



I hereby approve the Quality Management System (QMS) described in this Quality Manual, in support of our Quality Policy and Quality Objectives. I am committed to the ongoing development, implementation and continual improvement of our quality management system.

Kenneth Statton, President

7/8/2011

Kenneth Statton, President

QM Revision Date

1000 Revision Sheet

Date	Section No.	Description of Revision	Approved by
5/7/2007	ALL	Implementation of QM	K. Statton
5/9/2007	7500 7520 7540 8210 5100 7200	Changed section owner from Steve to Kenneth Changed section owner from Steve to Kenneth Changed section owner from Steve to Ken C Changed section owner to remove Skylar Changed typographical errors in Parts A and C Added "As Deemed necessary by Ken or Skylar" for all New Orders	K. Statton
5/29/2007	7516	Added applicable definitions to PM Checklists and PM Schedules.	K. Statton
6/1/07	5100, 5500, 7500	Replaced "organization" with "M & M" for clarity	K. Statton
	4230 B	Added reference to Controlled Documents Log	Stephanie Pulley
	4230 H	Moved part H to 7200 H, for consistency	K Statton/S Guilfoyle
	4230 M	Moved to 7530 G, clarified configuration management requirements	S. Norris
	4230 M	Changed frequency of data backup	S. Pulley
	6200 H	Moved to 6200 B for clarity	S. Pulley
	6200 C	Clarified where personnel training needs are documented	S. Pulley
	6200 C	Moved to 5600 D, for clarity and alignment of responsibility	S. Pulley
	6200 F	Added ref. to Team Member Handbook, for clarity	S. Pulley
	6300	Changed Section Owner to Chuck Knight	K. Statton
	7100 B	More clearly defined where specific production planning criteria are documented	K Statton/S Guilfoyle
	7100 D	Clarified reference to Production Planning Process Map	K Statton/S Guilfoyle
	5500 B	Removed reference to assuring integrity of QMS (redundant with Section 5700)	K. Statton
	7500 H	Added reference to Job Traveler/Production Notes	K Statton/S Guilfoyle
	7516	Changed Section Owner to Chuck Knight	K Statton
	7530 B	added missing ref. to brown cards	S. Norris
	8210	changed Section Owner to Skylar Guilfoyle	L. Freeman

AS9100 Quality Manual

	8210 D	Added reference to Section 8520	S. Guilfoyle
	8220 G	Use of specific checklists clarified	L. Freeman
	8240	Section reorganized for clarity	K. Conway
	8300	Reorganized for clarity	K. Conway /S. Guilfoyle
	8300 F	Added ref. to in-process nonconforming product	K. Conway /S. Guilfoyle
	8300 H	Added appropriate ref. to Discrepancy Report, elim. Nonconformance Report	K. Conway /S. Guilfoyle
	8210	Changed Section Owner to S. Guilfoyle	L. Freeman
6/7	4100 F, G, H	More clearly defined role of Quality Process Interface Map, more clearly defined supporting Quality Processes of that Map. Made the Change Order Process Map stand alone instead of being part of the Production Planning Process Map	K. Statton
6/17	7500 A	Re-Defined as Job Traveler Packet and included documents that may be part of packet.	K. Statton
	7500 C	Added bullet item relating to standard notes in Traveler concerning clean and debur	K. Statton
	7500 E	Rewritten and organized for clarity	K. Statton
	7500 F	Changes to processes: changed "and" to "and/or" and added designated representative.	K. Statton
	7500 G	Change Order Process Map now stands alone, No Longer referenced ONLY in the Production Planning Process Map. Also added Product Development Memo Ref along with extended criteria relating to significant changes such as effect and follow-up.	K Statton/S Guilfoyle
	7500 H	Reference Purchasing Checklist	K Statton/S Guilfoyle
	4100 H	Deleted unused Quality Process Map references. Change Order Process Map added as stand alone map instead of only being a part of the Production Planning Process Map.	K Statton/S Guilfoyle
	4230 H	Changed reference from Section 7140 to Section 7200 G	K Statton/S Guilfoyle
	4230 D	Added "and/or Kenneth Statton"	K Statton/S Guilfoyle

AS9100 Quality Manual

	4230 E	Changed paragraph to read obsolete documents "are" maintained as necessary	K Statton/S Guilfoyle
	4230 N	Computer files backed up "at least every week"	K Statton/S Guilfoyle
	6200 B	Changed "Job Description" to "Employee Evaluation"	K Statton/S Guilfoyle
	6200 F	Removed reference to Evaluation Review Procedure and changed to Team Member Handbook	K Statton/S Guilfoyle
	6300 B	Removed "humidity"	K Statton/S Guilfoyle
	7100 D	Change Order Process Map stands alone, NO longer referenced as part of the Production Planning Process Map Only.	K Statton/S Guilfoyle
	7200 B	Re-organized for clarity	K Statton/S Guilfoyle
	7200 G	Change Order Process Map stands alone, NO longer referenced as part of the Production Planning Process Map Only.	K Statton/S Guilfoyle
	8210 D	Removed "Customer Returns"	K Statton/S Guilfoyle
6/19/07	7400 B	Added reference to New Supplier Approval Form and New Supplier Approval Procedure	K Statton
	7400 C	Created new section C to make disqualification of suppliers a stand alone bullet item	K Statton
	8220 A	Created new Section A to reference Internal Audit Procedure.	K Statton
	8220 B-N	Sections from this point advance (1) spot to accommodate new added section A	K Statton
	Page 6	Added current 6-19-2007 revision of QMS Cross-Reference table (CRT)	K Statton
6/21/07	ALL	Proof read to make final spelling and grammatical changes with AS9100 Team	K Statton
6/29/07	8520 H	Added Section H, description of specific actions taken if CPAR(s) are untimely or ineffective	K Statton S Guilfoyle
7/1/07	4100 F, G, H	Corrected spacing and spelling errors. No Content Changes	K Statton
	7520 A,B,C	Corrected format of section. Added clauses A & B to support more accurately requirement from AS9100.	K Statton
7/19/07	CRT, Page 6	Updated Cross Reference Table (CRT) removing Lisa Freeman from any section ownership.	K Statton

AS9100 Quality Manual

7/19/07	7400	Changed Section Owner from Lisa Freeman to Chuck Knight and names in content	K Statton
7/19/07	8220	Changed Section Owner from Lisa Freeman to Skylar Guilfoyle and names in content	K Statton
7/19/07	Org Chart, Page 7	Updated Org Chart to remove Lisa and add Chuck to Purchasing Mgmt responsibility.	K Statton
8/5/07	7500 C, 8300 H,K,N,O	Eliminated "Discrepancy Report" and replaced with "Discrepant Material Report"	K Statton
8/9/2007	7530 D	Re-written to fully define the Controlled Stamp Logs and responsibility to human Resources.	K Statton
8/9/2007	8300 M	Changed paragraph to state that M & M "does not" authorize...per AS9100 Standard	K Statton
8/13/07	7520	Re-write of section 7520 removing exclusion and explaining process and special process validation as it relates to outside suppliers.	K Statton
11/28/07	Page 7	Revised Cross Reference Chart. Changed internal process to use positions/titles for Section Ownership in place of individual (people) names.	K Statton
11/28/07	Page 8	Revised and replaced Organization Chart. Revised Assignments of Upper Management and removed names from Sub-Tier items	K Statton
11/28/07	7600F	Added "which fall outside the scope of the capabilities of M & M"	K Statton
11/28/07	ALL	Revised ALL Section Owners to Proper responsible Titles in place of individual names. Also removed ALL specific references to peoples name throughout the entire manual except for "Kenneth Statton" and replaced with the appropriate "Title" instead. Also retained (1) reference to Skylar Guilfoyle as Management Representative. Section 5500-B.	K Statton
11/28/07	ALL	Misc. grammatical and punctuation errors. None of the changes affected the meaning of the document.	K Statton
7/31/08	7540 B	Removed 1 st bullet item stating that a copy of the customer furnished calibration certificate is required	K Statton

