determine conformity of characteristics being inspected. Including details of equipment type, identification numbers, location, check frequency, check method along with procedures that define the process. (7Q2-1) [4.11.2C]

6.1.4 Precision measuring devices that are used for fabrication shall be selected for their accuracy to determine the design criteria including determinations of adjustments and tool wear. (7P1)

6.1.5 Methods established to identify, eliminate, or adjust measurement errors that may contribute to variability. (7Q1-1)

6.1.6 Establishment of the accuracy of all measurement devices prior to initial use. (7Q1-3)

6.1.7 Provisions for the inspection and testing of equipment and tooling used for the acceptance of drawing characteristics. (7Q2)

6.1.8 Calibration methods for each measurement device and standard which includes acceptance criteria and action to be taken when results are unsatisfactory. (7Q2-2) [4.11.1B]

6.1.9 The degree of accuracy of all measurement devices and test equipment. (7Q7-1)

6.1.10 Measurement devices and test equipment capable of the accuracy necessary and adequate for the intended purpose including measurement devices and test equipment substituted for those specified. (7Q7-2) [4.11.2C]

6.2 The requirements for the identification of equipment shall be incorporated as follows:

6.2.1 Procedures provide for the inclusion of personally owned gauges used for product acceptance and identified in a unique method. (7Q8-1,2)

6.2.2 Tools which are used in the production cycle as a means of acceptance are included in the calibration system, have accurate and repeated use of product acceptance prior to use, assigned unique identifiers, and have available current applicable tool drawings. (7Q11)

6.2.3 Unique identification of individual measurement devices and standards to provide traceability to the calibration records. (7Q14-1) [4.11.2A] [4.11.2D]

6.2.4 Methods provide for standards, inspection tools, gauges, instruments, and jigs that are inaccurate or beyond the scheduled calibration cycle are identified and precluded from use until rework or recalibration is accomplished. (7Q16)

6.3 Scheduling requirements shall be incorporated as follows: [4.11.2F]

6.3.1 Periodic inspection and calibration of all measurement devices at predetermined intervals, or just prior to use. (7Q1-3)

6.3.2 Assignment of calibration schedules to all measurement devices. (7Q1-4)

6.3.3 Establishment of initial calibration intervals and allowable conditions for adjusting the intervals. (7Q1-5)

6.3.4 Procedures provide for periodic calibration of instrumentation used for controlling and monitoring special processes and for the generation and maintenance of records. (7Q9)

6.3.5 Periodic calibration of NDI (Non-Destructive Inspection) equipment, if used, and the generation and maintenance of records. (7Q10-1)

6.3.6 When applicable, measurement of black light intensity on a periodic basis (preferably daily) using a calibrated black light meter. (7Q10-2)

6.3.7 When applicable, measurement of white lights on a periodic basis using a calibrated white light meter. (7Q10-3)

6.3.8 Interval schedules are adjusted based on analysis of previous calibration results, wear, stability, purpose, and degree of usage. (7Q13)

6.4 A recall system shall be established using the following criteria: [4.11.2F]

6.4.1 A documented mandatory recall system (7Q3-1)

6.4.2 Control of measurement devices and standards that are overdue for calibration. (7Q3-2)

6.5 The Indication of Calibration Status shall incorporate the following requirements:

6.5.1 Indication of calibration status of measurement devices and standards and use of status for monitoring adherence to calibration intervals. (7Q14-2,3) [4.11.2A] [4.11.2D]

6.5.2 Procedures provide appropriate methods for rework of measurement devices and standards, and include sufficient reinspections to ensure accuracy. (7Q19) [4.11.2.F]

6.6 Environmental controls shall be established using the following criteria: [4.11.2E]

6.6.1 Procedure for the environmental controls, standards, and equipment to be used. (7Q2-3)

6.6.2 The identification of environmental conditions that are necessary for use and calibration of measurement devices and standards and the appropriate use of this equipment which might affect accuracy, stability, or calibration such as temperature, relative humidity, vibration, electrical interference, cleanliness, or other controllable factors. (7Q6-1,2)

6.6.3 Compensating corrections to calibration or measurement results obtained in an environment that departs from acceptable conditions. (7Q6-3)

6.7 SOT (significant out-of-tolerance) conditions shall be met as follows: [4.11.2B,F]

6.7.1 A determination of what constitutes a significant out-of-tolerance (SOT) condition, and the degree of uncertainty contributed to the measurement by a significantly out-of-tolerance device or standard, not to exceed 25% of the allowable tolerance. (7Q17)

6.7.2 Procedure provides for documenting significant out-of-tolerance conditions and investigating the validity of previous measurements. (7Q18-1)

6.7.3 Notification of significant out-of-tolerance conditions to the user of the measurement device or standard. (7Q18-2)

6.8 Handling/ Storage: [4.11.2E]

6.8.1 Methods for handling, transporting, and storing measurement devices and standards to ensure accuracy and reliability, and an established corrective action procedure to determine the adverse effects of mishandling. (7Q15) [4.11.2E]

6.9 Records: [4.11.2D]

6.9.1 Certificates, reports, or data sheets verifying accuracy of all calibration standards. (7Q5-3)

6.9.2 Records are generated and maintained on all equipment with the content including as a minimum:

1. Nomenclature
2. Serial Number
3. Location
4. Details of all adjustments
5. Repair or rework accomplished
6. Calibration history
7. Source and date next inspection is due
8. Legibility, completeness, and accuracy (7Q12)

6.9.3 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a system for indicating the status of inspection and test criteria and verifying the location of the inspection/ test in reference to the manufacturing build process.

2.0 SCOPE

2.1 This procedure applies to all products being manufactured at ACR.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 08 (Product Identification and Traceability)

3.4 SECTION 09 (Process Control)

3.5 SECTION 10 (Inspection & Testing)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Director of Operations is responsible for ensuring the creation of documentation for the series of steps necessary to build a product by part number in a controlled and sequential method for the purpose of identifying the manufacturing build process and status of inspection and test.