AS9100 Quality Manual

07/31/08	Page 8	Updated and replaced Organizational Chart with current 7/28 revision	K Statton
07/31/08	5600 F, G	Added sections to manual outlining Management Review Procedure and considerations for special sessions.	K Statton
07/31/08	7540 B	Added to the new bullet point #1 the word (name) and phrase "or other identifying number"	K Statton
07/31/08	7500 A	Added M & M Check sheet to bullet points	K Statton
07/31/08	7540 B	Added bullet note provision for returning customer gages upon completion of the specific order and that these items are not logged in the M & M calibration schedule	K Statton
11/11/08	7600 L,M	Added Paragraphs L and M. Confirmation and Control of Electronic Models as supplied by Customer. Referenced and created SOP "Control of Electronic Product Models"	K Statton
11/11/08	ALL	Added Revision Date to footer so that it shows up on each page of the document.	K Statton
4/29/09	4100 J	Revised M&M physical address	E Martin
4/29/09	ALL	Deleted reference to Rev B in all instances of use	E Martin
8/21/09	8200 B	Revised "at least every 90 days" to "within a calendar year"	E Martin
8/21/09	8200 O	Added paragraph O "M&M maintains the authority to outsource the internal audit process to a certified third party organization."	E Martin
8/27/09	4100 H	Deleted the list of Process Maps.	E Martin
8/27/09	4200 B, E	Added a list of Process Maps Added details of and justification for exclusions 7.3 Design and 7.5.1.5 Servicing	E Martin
8/27/09	4230 D	Deleted 'externally supplied documents and added quality management system documents.	E Martin
	4230 F & J	Deleted Administration and added Quality will maintain document and record log	E Martin
8/27/09	5500 B	Changed Management Representative from Skylar Guilfoyle to Ed Martin.	E Martin
8/27/09	7400 B & C	Supplier approval authority was limited to Management	E Martin
8/27/09	7500 F	Management or designee is authorized to redline a Job Traveler.	E Martin

AS9100 Quality Manual

10/5/09	8300 H	Revised "The Quality Manager and Production Manager mutually" to The Production Manager and Quality Manager, or their designee,	E Martin
3/22/2010	5500 B	Changed the management representative from Ed Martin to Skylar Guilfoyle	K Statton
3/22/2010	5600 C,D,E,F	Changed references from "Checklist" to "Powerpoint" Also made wording change from procedure to guideline in Section (F)	K Statton
3/22/2010	5600 A	Changed frequency of Management Review to annually	K Statton
3/22/2010	7516, A,B	Removed requirement for daily logging of data at the machine. Added PM schedules posted at each work group or cell and available for review.	K Statton
3/22/2010	Page 10	Revised Organizational Chart and added 3/1/2010 revision to manual.	K Statton
6/14/2010	8520 I	Added Paragraph 'I'	S Guilfoyle
6/14/2010	8520	Replaced 'Production Manager' with 'Quality Manager'	S Guilfoyle
4/04/2011	3000 ALL	Added Section 3000, 3200 Updated to AS9100C	S Guilfoyle
5/11/2011	Table of Contents	Added Standard Operating Procedures and Process Maps Added new organizational chart.	S Guilfoyle
5/11/2011	3000 - Distribution	Added controls for minor corrections	S Guilfoyle
5/11/2011	3100	Updated organizational chart	S Guilfoyle
5/11/2011	All	Formatting and typographical corrections	S Guilfoyle
5/28/2011	TOC	Removed SOP 8210	SGuilfoyle
5/28/2011	8210	Removed C and D referring to M&M Customer Quality Audit	SGuilfoyle
7/8/2011	4230	Added section E. All subsequent sections advanced one letter.	SGuilfoyle

2000 Table of Contents

Section / SOP	Title
1000	Revision Sheet
2000	Table of Contents
3000	Purpose, Scope, Distribution and Reference Documents
4000	Quality Management System
4200	Documentation Requirements
4230	Control of Documents and Quality Records
SOP 4230	Control of Electronic Models
SOP 4231	Data Translations of Catia
5000	Management Responsibility
5100	Management Commitment, Customer Focus
5300	Quality Policy, Quality Objectives and Quality Planning
5500	Management Responsibility, Authority, Communication and Management Representative
SOP 5600	Management Review
6000	Resource Management
6200	Provision of Resources, Competence, Training, and Awareness
6300	Work Environment and Infrastructure
7000	Product Realization
7100	Planning of Product Realization
7110	Project Management
7120	Risk Management
7130	Configuration Management
7200	Determination of Customer Quality Requirements and Customer Communication
7210	Determination of Requirements Related to Product
7220	Review of Requirements Related to the Product and Customer Communication
SOP 7200	RMA Procedure
7300	Product Design and Development
7400	Purchasing
7410	Purchasing Process
SOP 7400	Supplier Approval Procedure
7420	Purchasing Information
SOP 7401	Time Phase Material
7430	Verification of Purchased Product
SOP 7402	Receiving Material Parts
7500	Control of Production
7516	Preventive Maintenance
7520	Process Validation
7530	Identification and Traceability
SOP 7530	Temporary Inspection Stamp
7540	Customer Property
7550	Preservation of Product
7600	Control of Monitoring and Measuring Equipment
SOP 7600	Calibration Control

AS9100 Quality Manual

8100	Measurement, Analysis and Improvement
8210	Customer Satisfaction, Customer Complaints
8220	Internal Quality Auditing
SOP 8220	Internal Quality Auditing Procedure
8230	Monitoring and Measurement of Processes
8240	Product Quality Monitoring and Measurement
SOP 8241	Material Control Inspection Procedure
SOP 8242	First Article Inspection
SOP 8243	In Process Inspection
SOP 8244	Outside Processing Inspection
8300	Control of Nonconformance
8400	Analysis of Data
SOP 8300	Inspection Processing Procedure
8510	Continual Improvement
8520	Corrective and Preventive Action
Process Maps	M & M Quality Process Maps Manual



3000 Purpose, Scope, Distribution and Reference Documents

Purpose and Scope

This Quality Manual contains policies and procedures within the quality management system. Policies, defined in this document apply to products manufactured at our facility and the same policies are flowed down to our supply chain. Any deviations from this quality manual must be submitted to the Management Representative and approved before proceeding. This document shall not be interpreted to conflict with requirements specified by customer, regulatory or statutory requirements.

Distribution

The Management Representative is responsible for control and distribution of this manual and all other controlled documentation within the quality management system. This document is uncontrolled when printed. The latest revision of this document is located on the M&M server "Controlled Documents". Users shall verify the latest revision before use. Contact the Management Representative for questions related to this manual. Minor corrections (typographical errors and clarifications) are not considered a change therefore change in revision status is not required.

Reference Documents

ISO 9001:2008, International Standard, Quality Management Systems - Requirements

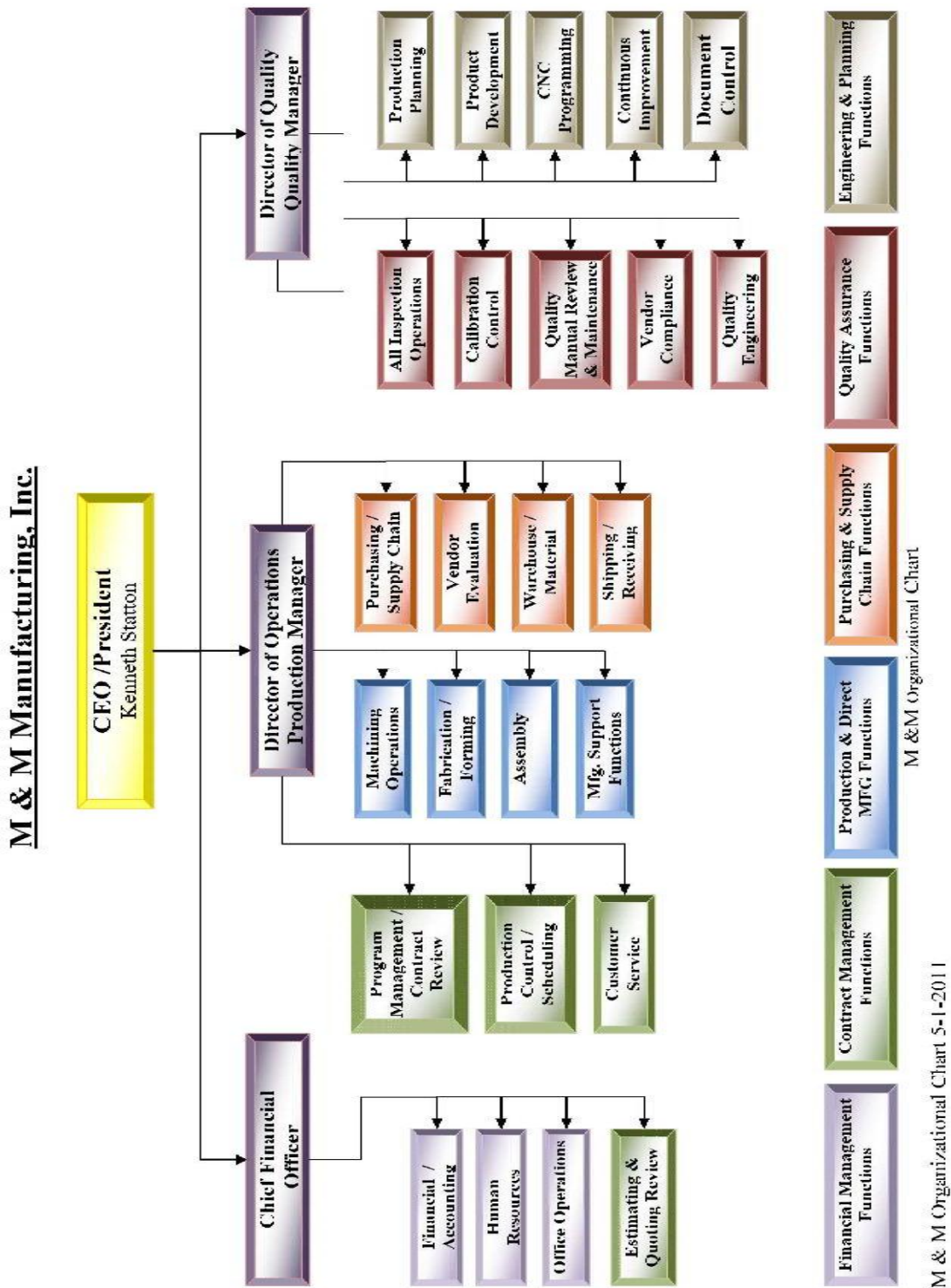
AS9100:Rev. C, Aerospace Standard- Quality Management Systems – Aerospace - Requirements.

ISO 10007, Quality Management, Guidelines for Configuration Management

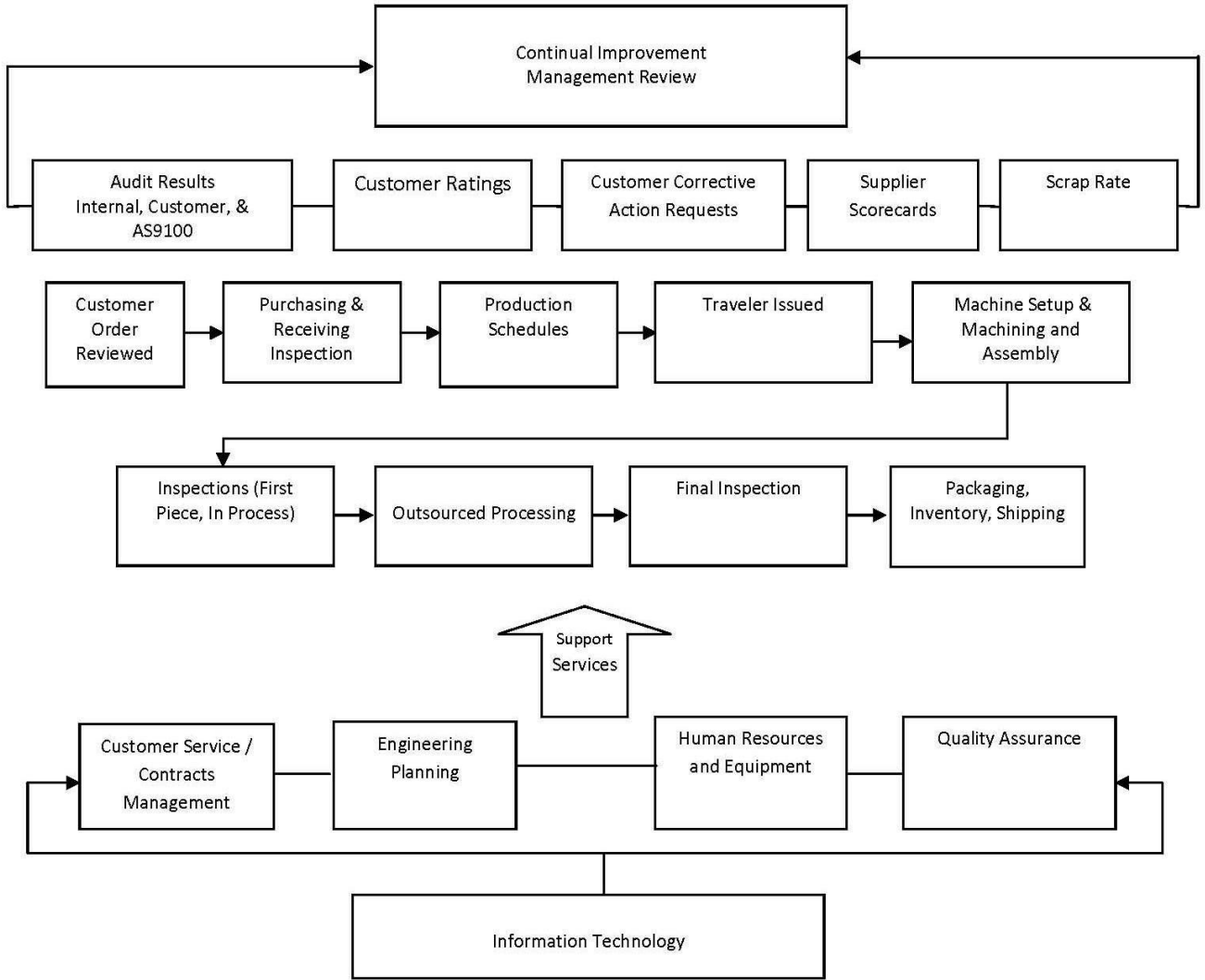
Standard Operating Procedures

Process Maps

3100 Organization Chart



3200 QMS Process Map



Section 4000 Quality Management System (QMS)

Section Owner: Mgmt. Representative

- A. This manual defines and standardizes M&M's quality management system in accordance with AS9100C and ISO9001:2008. It defines QMS processes, documents and records needed to provide evidence of customer satisfaction and compliance to customer, aviation, space and defense requirements. M&M produces safe, reliable products that meet or exceed customer and applicable statutory and regulatory requirements. M&M also provides customer and regulatory authorities' access to quality management system documentation. The intent of this manual is to improve quality, schedule and cost performance.
- B. The overall QMS process includes management responsibility, resource management, production and supporting processes, and activities for measurement and analysis. Sub-Processes needed for the QMS are determined and identified in each section of this manual and procedures. The scope of the QMS does not include design and development. Justification for this exclusion is defined in section 7000.
- C. The Organization Chart in section 3100 defines Top Management and various departments. Process Map in section 3200 depicts each process, its application, sequence and interaction.
- D. Criterion and methods are defined to ensure operations within a process are controlled, monitored, and effective. Resources and information are defined and available to support each process. Where applicable, processes are monitored and measured. Necessary actions are implemented when planned results are not achieved to promote continual improvement of processing.
- E. Processes are managed in accordance with the AS9100C standard. Outsourced processes, which affect product conformity to requirements, are controlled. Type and extent of control is defined in our purchase orders and supplier quality manual.

Section: **4200 Documentation Requirements**

Section Owner: Management Representative

- A. Quality Management System documentation, including that referenced from the Quality Manual, includes
- Quality Policy and Objectives
 - This Quality Manual (QM)
 - Documented procedures and records required by AS9100. Standard Operating Procedures required by AS9100, documented either within the QM or as referenced by the QM, including those for
 - document control, as described in Section 4230 Control of Documents and Quality Records
 - records control, as described in Section 4230 Control of Documents and Quality Records
 - purchasing (purchase order requirements), as described in Section 7400 Supplier Quality
 - process validation (as applicable), as described in Section 7520 Process Validation
 - internal quality audits, as described in Section 8220 Internal Quality Auditing
 - control of nonconforming products, as described in Section 8300 Control of Nonconformance
 - corrective action and preventive action, as described in Section 8520 Corrective and Preventive Action
 - Documents and records determined to be necessary for effective planning operation and control processes.
 - Customer Contract
 - Engineering Data
 - Manufacturing Plan – Job Traveler
 - Inspection Records
 - Quality Process Maps supporting the QM, describing process inputs, actions and outputs.

AS9100 Quality Manual

- Production Planning Process
- Production Process

Purchasing Process

Supplier Quality Process

Shipping Process

- Control of Nonconformance Process
- Change Order Process

- Various records required by customer and M & M.
- B. The extent of QMS documentation is appropriate for the size of the M&M organization, its activities, the complexity and interaction of the Quality Processes.
- C. M&M ensures that personnel have access to relevant quality management system documentation and changes and are aware of relevant procedures.
- M&M has established and maintains this Quality Manual (QM). This QM includes the scope and details of justification for any exclusions to the scope of work as described in section 7000.
 - referenced documented procedures required by AS9100
 - M&M Standard Operating Procedures referenced from the QM. These procedures are established, documented, implemented and maintained.
 - appropriate description of the interaction of Quality Processes
- D. This Quality Manual is organized to describe "what" and, as applicable, "how" M&M meets the requirements of AS9100 within its Quality Management System (QMS). This QM is organized to include
- Sections (e. g., Section 4200) and parts within Sections (e. g., part D of Section 4200)
 - Section, Title, and Section Owner as a header for each section
 - where appropriate, procedural requirements within parts of the QM
- E. Revisions to this Quality Manual are described in the Revision Sheet.