5.0 GENERAL

5.1 Procedures shall be created describing the controlled and detailed method of inspection/ test for all areas of application. (9Q3)

5.2 Inspection/ test stamps shall be issued to qualified, authorized personnel only. (4Q3, 9Q1)

5.3 Inspection records will be used by the Quality department with support from associated departments to evaluate the inspection/ test system to determine if adjustments need to be made in an effort to produce a more reliable product and efficient system. (1Q7)

6.0 PROCEDURE

6.1 An indication of inspection/ test status shall be accomplished by using a controlled sequential documented method that ensures accurate and positive identification throughout the manufacturing process. This method shall include, but is not limited to the requirements as described in this procedure: (4Q10(2)) [4.12AB]

6.1.1 Inspection marking methods shall consist of the following as a minimum:

1. Inspection marking that ensures conformance to FAA approved design data, or purchase order requirements if applicable. (4Q10(1)
2. Assurance that inspection stamps do not damage material. (4Q4)
3. Positive identification throughout the manufacturing process. (4Q10(2)

6.1.2 Acceptance/ rejection criteria shall be used during the inspection/ test process and the following requirements apply: (9Q8-3)

1. Coordinate with the FAA, or PAH as applicable. (9Q8-1)
2. Identification of personnel authorized to review and update criteria. (9Q8-5)
3. Identification of personnel authorized to review marginal results. (9Q8-2)
4. Control of the revision level and removal of obsolete criteria. (9Q8-4)
5. Samples with **known-defects** used for rejection criteria are identified. (9Q6)
6. Test pieces and samples reflect the part configuration. (9Q5(1))

6.1.3 Prior to final inspection the following criteria applies:

1. All inspections and tests shall be completed and documented. (4Q12)
2. All assemblies shall be inspected prior to final closure. (4Q11(1)
3. All assemblies which have been reopened, disassembled, or tampered with after an inspection shall be reinspected. (4Q11(2)

6.1.4 To maintain a reliable inspection, test, and manufacturing environment the following methods apply:

1. Periodic samples of tank solutions to ensure compliance with operating specifications and the timely processing of lab reports to ensure "out of control" conditions are responded to immediately during the inspection/ test cycle. (9Q4)
2. Solutions are selected to preclude rust or corrosion. (9Q7)
3. Caps, plugs, or plates used to protect parts/ assemblies during the manufacturing process are reinstalled after the inspection or test process is completed. (9Q7(2)
4. Special holding fixtures are available to facilitate inspection methodology if required. (9Q7(3)

6.1.5 Product that has not passed the required inspections/tests shall be documented and processed per Section 13 (Non-Conforming Materials) [4.12C]

6.1.6 Only product that has passed the required inspections/tests or released under an authorized concession will be dispatched, used or installed. [4.12B] [4.12C]

6.2 Records:

6.2.1 The contents of records used to establish inspection and test status may include but is not limited to the following:

1. The nature and number of observations.
2. The number and type of discrepancies found (rejected material).
3. The lot identity and size.
4. Serial numbers.
5. Sample sizes
6. Corrective action taken.
7. Inspection and test product acceptance.
8. Date of acceptance.
9. Inspector responsible.
10. Drawing/ specification number
11. Revision levels.
12. In-process inspections.
13. Final inspection acceptance.
14. Test data directly traceable to the material, parts, or products tested.
15. The results of inspection and tests for first production configuration articles (FAA only).
16. Periodic inspection and control of tools used as a media of inspection, including check fixtures, inspection gauges, and measurement instruments. (4Q5, 9Q9(3,4)

6.2.2 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a system for identifying, controlling, evaluating, and dispositioning material/products/ parts which do not conform to approved design data, specifications, or contractual requirements. [4.13.1A]

2.0 SCOPE

2.1 This procedure applies to all material used for the manufacture of ACR products including the products themselves.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 14 (Corrective Action)

3.4 SECTION 16 (Records)

3.5 ANSI/ASQC Q9001-1994

3.6 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the activities described within this procedure.

4.2 The Director of Quality Assurance is responsible for ensuring the review of non-conforming material data with upper management and analyzing the data to detect trends and determine corrective and preventive actions. (11M1)

4.3 The Director of Quality Assurance is responsible for establishing and directing the Material Review Board (MRB) and maintaining a current list of all MRB members and their designees. (11Q3)

4.4 The Director of Quality Assurance is responsible for ensuring the notification of the cognizant customer representative, when required by contract, to participate in the MRB review of products/ parts for dispositioning.

4.5 The Director of Quality Assurance is responsible for ensuring the notification of the FAA of any non-conformances identified as major in the FAA approved design data. (11C1)

4.6 The Vice President of Engineering is responsible for ensuring the review of nonconforming material to identify major or minor changes to the FAA approved design data. (11E1)

4.7 The Vice President of Sales, Marketing, and Customer Service is responsible for ensuring that users are notified and products recalled, when necessary, in the event nonconformances are suspected or known to exist in products in service. (11S1)

5.0 GENERAL

5.1 The dispositioning of any/ all nonconforming material shall only be performed through the Material Review system, including Preliminary Review. (11Q1(4) [4.13.1B]

5.2 All nonconforming material shall be controlled from presentation through final MRB disposition. (11Q3(3)

6.0 PROCEDURE [4.13.1A]

6.1 Material Review Board members, responsibilities, and limitations include, but are not limited to the following: (11Q3) [4.13.1B] [4.13.2A]

6.1.1 A Material Review Board (MRB) consisting of, as a minimum, representatives from the Quality and Engineering departments. (11Q3(1a)