Section: **4230 Control of Documents and Quality Records**

Section Owner: Administration

- A. Documents and quality records required by the quality management system are controlled.
- B. Controlled documents are reviewed for adequacy and approved by the document owner prior to use. Controlled documents are updated as necessary and re-approved prior to use. Where revision status is used it is identified on the document.
- C. Only the latest revision of a controlled document is accessible where it is used.
- D. Quality Management Systems documents are identified in the Controlled Documents Log. Customer supplied documents include, but are not limited to customer drawings, specifications, parts lists, equipment manuals and quality standards and are maintained on the server. Customer supplied engineering data is controlled. Production Planning controls the distribution of external documents, including Job Travelers accompanied by customer drawings.
- E. Customer supplied engineering standards and specifications are controlled electronically and are considered uncontrolled if printed. Printed versions referred to where they are being used are considered for reference only and shall be marked as such to identify their status.
- F. The unintended use of an obsolete document is prevented by archiving the obsolete document (paper) or by a secured directory (electronic). As deemed necessary, obsolete documents are retained to preserve the knowledge.
- G. Quality maintains the Controlled Documents Log for controlled documents. For each controlled document, the Controlled Documents Log includes the
 - identifier, as applicable
 - document name or title
 - source of the document (internal or external)
 - current revision status
 - name of whomever approves the document for adequacy prior to first use
 - location(s) of controlled document
- H. Controlled documents and quality records are legible, readily identifiable and easily retrievable.

AS9100 Quality Manual

- I. M&M coordinates document changes with customers or regulatory authorities in accordance with contract or regulatory requirements per Section 7200 relating to Change Control.
- J. Quality records supporting the quality management system are established and maintained to provide evidence of
- conformance to requirements
 - effective operation of the QMS
- K. Quality maintains the Quality Records Log for quality records. For each quality record, the Log names the quality record and describes
- how records are identified
 - who has access to records
 - how long records are retained
 - how records are stored and protected (including archives, as applicable)
 - how records are disposed of
- L. Quality records created by and/or retained by suppliers are controlled, as applicable, per the Quality Records Log.
- M. Controlled documents and quality records are in paper or computer-based media. Computer-based controlled documents and quality records are backed up at least every week.
- N. The process used to control electronic data is defined in MM-DPD-QAP , *Quality Assurance Plan For Digital Product Definition*

AS9100 Quality Manual

Section: **5100 Management Commitment, Customer Focus**

Section Owner: President

- A. Top management / President is Kenneth Statton.
- B. Kenneth Statton is committed to the development and implementation of the quality management system and to continually improving its effectiveness.
- C. M & M President, Kenneth Statton
- communicates to the M&M organization the importance of meeting customer and statutory/regulatory requirements, as applicable as described in Section 5500 Management Responsibility, Authority and Communication
 - assures customer requirements are determined and are met while enhancing customer satisfaction as described in 7100 Planning of Product Realization, 7110 Project Management, 7120 Risk Management, 7130 Configuration Management, 7140 Control of Work Transfers, 7200 Determination of Customer Quality Requirements and Customer Communication, 7210 Determination of Requirements Related to Product, 7220 Review of Requirements Related to the Product and Customer Communication.
 - assures product conformity and on-time delivery performance are measured and appropriate action is taken if planned results are not or will not be achieved as described in Section 8100 Measurement, Analysis, and Improvement, 8210 Customer Satisfaction, Customer Complaints, 8230 Monitoring and Measurement of Processes, 8240 Monitoring and Measurement of Product, 8300 Control of Nonconforming Product, 8400 Analysis of Data, 8510 Continual Improvement, 8520 Corrective Action and Preventive Action.
 - establishes and maintains a consistent Quality Policy and measurable Quality Objectives, including those for M&M, as described in Section 5300, Quality Policy, Quality Objectives, Quality Planning
 - assures that QMS planning meets applicable requirements, including those of the Quality Objectives as described in Section 5300 Quality Policy, Quality Objectives, Quality Planning
 - defines and communicates responsibilities and authorities for quality as described in Section 5500 Management Responsibility, Authority and Communication
 - assures appropriate communication within M&M including communication regarding the effectiveness of the QMS as described in Section 5500 Management Responsibility, Authority and Communication

AS9100 Quality Manual

- conducts Management Reviews as described in Section 5600 Management Review and Standard Operating Procedure Management Review.
- assures the availability of resources (i.e., human resources and infrastructure) as described in Section 6200 Provision of Resources, Personnel Competence, Training and Awareness as described in Section 6300 Infrastructure and Work Environment



Section: **5300 Quality Policy, Quality Objectives, Quality Planning**

Section Owner: President

- A. M & M President, Kenneth Statton has created the following Quality Policy for M&M:

Exceeding our Customers' expectations for quality workmanship, on-time deliveries and consistent, superior quality is the cornerstone of our business.

As a manufacturer of precision machined parts and assemblies, M&M Manufacturing is dedicated to utilizing cutting-edge technology in an effort to extend the highest quality article and best possible value to our customer.

Our continued commitment to growth and excellence provides a solid foundation for promoting the ideals of quality throughout every aspect of our operations.

This M&M Quality Policy is appropriate for the purposes of M&M.

- B. The M&M Quality Policy provides the framework for establishing and reviewing M&M Quality Objectives. M&M Quality Objectives, consistent with the M&M Quality Policy are measurable, time-based with responsibilities, and approved by Kenneth Statton.
- C. The M&M Quality Policy and/or M&M Quality Objectives include commitments to
- comply with AS9100 requirements
 - comply with customer requirements
 - continually improve the effectiveness of the quality management system
- D. The M&M Quality Policy and Quality Objectives are communicated and understood within M&M by several means, including
- posting of the M&M Quality Policy and M&M Quality Objectives
 - Company meetings, at which the Quality Policy and Quality Objectives are discussed.
- E. The Company President assures that quality objectives are established at relevant functions and levels, measurable as appropriate, including those that support quality requirements for M&M products.

AS9100 Quality Manual

- F. Quality management system (QMS) planning meets the applicable requirements of AS9100, the Quality Policy and Quality Objectives.
- G. The integrity of the QMS Policy is maintained when changes to the QMS are planned and implemented by appropriate review and approval of changes as described in Section 5600 Management Review and 7220 Review of Requirements Related to Product and Customer.



Section: **5500 Management Responsibility, Authority, Communication and Management Representative**

Section Owner: President

- A. The President assures that quality-related responsibilities and authorities are defined and communicated within M&M as described in the Organization Chart and this manual.
- B. Skylar Guilfoyle is a member of management and is appointed Management Representative. The Management Representative has responsibility and authority to:
- ensures that QMS processes are established, implemented, and maintained
 - report to the president informally outside Management Review and formally during Management Review on the performance of the quality management system and any need for improvement as described in Section 5600 Management Review
 - supports top management in ensuring the promotion of awareness of customer requirements throughout M&M
 - serves as liaison to external parties (e. g., quality management system registrars and customers) regarding quality management system issues
 - has the organizational freedom and unrestricted access to the President to resolve QMS issues
- C. With posting of results and periodic meetings to discuss quality, the President assures appropriate communication processes are established and maintained. The President also assures applicable communication regarding quality management system effectiveness in part as described in Section 5600 Management Review.

Section: **5600 Management Review**

Section Owner: President

- A. By Review of M&M's quality management system (QMS) in Management Review at least once in a calendar year, or as deemed necessary, the President assures the continued suitability, adequacy and effectiveness of the QMS.
- B. The Management Review Checklist is the record of management review.
- C. As recorded in the Management Review PowerPoint, Management Review includes assessment of improvement opportunities and the need for change to the QMS, including the Quality Policy and Quality Objectives.
- D. In the Management Review PowerPoint , inputs to Management Review include data regarding
- any registration audits or surveillance audits
 - internal quality audits as described in Section 8220 Internal Quality Auditing
 - customer feedback as described in Section 7230 Customer Communication and Complaints
 - Quality Process performance as described in Section 8230 Process Monitoring and Measurement
 - product conformance as described in Section 8240 Product Quality Monitoring and Measurement
 - status of corrective/preventive actions, as described in Section 8520 Corrective and Preventive Action
 - follow-up actions from previous Management Reviews
 - changes that could affect the QMS
 - recommendations for continual improvement opportunities as described in Section 8510 Continual Improvement

- E. In the Management Review PowerPoint, outputs from Management Review include decisions and actions related to
- improvement in the effectiveness of the QMS and its processes
 - improvement of product related to customer requirements
 - resource needs
- F. To ensure accuracy and integrity of the review process, a standard operating procedure exists outlining the characteristics described in this section. The Management Review Procedure contains, at a minimum, the following information
- Definition of required attendees, upper level management
 - Meeting guidelines
 - Provisions for items to be added during next review
 - Follow-up guidelines to ensure implementation and evaluation from items discussed in previous review
- G. In the event that circumstances warrant, any member of the upper management team has the authority to call to order a review. This review may fall outside of the guidelines of the normal review process, but will follow the same procedural guidelines of the Management Review Procedure.