6.1.2 Required qualifications of the Quality and Engineering members and how additional members are chosen. (11Q3(1b)

6.1.3 A list of approved Quality and Engineering members and:

1. Frequency that the list is updated.
2. Areas the list can be found.
3. Facsimile of MRB members signatures. (11Q3(1c)

6.1.4 Approval signature from both Quality and Engineering representatives on any MRB documents dispositioning the material/ parts "accept as is", or "repair". (11Q3(1d)

6.1.5 The completion of all necessary MRB documents, including all required signatures of MRB personnel, prior to physical release of the products/ parts from MRB control. (11Q3(3a)

6.1.6 A method for recording MRB decisions shall be implemented. (11Q3(3d)

6.1.7 A method shall be established for notification of MRB activity to functions concerned.

6.1.8 Where required by contract "use as is" or "repair" of a nonconformance shall be reported for concession to the customer. [4.13.2]

6.2 Identification and Segregation of Nonconforming Material: [4.13.1B]

6.2.1 The identification of MRB material sent to the manufacturing areas for rework or repair to preclude subsequent release without MRB approval. (11Q3(3b)

6.2.2 The identification of MRB material sent to the manufacturing areas for continued processing and reinspection of the nonconformance after subsequent operations to ensure reinspection of the specified characteristic. (11Q3(3c)

6.2.3 Methods shall be established for identification, control, and disposition of nonconforming parts/ products in an expeditious manner. (11Q1(1,2)

6.2.4 Nonconforming materials shall be controlled through segregation, marking, or tagging, in a manner which would preclude inadvertent release, or release by unauthorized personnel. (11Q3)

6.2.5 An enclosed and secure holding area shall be designated with access limited to authorized personnel. (11Q1(3)

6.3 Dispositioning of Material: [4.13.1B] [4.13.2A]

6.3.1 The disposition of nonconformances which are MINOR changes to FAA approved design data shall be limited to:

1. "accept as is"
2. "rework"
3. "repair"
4. "scrap"
5. "return to supplier" (11Q3(2a)

6.3.2 The disposition of nonconformances which are MAJOR changes to the FAA approved design data shall be limited to:

1. "rework" (to eliminate the nonconformance)
2. "scrap"
3. "return to supplier"
4. "accept as is" **(only after the major change has been approved by the FAA as a change to the FAA approved design data).** (11Q3(2b)

6.3.3 Delegation of nonconforming material disposition authority to Preliminary Review personnel for "scrap", "return to supplier", "rework", or "repair" to Standard Repair Procedures. (11Q3(3e)

6.4 Nonconforming material dispositioned as "repair":

6.4.1 Any Standard Repair Procedure used shall be controlled. (11Q1(5)

6.4.2 Instructions for processing parts/ products dispositioned as "repair" by the MRB: e.g., MRB repair traveler which includes: [4.13.2B]

1. Reinspection per the documented requirements of the repaired area and related dimensions associated with the repair to ensure the repair was completed. [4.13.2B]
2. Retest of the product as necessary.
3. Assurance that the nonconformance meets the acceptance criteria of the MRB, or is routed back to the MRB for final disposition. (11Q5(2)

6.5 Nonconforming material dispositioned as "rework":

6.5.1 Instructions for processing parts/ products dispositioned as "rework" or persons assigned Preliminary Review authority: e.g., MRB rework traveler. These instructions include:

1. Reinspection per the documented requirements of the reworked area to ensure completion of the rework. [4.13.2B]
2. Retest of the product as necessary. (11Q5(1)
3. Assurance that the former nonconformance now meets FAA approved design data.

6.6 Nonconforming material dispositioned as "scrap":

6.6.1 Any material dispositioned as "scrap" shall be identified as follows:

1. Material/ parts shall be mutilated prior to release from the MRB.
2. Material/ parts shall be identified by attaching scrap tags or labels.
3. Material/ parts shall be physically segregated; e.g., "scrap retention" crib. (11Q2)

6.7 Records:

6.7.1 Material review records shall include as a minimum:

1. Part number
2. Quantity
3. Date
4. Adequate description of nonconformance
5. Identification of Major or Minor change
6. Disposition
7. Authorized approvals (11Q4(1)
8. Records shall be complete, legible, and accurate (11Q4(3)

6.7.2 Meeting records designed to handle disposal of scrap and rework shall be maintained. [4.13.2C]

6.7.3 There shall be "password" protection on all electronic signatures. (11Q4(2)

6.7.4 See Section 14 for Corrective Action requirements.

6.7.5 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 To establish a documented system for corrective and preventative action used to discover the root cause of nonconformances or potential nonconformances, both internally and for suppliers, and to eliminate it in a controlled and documented manner. ACR will record and control any changes made to the documentation as a result of these corrective and preventative actions taken. [4.14.1A]

2.0 SCOPE

2.1 This procedure is applicable to all processes, and work operations which affect product quality.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 06 (Purchasing)

3.4 SECTION 13 (Nonconforming Material)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditor's Companion by Kent A. Keeney

3.8 02-QA-01 Control of Work Instructions

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the use and follow-up of corrective actions internally, and when warranted, for supplier/ vendor control. (10Q1(3)

4.2 When a supplier notifies ACR of suspect material which has already been delivered, it is the responsibility of the Director of Quality Assurance to ensure that the material is segregated and investigated to determine the nonconformance and resultant corrective action as applicable. (10Q7)

4.3 The Director of Quality Assurance is responsible for ensuring the notification of the functional area when an "out of control" condition is found. (6Q10(2)

4.4 The Director of Quality Assurance is responsible for ensuring that corrective action is taken when periodic reviews of the material review records identify repetitive nonconformances and to monitor the response, implementation, and effectiveness of the corrective action. (11Q6, 11Q7)

4.5 The Purchasing Manager is responsible for ensuring that the supplier corrective action request (SCAR) is sent to the supplier for review and a signature.