Section: **6200 Provision of Resources, Competence, Training and Awareness**

Section Owner: President and Human Resources

The President has determined and provided resources needed to implement and maintain the quality management system and continually improve its effectiveness, and enhance customer satisfaction by meeting customer requirements

- A. M&M personnel (i. e., team members) performing work affecting conformity to product requirements is competent on the basis of appropriate education, training, skills and experience.
- B. The necessary competence and training needs of personnel who affect conformity to product requirements is determined per the Employee Evaluation.
- C. New employees receive new employee orientation, including quality requirements, per the Team Member Orientation checklist. New employees are evaluated after 90 days per the Team Member Handbook.
- D. On-the-job training provides skills training, as applicable. Group technical training is supported by the local technical center.
- E. Team members are evaluated periodically per the Team Member Handbook and Employee Evaluation/Review. This evaluation includes evaluation of training effectiveness, as applicable. M&M management decides whether training has been effective, based on performance, as applicable.
- F. The records of personnel education, experience, training and qualifications are in personnel files.
- G. At periodic Company Meetings, it is assured that personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the Quality Objectives. Personnel are qualified with particular attention to satisfaction of customer requirements.
- H. M&M personnel responsible for product conformity to requirements as of May 7, 2007 are considered fully qualified and competent to fulfill those responsibilities based on their existing education, training, skills and experience as of that date.

Section: **6300 Infrastructure and Work Environment**

Section Owner: Maintenance

- A. M&M determines, provides, and maintains the infrastructure and work environment needed to meet product requirements including, as applicable, the server equipment, buildings, utilities, process equipment (e. g. hardware and software), and supporting services such as transport, communication or information services.
- B. M&M manages the work environment needed to achieve conformance to product requirements. Factors in the work environment affecting product requirements include physical, environmental and other factors such as storage, temperature, humidity, lighting and cleanliness.
- C. Consistent with the nature of M&M and its products, the M&M site is maintained in a state of appropriate order, cleanliness and repair.



Section: **7000 Product Realization**

Section Owner: President

M&M takes exclusion to design and development and process validation:

- M&M is not a product design-responsible supplier. Due to the nature of the organization and its product, M&M is excluded from compliance to the product design and development requirements of AS9100C, clause 7.3, but only as 7.3 relates to product design and development.

This exclusion does not affect the ability or responsibility of M&M to provide product that meets customer and applicable statutory and regulatory requirements.

- M&M does not service its product. Due to the nature of the organization and its product, M&M is excluded from compliance to service requirements of AS9100, clause 7.5.1.4, but only as 7.5.1.4 relates to service.

This exclusion does not affect the ability or responsibility of M&M to provide product that meets customer and applicable statutory and regulatory requirements.



Section: 7100 Planning of Product Realization

Section Owner: Customer Service

- A. Per the Production Planning Process Map, M&M plans and develops processes needed to provide product consistent with the requirements of other Quality Processes.
- B. M&M determines the following
- product quality objectives and requirements
 - process, document and resource needs specific to the product
 - required verification, validation, monitoring, measurement, inspection and tests activities specific to the product quality objectives and requirements
 - necessary records (Job Traveler, First Article Inspection Record and In-process Inspection Record) to provide criteria for inspection acceptance and records provide evidence that products provided meet requirements
 - configuration management appropriate to the product
 - identification of resources to support production and maintenance, as applicable
- C. The Job Traveler, First Article Inspection Record and In-process Inspection Record are suitable to M&M operations.
- D. Prior to documenting and implementing changes that impact planning, the effects of the change are assessed to assure compliance with customer requirements as described in Section 7110, 7120, 7130, 7140, 7200, and 7500. These changes will be carried out per the Change Order Process Map.

Section: **7110 Project Management**

Section Owner: Customer Service

- A. The President is responsible for ensuring product and quality requirements are flowed and coordinated for internal operations in a structured and controlled manner which is required to meet requirements at acceptable risk, within resource and schedule constraints. Responsibilities include defining goals and objectives of the project, assigning due dates and personnel to each project.
- B. Project management applies to products outside the scope of core products currently produced at M&M but may be extended to other projects as determined by the President.
- C. Customer Service Representative is responsible for communicating with customers when managing projects and is also responsible for the flow down of requirements and expectations in subsequent processing, i.e. defined in sections 7120, 7130, 7140, 7200, and 7500.
- D. When project management is deployed, the following activities are typical and implemented:
- Create status report
 - Update as changes are requested
 - Record effective date for implementation of change
 - Coordinate with applicable departments within M & M to obtain agreement on time and budgeting. Including quality control checks to ensure completed product meets expectations.
 - Send status report to applicable functions within M & M
 - Send status report to customer

Section: **7120 Risk Management**

Section Owner: Customer Service

- A. Risk management is a key factor to achieve customer requirements and expectations and is part of the QMS. Customer Service is the central source for communicating with customers and obtaining additional information that may not be stated in contracts or purchase orders to fulfill objectives. This information is used in the risk management process.

The President and management are responsible for risk management and taking actions to mitigate risks that exceed defined risk acceptance. Factors, such as labor, equipment, material, scheduling, and outsourced processing is identified throughout contract review, purchasing, planning, production and inspection processes. Documents are created or revised and meetings are held as needed to address and communicate scheduling, material, equipment, etc.

- B. Prior to acceptance of contract or purchase order, relevant factors are assessed to identify risk criteria and determine feasibility. Factors, include but are not limited to:
- Engineering data (drawing, model, specifications) are included or made available
 - Customer's supplier quality requirements and/or manual
 - Configuration plan
 - Quantity and delivery schedule
 - Requirement for customer approved sources
 - Lead time and cost for raw material and/or hardware items
 - Lead time and cost for outside processing, (i.e., heat treat, plating, etc.)
 - Cost of non-recurring charges if any
 - Labor hours and skill
 - Equipment; tooling, fixtures, resources
 - Inspection and test plan
 - Any special requirements and expectations not stated in the request

- C. For complex orders:

- the Product Development Team reviews product requirements
- results of the product requirements review and actions arising from the review are documented as described in the Product Development Memo
- the Product Development Team investigates, confirms and documents any risk associated with the order

- D. Records, such as quote sheets, product development memo are maintained by Customer Service Representative.

Section: **7130 Configuration Management**

Section Owner: Customer Service

- A. Configuration management process includes planning, identification, change control, status accounting, and auditing. Configuration audits are conducted during internal audits. Contracts for new products and changes to existing products are processed in accordance with section 7200 Customer-Related Processes.
- B. Part configuration is provided in the customer's engineering. Configuration is identified on Job Travelers and shipping documents. When product requirements change, the manufacturing plan is revised and appropriate personnel are informed of the change. This process is defined in section 7500 Control of Production
- C. Configuration is controlled through verification points during manufacturing. Evidence of verification is recorded on Job Travelers and Inspection Records as defined section 8240 Monitoring and Measurement of Product.
- D. Part Configuration is traceable through assignment of a unique job number which ensures control of the correct identification.



Section: **7140 Control of Work Transfers**

Section Owner: **Procurement**

- A. When planning to temporarily transfer work to a location outside the M&M site, M&M defines the process to control and validate the quality of the work per the customer drawing and the In-process Inspection Record.
- B. This process is controlled by purchasing and receiving documentation. Product and quality requirements are flowed down in purchase orders as described in section 7400.



Section: **7200 Determination of Customer Quality Requirements and Customer Communication**

Section Owner: Customer Service

- A. Per the Production Planning Process Map, requirements specified by the customer are normally determined upon receipt of a customer Purchase Order and any referenced documents. New orders are not accepted without a Purchase Order.
- B. M&M shall determine and implement effective arrangements for communicating with customers in relation to
- product information
 - enquiries, contracts or order handling, including amendments, and
 - customer feedback, including customer complaints.
- C. M&M determines customer requirements including
- Purchase Order requirements
 - delivery requirements
 - where known, requirements not stated by the customer but necessary for specified or intended use of the product
 - statutory and regulatory requirements related to the product, if any
 - any additional requirements determined by M&M
- D. The majority of orders received by M&M are typical, repetitive orders. An extensive customer quality requirements review is neither necessary nor practical for such orders.
- For such orders, product requirements are defined and unchanged from previous orders, and M&M has proven ability to meet customer requirements. For such orders, a Customer Service Representative for M & M shall sign and date the Sales Order Acknowledgement verifying review of customer requirements.
- E. As deemed necessary by Customer Service, quality requirements for new customer orders reviewed prior to order acceptance as described in the Product Development Memo. This review of requirements assures
- product requirements are defined

AS9100 Quality Manual

- order requirements different from previous order requirements are resolved
- M&M has the ability to meet the customer requirements
- special requirements of the product are determined
- risks such as new required technology, short lead times, short delivery time frame, have been identified and evaluated
- For such orders, a Customer Service Representative shall sign and date the Sales Order Acknowledgement verifying review of customer requirements.

For more complex orders requiring a more thorough review of customer requirements refer to section 7110 Project Management and 7120 Risk Management for instructions.

- F. Customer quality requirements are documented as described in the Job Traveler and In-process Inspection Record. The Job Traveler is built from the Vista Part Master.
- G. If product requirements are changed, the relevant documents are revised and relevant personnel are made aware of the change per the Change Order Process Map.



M&M
Manufacturing, Inc.

Section: **7300 Product Design and Development**

Section Owner: Customer Service

- A. M&M is not a product design-responsible supplier. Due to the nature of the organization and its product, M&M is excluded from compliance to the product design and development requirements of AS9100C, clause 7.3, but only as 7.3 relates to product design and development.

This exclusion does not affect the ability or responsibility of M&M to provide product that meets customer and applicable regulatory requirements.



AS9100 Quality Manual

Section: **7400 Purchasing Process**

Section Owner: Purchasing Manager

- A. Purchased products or services conform to specified purchase requirements as defined in the Purchase Order and referenced documents, as applicable. The controls applied to the supplier and to the purchased product or service vary dependent on the effect of the purchased product or service on M&M product.
- B. Per the Supplier Quality Process Map, suppliers are evaluated and selected based on their ability to supply products and services meeting M&M requirements. Supplier selection is typically driven by customer-designated sources which reduce risk factors associated with sourcing. But factors associated with material availability and lead times are addressed. Criteria for selection, evaluation and periodic re-evaluation are established and implemented, as described in the Supplier Quality Survey. Records, including the Survey and subsequent follow-up actions, are maintained.
- C. Management is authorized to approve new suppliers per the SOP Supplier Approval. Supplier quality systems and/or the results of the Supplier Surveys along with information provided in the New Supplier Approval Form generated by Purchasing are the guideline for management approval of new suppliers.
- D. Management has the authority to disqualify the use of a supplier. Records, including the Survey and subsequent follow-up actions, are maintained.
- E. Current M&M suppliers as of May 7, 2007 are considered fully qualified based on their demonstrated ability to supply products and services meeting M&M requirements.
- F. Purchased "products" include products and services affecting customer requirements (e.g., raw materials, hardware components for assemblies, special purchased tooling, inspection and test equipment, calibration and outsourcing) provided by suppliers on the Approved Supplier List.
- G. M&M reviews and records the performance of approved suppliers at least every 12 months, to reestablish the level of ongoing control of the supplier. Reports will be generated to ensure materials needed for production are procured in time to meet delivery requirements as defined in SOP Time Phase Material.
- H. The scope of approval for each approved supplier is per the Approved Supplier List (ASL). Suppliers are added to The Approved Supplier List (ASL) per the New Supplier Approval Procedure. At a minimum, the ASL contains the vendor name, approval status (approved, disapproved, conditionally approved), and scope of approval (material, process)
- I. Specific purchasing information in the Purchase Order includes, as applicable:

AS9100 Quality Manual

- a complete description of the product or service purchased, including the name or other positive identification, and applicable issues of specifications, drawings, process requirements, inspection instructions and other relevant technical data
 - any requirements for M&M approval of the product or service, including
 - personnel qualifications
 - supplier quality management system requirements
 - verification requirements when M&M or its customer intends to perform verification at a supplier's site
 - requirements for design, test, examination, inspection and related instructions
 - requirements for test specimens (e. g., production method, number, storage conditions) for design approval, inspection, investigation, or auditing
 - any requirements for the supplier to notify M&M regarding
 - any nonconforming product and, as applicable, to obtain M&M approval
 - any changes in product or process definition and, as applicable, to obtain M&M approval
 - requirements for right of access by M&M, the customer and regulatory authorities to all supplier sites and supplier records involved in the Purchase Order
 - requirements by suppliers to pass down any requirements from the Purchase Order to their suppliers, including critical characteristics, as applicable
- J. As applicable, Customer Service assures that both M&M and suppliers use customer-approved suppliers of special processes.
- K. Customer Service or a designated member of the purchasing team approved by Customer Service verifies specified purchase requirements are adequate, prior to issue of the Purchase Order.
- L. M&M assures conformity of all products purchased from suppliers on the Approved Supplier List, including products from customer-designated suppliers.

AS9100 Quality Manual

- M. Per the Supplier Quality Process Map and SOP Receiving Material/Parts, verification of supplied product or service is established and implemented to assure that the product or service meets specified purchase requirements.
- N. Inspection includes receiving inspection, and verification includes review and approval of quality certificates. Specific inspection or verification activities include
- inspection of products upon receipt
 - inspection or review of an included supplier quality record (e. g., raw material certification or hardness test report) when product verification is delegated to the supplier.
 - M&M customer verification of supplied product at M&M site or supplier's site
- O. The data in a supplier quality record meets applicable specifications. Certifications or test reports for raw material are periodically validated. M&M will seek the assistance of an accredited testing lab to verify accuracy of Supplier provided Certifications and/or Test Reports.
- P. When product verification is delegated to the supplier, the requirements are specified in the Purchase Order. M&M does not currently have a Supplier Delegated Program. If a delegated program is created in the future, the program requirement for delegation will be defined and a register of delegations will be maintained. M&M does not verify product at the supplier's site. Where the customer intends to perform verification at the supplier's site, M&M shall state the intended verification arrangements and method of product release in the purchase order.
- Q. Customer verification of supplied product quality is not evidence of effective supplier quality control. Such verification does not absolve M&M of its responsibility to provide acceptable product, nor does it preclude subsequent rejection by the customer.
- R. Nonconforming supplier performance and/or supplied product is handled per Section 8300 Control of Nonconforming Product.
- S. Purchased product is not used or processed until it has been verified as conforming to specified requirements.

Section: **7500 Control of Production**

Section Owner: Production Manager

A. Per the Production Process Map, production is carried out under controlled conditions. First article inspection is performed in accordance with the AS9102 standard. FAI provides a process for inspection and verification activities, and documentation of a representative item from the first production run of a new part. FAI is also performed following any subsequent change that invalidates the results of a previous first article inspection. The Job Traveler Packet which may include all or part of the following documentation

- First Article Inspection Record
- M & M In- Process Check Sheet
- normally the customer drawing and/or parts list with specific instructions
- raw material certificate, as applicable
- CNC programs and setup sheets, as applicable
- Job Traveler

C. Production Planning considers, as applicable

- Creation of a Job Traveler Packet
- identification of in-process verification points when adequate verification of conformance cannot be performed at a later stage of production
- the design, manufacture, and use of tooling so that variable measurements can be taken, particularly for critical characteristics

D. Controlled conditions include

- available data regarding product characteristics per the Job Traveler with reference to other documents or /specifications
- In-process Inspection Record and First Article Inspection Record
- material certifications and test reports
- work instructions (Job Traveler)
- suitable equipment and available monitoring and measuring equipment

AS9100 Quality Manual

- actively implemented monitoring and measurement (e. g., final Inspection, in-process inspection, receiving inspection)
 - effectively implemented finished product release and shipping activities, per the Final Inspection Checklist
 - accountability for all product during production (e.g., parts quantities, split orders, nonconforming product), part accountability to ensure nonconforming parts have been destroyed, per the Discrepant Material Report
 - evidence that all production and inspection operations have been completed as planned, or as otherwise documented and authorized, per the Job Traveler and the Final Inspection Checklist
 - provisions for prevention, detection and removal of foreign objects, cleaning and debur as a standard practice per the job notes/production notes section of the Job Traveler
 - criteria for workmanship, which shall be specified in the clearest practical manner (e.g., written standards, representative samples or illustrations or special instructions).
 - When critical items are manufactured, the manufacturing plan (Job Traveler) shall control key characteristics and identify tooling used to measure variable data. This process is defined in in section 8240.
- E. M&M is a build to print facility and all requirements for products are defined by the customer. Production operations are carried out in accordance with approved data. These data contain, as applicable,
- customer drawings, parts lists, Job Traveler, First Article Inspection Record and In-process Inspection Record, including inspection operations and production operations
 - a list of specific or non-specific tools and computer numerical control (CNC) machine programs required and specific instructions associated with their use (i. e., setup sheets)
- F. Production equipment, tools and applicable programming are validated prior to use and maintained and inspected periodically. The Job Traveler Packet identifies the most current revision of tools and programs required. Validation prior to production use includes verification of the first article produced during that setup to the design data/specification, per AS9102 as applicable.
- G. Customer Service may request changes to production processes which require management approval. Management or designee is authorized to redline a Job Traveler. Customer Service identifies and obtains acceptance of changes

that require customer or regulatory authority approval in accordance with contract or regulatory requirements.

- H. Changes affecting processes, production equipment, tools and programs are documented and controlled per the Change Order Process Map. Significant changes may require the use of the Product Development Memo as outlined in Section 7100 with the following additional considerations
- Results of changes are assessed to confirm that the desired effect has been achieved
 - Such results have been achieved without adverse effect(s) to product quality
 - Applicable follow-up within a reasonable amount of time to examine consistency of achieved results
- I. Products are preserved and protected during processing and delivery to the customer. Product is identified per the Job Traveler and handled, packaged, stored and protected to assure the product conforms to specifications.
- J. Preservation of product, per customer product specifications and/or applicable regulations, includes provisions for
- Cleaning
 - Prevention, detection and removal of foreign objects
 - Special handling for sensitive products
 - Marking and labeling including safety warnings
- K. Shipping and receipt of product, as applicable, is described per the Shipping Process Map.
- L. M&M does not service its product. Due to the nature of the organization and its product, M&M is excluded from compliance to service requirements of AS9100, clause 7.5.1.4, but only as 7.5.1.4 relates to service.