4.6 The Vice President of Sales, Marketing and Customer Service is responsible for ensuring that:

1. A prompt corrective action is implemented for all field returns.
2. A method for root cause determination is established for all field returns. The determination includes all service problems both in design and manufacturing. (14S3)

5.0 GENERAL

5.1 Changes to documented procedures for controlling preventative and corrective action shall be recorded and implemented in accordance with Work Instruction 02-QA-01 and Section 5, Document Control. [4.14.1A] [4.14.2E]

5.2 Preventative actions shall be initiated for problems at a level corresponding to the risks involved. [4.14.1A] [4.14.2C]

5.3 This procedure allows the application of controls to ensure that corrective actions are effective. [4.14.2D]

6.0 PROCEDURE

6.1 Corrective Action Procedure

6.1.1 All nonconforming materials processed through the MRB shall address corrective action for the root cause.

6.1.2 Repeated/reoccurring discrepancies, deficiencies which have exceeded established limits shall have a corrective action request (CAR) generated and an analysis performed to determine the root cause of the nonconformance. Actions will be taken to eliminate it and to determine the corrective measures needed to prevent recurrence. (11Q6(1,2) [4.14.2A]

6.1.3 A corrective action shall be addressed on repetitive "use as is" dispositions and an evaluation of the design shall be performed as warranted. (11Q6(3,4)

6.1.4 Manufacturing processes found to be "out of control" either through inspection examinations or statistical methods shall have a corrective action report generated to identify the problems and correct them. (5Q5) [4.14.2B]

6.1.5 When an SPC method is found to be "out of control", the following steps shall be taken.

1. All materials/ parts shall be inspected at the "tightened" level of the statistical plan.
2. Control charts shall be implemented to verify the limits are controlled.
3. An evaluation shall be performed to determine a "purge" action to remove the nonconforming material.
4. A corrective action request shall be initiated to determine the cause and corrective action while the above controls remain in effect. (6Q10, 6Q11)

6.1.6 When a nondestructive inspection process (NDI) is found to be "out of control", an investigation shall be initiated to determine if previously accepted material/ parts are still acceptable. (9Q10)

6.1.7 Establish a method of control for any deviation from the established system to allow the production of products/ parts until the completion of the corrective action. (11Q6(5)

6.1.8 Customer Service corrective actions shall have a method established for identifying, investigating (including the magnitude and nature of the complaint), locating, reporting, purging, or tracking of suspected and known unsafe conditions as well as non-conforming products in order to detect and eliminate causes of nonconforming product. (14S3) [4.14.2B]

6.2 Preventative Action Procedure

6.2.1 Procedures for preventative action shall include: appropriate sources of information such as processes, work operations affecting quality, concession, audit results, quality records, service reports and customer complaints to detect, analyze, and eliminate potential causes of nonconformities. [4.14.3A]

6.2.2 Procedures shall determine steps to deal with any problems requiring preventative action, initiate such action, and apply controls to ensure effectiveness. [4.14.3B]

6.2.3 Relevant information on action taken and changes to procedures shall be submitted for management review. [4.14.3C]

6.3 See Section 16 for the requirements of the retention, maintenance, and storage of records.

Subject:	Section: 15	Revision: I
HANDLING, STORAGE, PACKAGING, PRESERVATION AND DELIVERY	Pages: 1 of 4	Date: 9-17-98

1.0 POLICY

1.1 ACR will provide a system for handling, storage, packaging, preservation and delivery of product. [4.15.1A]

2.0 SCOPE

2.1 This procedure applies to all materials, items, or assemblies that go into ACR products including the final product itself.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 ANSI/ASQC Q9001-1994

3.4 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Operations is responsible for ensuring the performance of the activities described within this procedure.

4.2 The Vice President of Engineering is responsible for ensuring that appropriate methods of protecting products are incorporated into the technical data package (drawings, specifications, etc.), when recurrent damage is reported. (12E1)

4.3 The Director of Operations is responsible for ensuring the review and approval of all material handling, storage, packaging, and delivery specifications and procedures. (12P1)

5.0 PROCEDURE

5.1 Controlling Removal and Issuance of Products/ Materials: [4.15.3A]

1. Authorized methods for removal and/or replacement of parts. (12Q7-1)
2. Limited and controlled access to storage areas. (12Q7-2)
3. Records to be generated and maintained for parts removed from stock. (12Q7-3)
4. Issue of raw and process material accountable to a released production order. (12Q7-4)
5. Control of parts that have been quarantined as a result of a suspected nonconformance. (12Q7-5)
6. First-in/ First-out system (FIFO) will be implemented for all materials/ parts.

5.2 Packaging/ Shipping/Delivery: [4.15.4A] [4.15.5A] [4.15.6A] [4.15.6B]

1. All products/ parts which are to be packaged and shipped meet established acceptance criteria. (12Q8-1)
2. Compliance with shipping instructions. (12Q8-2)
3. Methods for packing, packaging, preservation, marking and shipping of completed products. (12Q8-3)
4. After final inspection the product is protected by its packaging until delivery to final destination. Product quality after final inspection shall be verified through the packaging inspection. Product quality during delivery will be tracked through Customer Service. [4.15.6AB]

5.3 Incorporating Design Changes:

1. Establishment of effectivity of design change. (12Q6-1)
2. Use of shop order or traveler. (12Q6-2)
3. Stock purge requirements. (12Q6-3)
4. Rework to Engineering instructions. (12Q6-4)
5. Inspection requirements. (12Q6-5)
6. Reidentification and restocking requirements. (12Q6-6)

5.4 Preventing Part Damage: [4.15.2A]

1. Instruction on the use of material handling equipment. (12Q1-1)
2. Methods for stacking parts. (12Q1-2)
3. Methods for tying, wrapping, or properly supporting parts to preclude shifting and falling. (12Q1-3)
4. Sealed type parts such as switches, circuit breakers, and relays, are protected from rough handling and contact damage from like parts or other products. (12Q1-5)
5. Methods to protect critical machined surfaces, highly polished surfaces, or plated parts. (12Q1-4)
6. Methods on the use of lift fixtures, covering on fork lift contact surfaces, protective containers, wrapping, interlayering with protective material, special racks. (12Q1-4)

5.5 Preventing Contamination: [4.15.3B] [4.15.5A]

1. Methods to protect electronic parts from corrosion, pin damage, or contamination from dust or dirt. (12Q1-5)
2. Capping tubes prone to entrapment of foreign objects, both ends. (12Q1-6a)
3. Methods to prevent fingerprints from deteriorating the product or causing inadequate adhesion. (12Q1-7a)

5.6 ESD Precautions: [4.15.2A]

1. Methods for identifying supplies and parts that require ESD handling. (12Q1-7d)

2. Controlled work station conditions for removing ESD parts from special tote trays, boxes, and packaging. (12Q1-7E)

5.7 Protection During Transit: [4.15.2A]

1. Bagging, boxing, or tying parts and material to prevent intermixing. (12Q1-8a)
2. Retaining product in the original containers as long as possible. (12Q1-8b)
3. Foam, pads, or special packaging for delicate parts that are susceptible to vibration and shock damage. (12Q1-8c)
4. Covering, tying, or bundling parts and material that may be blown out of carts, trucks, or dollies. (12Q1-8d)
5. Protecting parts and materials from adverse weather conditions that would affect the product. (12Q1-8e)

5.8 Utilizing Environmental Controls: [4.15.2A] [4.15.5A]

1. Storage of environmentally sensitive material in original containers, and, if removed for inspection, appropriately resealed. (12Q2-1)
2. Survey of stock areas to ensure compliance. (12Q2-2)
3. Upper and lower temperature and humidity control limits, when applicable. (12Q2-3)
4. Recording requirements, corrective action procedures, and objective evidence that a corrective action was taken when limits are exceeded. (12Q2-3)
5. Control of general housekeeping. (12Q2-4)
6. Training for stockroom personnel. (12Q2-5)

5.9 Product / Part / Material Segregation and Preservation: [4.15.2A] [4.15.3A,B] [4.15.5A]

1. Placement in stock of products/ parts/ materials that have met established acceptance criteria. (12Q3-1)
2. Control of uncompleted parts to prevent stocking under an identifying part number until complete as defined by drawing or specification. (12Q3-2)
3. Placement in stocking areas of parts and material under investigation for nonconformances are properly identified to prevent distribution and usage. (12Q3-3)
4. Parts and materials that are alike or similar are segregated. (12Q4-1)
5. Identification of bins, shelves, and storage areas as to their contents. (12Q4-2)
6. Protection from water, dust, and dirt damage. (12Q4-3)
7. Appropriate method for preservation. [4.15.5A]

5.10 Age-Sensitive Materials: [4.15.3B]

1. Identification and control of age-sensitive material, and material susceptible to corrosion. (12Q5-1)
2. Determination of shelf life limits by type of material. (12Q5-1a)
3. Detailed mixing instructions if different from the manufacturers. (12Q5-1b)
4. Instructions for retest and extension of shelf life. (12Q5-1c)
5. Permissible amount of time shelf life may be extended. (12Q5-1d)

6. Identification requirements for shelf life extension dates. (12Q5-1e)
7. Removal and segregation of out-of-date items in bonded areas until reinspection, retesting, and dispositioning can be accomplished. (12Q5-3)
8. Identification of bins that contain limited shelf life items. (12Q5-2)
9. Records to be generated and maintained for raw materials used in composites to ensure compliance with manufacturer's specifications. Records contain as a minimum, receipt of material, initial testing, usage, and retesting. (12Q5-4)
10. A method for periodic assessments of product in stock. [4.15.2A] [4.15.3B]

5.11 See Section 16 for record retention, maintenance, and storage.

1.0 POLICY

1.1 ACR will provide a documented system for the maintenance, identification, collection, indexing, access, filing, disposition, and storage of complete, legible, and accurate quality records. [4.16A]

2.0 SCOPE

2.1 This procedure applies to all records created through ACR's corporate quality system.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 17 (Audits)

3.4 16-QA-01-01 (Record Identification Label)

3.5 ANSI/ASQC Q9001-1994

3.6 The ISO 9000 Auditor's Companion by Kent A. Keeney

4.0 DEFINITIONS

4.1 Records - Includes all technical data relating to the manufacture of a product, i.e.: engineering drawings, specifications, quality / inspections, purchase orders, manufacturing processes, tests, contracts, etc..

4.2 Active Records - Records representing products which are being manufactured.

4.3 Inactive Records - Records representing products which were shipped at least 12 months earlier.

5.0 GENERAL

5.1 All departments will be audited on a predetermined basis for compliance with record retention, maintenance, and storage requirements. (1Q6-2)

6.0 RESPONSIBILITY

6.1 The Director of Quality Assurance shall be responsible for ACR Electronics record maintenance and storage. Records will reside in their associated departments/ areas and quality audits will provide a method of determining compliance to established procedures.

6.2 The Director of Quality Assurance shall use these records to analyze the corporate quality system to determine the systems effectiveness and adjust the system accordingly. (1Q7)

6.3 The disposal of inactive records will be at the direction of the Quality Assurance Director.

6.4 It is the responsibility of each department with data records to comply with this procedure and to create work instructions (when applicable) to ensure that a systematic approach to record retention and storage is followed.