This exclusion does not affect the ability or responsibility of M&M to provide product that meets customer and applicable regulatory requirements.

Section: **7516 Preventive Maintenance**

Section Owner: Maintenance

- A. Maintenance resources are provided for machine/equipment maintenance to provide planned preventive maintenance activities. PM Schedules and Checklists are posted in each applicable machining cell or group. These schedules and checklists are specific to the types of machines (e.g., mills, lathes, saws, etc.) and located in that working area, group or cell and available for review by operators.
- B. PM Schedules and checklists are designed around a daily use, monthly review and annual service of the applicable equipment.
- C. Preventive maintenance includes
- use of checklists, per the Maintenance Record
 - easily-available replacement parts. Most commonly used parts such as filters and belts are kept on-hand, to reduce extended machine down time in the event of necessary replacement.
 - packaging and preservation of unused equipment and tooling, as applicable
 - recommended process improvements
 - predictive methods, including cooling oil sampling
- D. Maintenance objectives are reviewed, as applicable, per Section 5600 Management Review.

AS9100 Quality Manual

Section: **7520 Process Validation**

Section Owner: Quality Manager

- A. M & M does not currently perform any processes in house that would require validation. All processes (including those referred to as special processes) are performed outside of the M & M facility.
- B. Per the AS9100 Standard, M & M has no production process (including special process) for which the resulting output cannot be verified by subsequent monitoring or measurement, or for which non-conformances become apparent only after the product is in use.
- C. Process validation when using outside sources is demonstrated by
- Using only suppliers on the M & M Approved Supplier List (ASL) or, as required, specific approved suppliers as directed by Customer Purchase Order requirements
 - Outlining the customer process requirements on the M & M Purchase Order in order to achieve a planned result
 - Certificate of Conformance or Process Certification provided by the supplier verifying completion of the requested process to the requested standard or specification
 - Visual inspection
- D. As applicable, production equipment, tools and programs are validated prior to use and maintained and inspected periodically. Validation prior to production use may include verification of the first article produced to the design data/specification.

Section: **7530 Identification and Traceability**

Section Owner: Production Manager

- A. Per the Production Process Map, product is identified throughout the production process with the Job Traveler and Brown Card to identify containers belonging to that specific job.
- B. M&M maintains the identification of the configuration of the product with the Job Traveler and brown cards, as applicable, in order to identify any differences between the actual configuration and the agreed configuration. If AS9100 orders are split in production, another Job Traveler and brown cards, as applicable, are created.
- C. Inspection and test status is identified throughout the entire manufacturing process. This is accomplished on the In-Process Inspection Record and First Article Inspection Record. The person performing inspection and/or test verifies inspection and test status by stamping the Job Traveler for the applicable operation.
- D. Manufacturing, Inspection and Document Control Stamps are administered by Human Resources. A Log of stamps issued is maintained by Human Resources. This Log is a controlled Quality Record and maintained on the M & M Server. Representative Samples of each type of controlled stamp are contained as an image in that respective Log.
- E. Traceability, the unique lot traceability identification of the product, is controlled and recorded on the Job Traveler and the brown card, as applicable.
- F. Whatever the level of traceability required by customer requirements, regulatory or other established requirement. All products manufactured are traceable to the material batch, manufacturing lot, and scrap. Quality records include
 - individual part identification, including the Job Traveler number, customer Purchase Order number, part number and revision level, and manufacturing date (normally date shipped) (AS9100 only)
 - identification to be maintained throughout the product life
 - identification of an assembly, its components to be traced per the Job Traveler
 - in a given product, a sequential record of its production (manufacture, assembly, inspection) to be retrieved per the applicable Job Traveler.
- G. M&M maintains the identification of the product in order to identify any differences between the actual configuration and the agreed configuration per

AS9100 Quality Manual

the Job Traveler, Brown Card/Tag, Red Tag and/or applicable paint to identify scrap product or material prior to rendering it unusable.

- H. M&M maintains control of customer part numbers/revision levels throughout production. M&M maintains control of part numbers/revision levels in Purchase Orders to suppliers, as applicable. Variations to key characteristics of customer product are managed to assure product fit and finish, service life and manufacturability.



Section: **7540 Customer Property**

Section Owner: Quality Manager

- A. M&M exercises care with customer property under its control and/or being used by M&M. Customer property is appropriately identified (e.g., tagged) and verified, protected and safeguarded while at the M&M site. This includes all customer property for use and incorporated into the product whether it be intellectual property or personal data.
- B. For customer-provided inspection and/or test equipment, control is assured by
- Tagging with Customer ID (name) and applicable Serial Number or other identifying number
 - Items, requiring calibration that are maintained for indefinite periods of time are included on the M&M Calibration Schedule and are maintained per M&M calibration procedures
 - Returning items that are used for a specific run of parts or assemblies with the final shipment of that order. Additionally, these items, because they are at M & M specific to an order are not entered on the M & M calibration schedule
 - Gauges are maintained in the Inspection Room until such time as required for use during the machining/fabrication process
- C. The need for customer property is described in the production notes section of the Job Traveler, including, as applicable
- returnable packaging
 - inspection equipment
 - tooling
 - raw material
- D. If any customer property is lost, damaged or otherwise found to be unsuitable for use, the facts are reported to the customer, normally via e-mail. Records of notifications shall be maintained. Nonconforming customer product is handled as described in Section 8300 Control of Nonconforming Product.

Section: **7550 Preservation of Product**

Section Owner: Quality Manager

- A. Product conformance is preserved during internal manufacturing, to and from outside processing, to internal storage of finished and delivery to the customer. Preservation includes identification, handling, packaging; storage and protection. This applies to all materials, parts, assemblies and subassemblies. Preservation of product shall also include, where applicable to manufacturing specifications.

Other provisions include where applicable

- Marking or labeling
 - Cleaning
 - Special handling for time and temperature products. Stock rotation and periodic verification is conducted
 - Prevention of foreign object damage
 - Packaging
 - Special handling of hazardous materials
- B. Finished goods in storage are checked periodically and engineering (revision levels) are verified when product is released. When an order is received for a part in stock, the revision level is compared to the purchase order requirement. If the revision level is different, changes are determined by engineering. If the part meets engineering in the as is condition, a job traveler is created to re-identify the part to the new revision level. If the part is not usable as is, engineering determines whether or not the part can be reworked into the new configuration (add holes, add finish coatings, etc). If so, a job traveler will be issued to perform the rework. If stock is not usable or reworkable, a job traveler is created to manufacture the parts on order.
- C. Marking and labeling of manufactured products is controlled to ensure conformance to specified customer requirements. MSDS sheets are located in the shop area and updated as revisions are released.
- D. Quality documentation (packing list and certificate of conformance) is protected before delivered.

Section: **7600 Control of Monitoring and Measuring Equipment**

Section Owner: Quality Manager

- A. Monitoring and measuring equipment is calibrated and controlled per the Calibration Control Procedures.
- B. Monitoring and measuring is established consistent with monitoring and measuring requirements as described in the Job Traveler, First Article Inspection Record, and the In-process Inspection Record.
- C. M&M has determined the monitoring and measuring equipment required to provide evidence of conformance to customer quality requirements determined in Section 7200 Determination of Customer Quality Requirements.
- D. Monitoring and measuring equipment includes company-owned, personally-owned and applicable customer-supplied equipment.
- E. Where necessary to assure valid results, monitoring and measuring equipment is normally calibrated or verified or both at specified intervals, or prior to use, against established standards traceable to national measurement standards.
- F. Monitoring and measuring equipment requiring calibration, which fall outside the scope of the capabilities of M & M, is calibrated by an approved and accredited supplier as described in the Approved Supplier List.
- G. Monitoring and measuring equipment is
 - adjusted or re-adjusted, as necessary
 - identified to allow calibration status to be determined with a calibration sticker or stencil
 - safeguarded from unintended adjustments that would invalidate measurement results
 - protected from damage and deterioration during handling, maintenance and storage
 - recalled for calibration per the calibration database
- H. Environmental conditions are suitable for calibrations, inspections, measurements and testing carried out at the M&M site.
- I. Monitoring and measuring equipment status master records are maintained in the Calibration Records database located on the server, including records of equipment type, unique identification, location, frequency of checks, check method and acceptance criteria.