7.0 PROCEDURE

7.1 Corporate Quality System Records Include but are not Limited to the Following:

* Quality Planning
* Indication of Inspection Status
* Incoming Inspection
* Material & Material Control
* Product Identification & Traceability
* Completed Item Inspection
* Measuring & Test Equipment
* Nonconforming Material
* Purchase Orders
* Manufacturing Work Instructions
* Stockroom Control In/Out
* Scrap Reports
* Training Records
* Government Property
* Quality System Audits
* Corrective Actions
* Supplier Ratings
* Packaging & Shipping Inspection
* In-Process Inspection
* Design Data Control
* Customer Service Difficulties
* Test Reports
* Manufacturing Process Plans
* Repair/Rework Specific Instruction
* FAA Communication Reports [4.16.A]

7.1.1 Records shall be described as Active and Inactive for the purpose of maintenance and storage scheduling. [4.16.A]

7.1.2 Records may be filed by numerical order, by date of creation, by contract/program number or any other systematic way that allows for easy record retrieval and identification. [4.16.A,B]

7.1.3 Records may be kept in file cabinets, loose leaf binders, electronic media, or any means which will ensure adequate record protection. (5Q4.3) [4.16.A]

7.1.4 Active records shall be maintained for a minimum of 1 year after the completion of manufacture before being considered inactive and ready for storage. Note: Training records will remain active records throughout an individual's active employment. [4.16.A] [4.16.B]

7.1.5 Inactive records will be maintained for a minimum of 5 years after shipping has taken place before being considered for disposal. Note: Training records will be maintained for a minimum of 2 years after termination of an individual's employment with ACR. [4.16.B]

7.1.6 Inspection records shall be kept for a minimum of 2 years after the part/ product is completed before being considered for disposal. (1Q6-1a) [4.16.B]

7.1.7 FAA-TSOA technical data file shall be kept until the part/ product is no longer manufactured, at that time copies of the records shall be sent to the FAA administrator, and all inspection and test records verifying compliance to the product shall be kept for a minimum of 2 years before being considered for disposal. (1Q6-1b)

7.1.8 The storage containers for the inactive files shall have the Records Identification Label (see 2.4) attached to all boxes to be stored. The label must be filled out completely with all information supplied or an N/A in areas not applicable. Apply the label to the box in a conspicuous place to make locating the records easier. [4.16.A]

7.1.9 Inactive records shall be stored in a protected, bonded area with ease of accessibility. [4.16.A,B]

7.1.10 Subcontractor quality records shall be maintained in accordance with this procedure. [4.16.C]

1.0 PURPOSE

1.1 ACR will establish and maintain an internal quality Auditing program. The program will objectively obtain evidence regarding actions and events to determine the degree of adherence to established criteria. It will ensure that corporate organization's objectives are met both internally and externally by evaluating that the general operations are efficient, effective, accurate, and current.

2.0 SCOPE

2.1 This procedure applies to all documented practices at ACR.

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 SECTION 01 (Management Responsibility)

3.4 SECTION 02 (Quality Systems)

3.5 SECTION 16 (Records)

3.6 ANSI/ASQC Q9001-1994

3.7 The ISO 9000 Auditors Companion by Kent A. Keeney

4.0 RESPONSIBILITY

4.1 The Director of Quality Assurance is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Director of Quality Assurance is responsible for reviewing the audit results and reporting them to upper management.

4.3 The Director of Quality Assurance is responsible for ensuring the review of the audit results by the personnel responsible for the audited area.

4.4 Upper Management is responsible for making provisions for periodic independent comprehensive audits to verify the results of our internal auditing system.

5.0 GENERAL

5.1 The purpose of quality auditing is to examine the effectiveness of management directed control programs. The philosophy of quality assurance programs is based on prevention rather than detection of problems.

5.2 Management implements control programs to prevent problems, and to prevent the reoccurrence of problems.

5.3 Quality auditing provides management with objective feedback based on facts, enabling management to make informed decisions. The primary directive of an audit is to be beneficial to the function being audited.

6.0 PROCEDURE

6.1 Procedures shall be established to implement an auditing program using the following requirements:

6.1.1 Internal audits shall be planned and documented. Equipment, material, processes performed, procedures, products, and records in all major functional areas shall be audited to determine and maintain compliance to established systems and procedures and to determine the effectiveness of the quality system. (15M1-1,3) [4.17.A,B]

6.1.2 Methods shall be established for conducting, accomplishing, and reporting the audits by personnel independent of those having direct responsibility for the activity being audited. (15M1-2) [4.17.E].

6.1.3 Schedules shall be generated to establish time periods for auditing the functional areas on the basis of status and importance. (15M1-4) [4.17.B]

6.1.4 Special audits shall be implemented when critical safety problems are detected. (15M1-5)

6.1.5 Special audits may be implemented when there are significant organizational changes. (15M1-5)

6.1.6 Special audits shall be implemented as a result of market feedback, non-conformity reports, and surveys.

6.1.7 Methods shall be generated for identifying nonconformances and for implementing corrective actions. (15M1-6)

6.1.8 The identification of personnel responsible for conducting the audits. (15M1-7)

6.1.9 Notification to upper management of the results of audits. (15M2)

6.1.10 The review of audit results and timely corrective actions by management. (15M2-1) [4.17.D]

6.1.11 Review of audit results by personnel having responsibility for the area that was audited. (15M2-2) [4.17.C]

6.1.12 Quality systems or overall quality program improvement, in addition to correcting reported noncompliance's. (15M2-3)

6.1.13 Records of audit results shall be maintained. [4.17.F]

6.1.14 Follow-up audits record the implementation and effectiveness of corrective actions taken. [4.17.G]

6.2 Records:

6.2.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

1.0 POLICY

1.1 ACR will provide a documented system for identifying the training and experience needs and provide for the training of all personnel performing activities affecting quality. [4.18A]

2.0 SCOPE

2.1 This procedure applies to all ACR employees who perform activities that affect the quality of ACR products.

3.0 REFERENCES

3.1 ACSEP 8100 (Appendix 6)

3.2 SECTION 01 (Management Responsibility)

3.3 SECTION 16 (Records)

3.4 The ISO 9000 Auditor's Companion by Kent A. Keeney, 1995 edition

3.5 ANSI/ASQC Q9001-1994

3.6 MIL-I-45208A

4.0 RESPONSIBILITY

4.1 Each department head is responsible for ensuring that the employees in their department have been properly trained for the job duties that they are assigned to perform.

4.2 The Director of Quality Assurance is responsible for ensuring that each department head is aware of any QA related training requirements for the people in their departments, including special processes.

4.3 The Director of Human Resources is responsible for providing a corporate orientation program for new employees which will include:

- Familiarization with the company's quality policy and standards
- A review of work rules
- A review of general safety rules

4.4 Supervisors are responsible for providing new employee orientation at the departmental level. The orientation will include instruction on:

- How the company's QA policy relates to their job responsibility

- The correct method for performing all quality related operations that they will be doing
- The person to ask if they have any questions

4.5 Supervisors are responsible for identifying and providing any necessary OJT training for new employees, existing employees and employees who are transferred into their department.

4.6 Department heads and supervisors are responsible for submitting documentation of all formal and/or OJT training to the Director of Human Resources.

4.7 The Director of Human Resources is responsible for maintaining records of all formal and OJT training documentation that has been submitted and for notifying department heads of any renewal and/or recertification training that is required.

5.0 GENERAL

5.1 ACR generally recruits and employs individuals who possess the technical skills, experience and educational requirements of the position that is being filled.

5.2 As of May 1, 1998, ACR deems that all personnel are trained and qualified in their existing position provided that they have been satisfactorily performing in that position for a period of at least three months prior to this date. Training for these employees shall be documented and maintained as new responsibilities become effective and training is provided to those affected employees.

6.0 PROCEDURE

6.1 **HIRING.** It is the intent of ACR to recruit and employ individuals with the skills, experience and educational background necessary to satisfactorily meet the requirements of the position for which they are hired.

6.1.1 Individuals hired who possess some, but not all of the requirements to fill an open position, will receive training on any skills that they are lacking. [4.18A,B]

6.1.2 Job descriptions will be utilized in determining the required skills, competencies and educational background considered necessary when filling an open position at ACR. [4.18A]

6.1.3 An individual's demonstration of proficiency in specific tasks or jobs, may qualify them as having met certain skill requirements.

6.2 **ORIENTATION** to the Company will be provided to new employees.

6.2.1 The Director of Human Resources will provide a corporate Orientation Program for new employees.

6.2.2 Supervisors will provide new employee orientation at the departmental level.

6.3 TRAINING NEEDS ASSESSMENT [4.18A] [4.18B] [4.18D]

6.3.1 Training needs for new employees, including training for those who will be performing special processes and operations will be evaluated by, and arranged for by their immediate supervisor.

6.3.2 Training for all employees, including training for those who will be performing special processes and operations will be evaluated by, and arranged for by their immediate supervisor based on any perceived need to improve skill efficiency, new or modified processes or procedures, or recurrent training, as applicable.

6.3.3 The Director of Human Resources will track and monitor requirements for recurrent training and provide notification to supervisors through their department head of impending renewal dates.

6.4 TRAINING to ensure that all employees affecting the quality of ACR's products are properly trained, may take place in any of the following forms:

6.4.1 Classroom training within the company by qualified ACR employees

6.4.2 On the job (OJT) training instruction by a supervisor or another trained and qualified ACR employee

6.4.3 Written memorandums or instructions

6.4.4 Assigned reading or self-study instruction

6.4.5 Classroom training within the company presented by qualified third party providers

6.4.6 Attendance at seminars, classes or other types of training offered at trade schools, colleges, and institutions of learning or independent seminar sites.

6.5 DOCUMENTATION in written form will be forwarded to the Director of Human Resources by department heads and supervisors upon completion of any employee training. [4.18C]

6.5.1 Classroom training that takes place in-house will be documented.

6.5.2 OJT training will be documented.

6.5.3 Training accomplished through written memorandums, assigned reading or self-study will be documented in the form of a signed acknowledgment by the employee.

6.5.4 Training received through attendance at seminars, classes or other types of training at trade schools, colleges, institutions of learning or independent seminar sites will be documented in the form of certificates or other written support given by the provider.

6.6 **FAA PRODUCTS** manufactured by ACR are subject to the following procedures and requirements:

6.6.1 All personnel having manufacturing, quality, test, maintenance, repair, and notification function responsibilities relating to FAA designed products shall have the appropriate training and verification documents, if applicable. (1C3, 1S3, 1P3, 1Q3)

6.6.2 Vision testing is required of all inspectors. Results are recorded and kept on file in Human Resources. (9Q1-3,7)

6.6.3 A schedule has been established for the retesting of vision on a periodic basis. (4P6, 5Q2, 9Q1, 2, 9Q9(b))

6.6.4 Any area defining special qualifications requiring certifications shall have the requirements documented and the results keep on file for recertification purposes.

6.6.5 Documentation of all test results and certification verification shall be forwarded to the Director of Human Resources. The documentation will be maintained as part of an employee's training records.

6.7 **TRAINING RECORDS** will be maintained by the Director of Human Resources.

6.7.1 In order to maintain individual privacy rights, training records will be kept separate from employee personnel files. [4.18C]

6.7.2 Training records will be maintained in the form of a computerized database for active employees.

6.7.3 Training records for terminated employees will remain in archive files for a pre-defined period of time.

1.0 POLICY

1.1 ACR will provide a system to ensure adherence to requirements in the areas of Customer Service, and Manufacturer's Maintenance Facility operations.

2.0 SCOPE

2.1 This procedure applies to all ACR products processed through Customer Service.

3.0 REFERENCES

3.1 ACSEP 8100 (Appendix 6)

3.2 SECTION 01 (Management Responsibility)

3.3 SECTION 02 (Quality Systems)

3.4 SECTION 16 (Records)

3.5 ANSI/ASQC Q9001-1994

3.6 The ISO 9000 Auditor's Companion by Kent A. Keeney

3.7 MIL-I-45208A

4.0 RESPONSIBILITY

4.1 The Vice President of Sales and Marketing is responsible for ensuring the performance of the activities described in this procedure.

4.2 The Vice President of Sales and Marketing is responsible for ensuring that the Director of Quality Assurance is notified immediately of any major malfunctions, failures, and/or defects (per 21.3) reported from the field to ensure that the FAA will be notified within a 24 hour time frame of the occurrence(s) as defined in the FAR Part 21, Section 21.3. (14C1)

5.0 PROCEDURE

5.1 Customer Service shall ensure that the following requirements are met and documented within their respective work instructions:

5.1.1 An identification of the specific function which will receive reports of all service difficulties. (14S1-1)

5.1.2 A determination must be made of the appropriate manufacturing or design responsibilities in regard to the reported problem. (14S1-2)

5.1.3 A systematic approach for tracking the accountability of service problems. (14S1-3)

5.1.4 Records must be generated for all reported service difficulties, including when the report was received, what was reported, and the actions taken. The records shall be legible, complete, and accurate. (14S2)

5.1.5 In the event the records are on tape files, microfilm, etc., they must exhibit legible data, acceptance stamps, and/ or signatures as required. (14S2-3)

5.1.6 A system created for informing the users of the service difficulties and notifying them of field purges for suspected or known unsafe conditions. (14S4-a)

5.1.7 Service problems which have originated in design and/ or manufacturing shall be investigated and a prompt corrective action implemented which shall include a root cause determination and a correction of the deficiency. (14S3 -14S3-2a)

5.1.8 A method generated for identifying, locating, and reporting suspected unsafe conditions. (14C2) (14S3-1)

5.1.9 A method for investigating, reporting, purging, tracking, and for the accountability of known unsafe features or characteristics of products. (14S3-2b, 14C2)

5.1.10 Specific organizational and individual functions must be defined for approving and issuing service bulletins, maintenance manuals, service difficulty reports, and any other related communication. (14S5)

5.1.11 A method for making available to all users of a product the descriptive data and information resulting from the incorporation of AD's which contribute to the safety of the product. (2S3)

5.1.12 Service bulletins and maintenance manuals and any changes thereof shall be coordinated with FAA engineering. (14C5)

5.1.13 Maintenance, return to service, and preventative maintenance on those products and appliances for which the MMF has been issued. (17Q1)

5.1.14 Competent personnel, and adequate facilities and equipment. (17Q1)

5.1.15 Work performed under the MMF is limited to the maintenance and return to service of products manufactured under the facilities production approval, and to preventative maintenance on those products. (17Q2)

5.1.16 For work to be performed according to the manufacturers maintenance procedure or instructions for Continued Airworthiness. (17Q3)

5.1.17 Certified mechanics and repairmen to be directly in charge in all areas of the facility where maintenance or preventative maintenance is being performed. (17Q4)

5.1.18 Entering all maintenance and preventative maintenance in the appropriate maintenance record. (17Q5)

5.1.19 Entering the information listed in FAR 43.9 and/or 43.11 in the maintenance record. (17Q5)

5.1.20 All requirements to be satisfactorily completed (17Q6)

5.1.21 Procedures for performing and verifying that servicing meets specified requirements. [4.19A]

5.1.22 Properly trained personnel are performing the servicing. [4.19B]

5.1.23 Spare parts lists, service literature and instruction are under document control. [4.19C]

5.1.24 All measuring and test equipment used is under the ACR calibration system. [4.19D]

5.1.25 Servicing responsibilities among supplier, distributor and user are clearly defined. [4.19E]

5.2 Records:

5.2.1 See Section 16 for the requirements of retention, maintenance, and storage of records.

Subject:	Section: 20	Revision: I
STATISTICAL QUALITY CONTROL (SQC)	Pages: 1 of 2	Date: 9-17-98

1.0 POLICY

1.1 ACR will provide a system for the identification of statistical techniques required for establishing, controlling and verifying process capability and product characteristics. [4.20.1A]

2.0 SCOPE

2.1 This procedure applies to all processes and product characteristics that are identified to require statistical techniques for control or verification. [4.20.1A]

3.0 REFERENCES

3.1 MIL-I-45208A

3.2 ACSEP 8100 (Appendix 6)

3.3 Section 16 (Records)

3.4 ANSI/ASQC Q9001-1994

3.5 The ISO 9000 Auditor's Companion by Kent A. Keeney

3.6 ANSI Z1.4 Sampling Procedure and Table

4.0 DEFINITIONS

4.1 Statistical Techniques - Any technique that uses statistical theory to reveal information.

5.0 RESPONSIBILITY

5.1 The Director of Quality, in conjunction with the Vice President of Engineering, shall be responsible for identifying, implementing, training, controlling and applying statistical plans and statistical techniques as deemed necessary. [4.20.2A] (6Q2)

5.2 The Director of Operations shall be responsible for determining additional statistical techniques which may effect process control.

6.0 PROCEDURE

6.1 ACR shall establish and maintain documented procedures to implement and control the application of the statistical techniques identified by the SQC policy. [4.20.2A]

6.1.1 ACR sampling plans shall be based on industry recognized standards.

6.1.2 The following statistical methods may be used to help improve the control or verification of processes or characteristics:

1. Graphical techniques, such as histograms, sequence charts, scatter plots, Pareto diagrams, cause and effect diagrams, etc.
2. Statistical control charts
3. Design of experiments
4. Regression analysis
5. Variance analysis
6. Other statistical methods, including pre-control methods, techniques and SPC.

6.2 RECORDS (6Q3 – 6Q11)

6.2.1 See Section 16 for the requirements of retention, maintenance and storage of records.