AS9100 Quality Manual

- J. The results of calibration and/or verification are recorded in the M&M Calibration Record. Traceable measurement standards exist for all monitoring and measuring equipment.
- K. When monitoring and measuring equipment is found not to conform to requirements, including calibration and verification requirements, the validity of previous measured results is assessed and recorded on the M&M Calibration Record specific to that tool. M&M takes appropriate action on any suspect equipment and/or suspect product.
- L. The ability of computer software used in the monitoring and measuring of specified requirements is confirmed. Confirmation is prior to initial use, and reconfirmed as necessary.
- M. Where Electronic Product Models (EPM) are received by M&M from the customer in a manufacturing effort, M&M has expressed written procedures for care, custody, and control as referenced in Standard Operating Procedure (SOP) "Control of Electronic Product Models".



Section: **8100 Measurement, Analysis, and Improvement**

Section Owner: Management Rep

- A. M&M plans and implements monitoring, measurement, analysis and improvement processes needed to
- demonstrate conformity to product requirements as described in Section 8240 Product Quality Monitoring and Measurement
 - assure conformance of the quality management system as described in Section 8230 Process Quality Monitoring and Measurement
 - continually improve the effectiveness of the quality management system as described in Section 8510 Continual Improvement
 - M&M determines applicable methods for measurement, analysis and improvement, including statistical techniques and the extent of their use per Section 8240 Product Monitoring and Measurement.



Section: **8210 Customer Satisfaction, Customer Complaints**

Section Owner: Customer Service

- A. Effective arrangements are determined and implemented for communicating with customers. Communications include, but are not limited to customer Purchase Orders, contracts, order handling, changes, customer feedback, and customer complaints.
- B. M&M monitors customer-provided data, as applicable, relating to customer perception. Customer-provided data includes:
- Product Conformity (defect)
 - On-Time Delivery (scorecard or rating)
 - Corrective Action Requests
 - Complaints
- C. Customer complaints are normally documented per the M&M Customer Complaint Report. As determined by Customer Service, legitimate customer complaints require corrective/preventive action per Section 8520 Corrective and Preventive Action.



AS9100 Quality Manual

Section: **8220 Internal Quality Auditing**

Section Owner: Lead Auditor

- A. The M & M Internal Audit Procedure serves as the guideline for the M & M Internal Audits of the Quality Manual, Quality Processes/Procedures and Quality Process Maps.
- B. Internal quality audits are scheduled by the Lead Auditor and a Management Representative within a calendar year to determine whether the QMS
- conforms to requirements of this Quality Manual and of AS9100
 - is effectively implemented and maintained
 - production processes conform to the Job Traveler and the In-process Inspection Record and that those processes are effective
 - products, at appropriate stages of production and delivery conform to specified requirements
- C. Internal quality audits include
- process audits per Quality Process Maps listed in Section 4100 Quality Management System (QMS), to assure conformance of Quality Processes supporting the QMS
 - quality management system audits, to assure conformance to the Quality Manual
 - Customer Perspective Audits of finished product
- D. Internal quality audit planning considers the status and importance of the processes and areas to be audited, as well as the results of previous internal quality audits, as applicable. If an internal/external nonconformance or customer complaint occurs, the audit frequency is increased, as applicable.
- E. The Management Representative
- plans and manages internal quality audits
 - defines the internal quality audit scope and frequency as described in the Internal Quality Audit Schedule and the resultant Internal Audit Report
 - selects the auditor to assure objectivity and impartiality of the audit process

AS9100 Quality Manual

- assures that auditors do not audit their own areas of responsibility
 - reports results and maintains records of internal quality audits as described
 - issues Corrective/Preventive Action Requests, as applicable
- F. Per the Internal Quality Audit Schedule, internal quality audits are sequenced by process and based on the Quality Process inputs, actions and outputs.
- G. The Internal Quality Audit Schedule lists audits completed/scheduled in a 12 month period, as applicable.
- H. Audit methods are defined as described in the applicable, specific Internal Quality Audit Checklist.
- I. Audit Checklists and Quality Process Maps are developed, maintained and used to audit QMS requirements, as applicable. The acceptability of the Audit Checklists and Quality Process Maps is measured against the effectiveness of the internal quality audit process and overall M&M performance.
- J. Internal quality audits meet applicable contract and/or regulatory requirements.
- K. Records of the audit and their results are maintained, including
- Internal Quality Audit Checklists
 - Internal Quality Audit Schedule
 - various auditor notes with results of the audit
 - auditor notes on various Quality Process Maps
 - the Internal Quality Audit Report referencing Corrective/Preventive Action Requests (CPAR), as applicable
- L. Internal quality auditors are qualified based on a minimum three-day formal training accompanied by a Certificate of Attendance.
- M. Normally the original internal quality auditor follows-up to verify corrective/preventive action taken, reporting verification results as described in the CPAR.

- N. Management responsible for the area being audited ensures that corrective/preventive action is taken without undue delay to eliminate detected nonconformance and cause(s) as described in the CPAR.
- O. M&M maintains the authority to outsource the internal audit process to a certified third party auditor.



Section: **8230 Monitoring and Measurement of Processes**

Section Owner: Management Rep

- A. Quality Processes are monitored and, where applicable, measured to assure these processes achieve planned results consistent with Quality Objectives. Results of process monitoring and measurement are reviewed at Management Review as described in the Management Review Checklist.
- B. Monitoring and/or measuring methods include
- results of internal quality audits as described in Section 8220 Internal Quality Auditing
 - periodic QMS registration and surveillance audits
 - customer-supplied performance data
 - Product Conformity (defect)
 - On-Time Delivery (scorecard or rating)
 - Corrective Action Requests
 - Complaints
 - Performance data provided by the Customer.
- C. When planned results consistent with Quality Objectives for a Quality Process are not achieved the process nonconformance is evaluated to determine if it has resulted in product nonconformance. As applicable, nonconforming product is identified and controlled per Section 8300 Control of Nonconformance. As applicable, corrective and preventive action is taken per Section 8520 Corrective and Preventive Action, to assure product conformance.
- D. Product conformity and on-time delivery performance are measured and appropriate action is taken if planned results or not or will not be achieved as described in section 8230.

Section: **8240 Product Quality Monitoring and Measurement**

Section Owner: Quality Manager

- A. Per the Production Process Map, product characteristics are monitored and measured to assure that product requirements have been met as described in the Job Traveler and In-process Inspection Record.
- B. First article inspection is performed in accordance with section SOP8242.
- C. The Job Traveler Packet will include the following inspection plan:
 - Criteria for acceptance and/or rejection
 - Sequence measurement and testing operations
 - A record of the measurement results (indication of acceptance or rejection)
 - Type of measurement equipment required and any specific instructions associated with their use
- D. When critical (key) characteristics have been identified, they are monitored and controlled per the In-process Inspection Record.
- E. Statistical techniques are used to support sampling of product at receiving inspection, final inspection and for selection and inspection of critical characteristics per the In-process Inspection Record per
 - ANSI/ASQC Z1.4 Sampling Procedures for Inspection by Attributes
 - ANSI/ASQC Z1.9 Sampling Procedures for Inspection by Variables for Percent Nonconforming.
- F. Product is not used until it has been inspected or otherwise verified as conforming to specified requirements. Positive recall procedures do not apply.
- G. Evidence of conformance to acceptance criteria (i. e., quality requirements) is maintained per the Job Traveler and In-process Inspection Record. The Job Traveler and In-process Inspection Record indicate the person(s) authorizing release of product.
- H. When M&M uses sampling inspection as a means of product acceptance, the plan is statistically valid and appropriate for use. The plan precludes the acceptance of lots whose samples have known nonconformances. When required, the plan is submitted for customer approval.
- I. Product is not released until requirements of the Job Traveler, First Article Inspection Record, In-process Inspection Record and Final Inspection Checklist have been completed and product requirements are found

acceptable.

- J. M&M does not perform product testing or provide product qualification.
- K. When product is released all required documentation is safeguarded and accompanies each shipment.



Section: **8300 Control of Nonconformance**

Section Owner: Quality Manager

- A. Sources of potential quality management system (QMS) nonconformance may be identified in
- an internal quality audit
 - a registration/surveillance audit
 - a supplier quality audit
 - a customer complaint
 - Management Review
- B. M&M takes corrective/preventive action to eliminate the cause of QMS nonconformance as described in Section 8520 Corrective and Preventive Action.
- C. Sources of potential product nonconformance include
- a supplied material, service or product
 - a nonconforming product in-process
 - nonconforming finished product
- D. Nonconforming product is controlled per the Control of Nonconformance Process Map.
- E. Nonconforming product, including unidentified or suspect product, product from suppliers and product returned from the customer, is painted red or identified with a Red Tag designating the existence of a non-conformance.
- F. Nonconforming product, other than in-process nonconformance, is segregated and maintained in the MRB (Material Review Board) area.
- G. Nonconforming parts in process at the machine are maintained with the order until the order is sent to Inspection. While with the machine or order, nonconforming parts and assemblies are painted red or tagged with a red Reject Tag the in the same manner as parts identified at the inspection level.
- H. The Quality Manager, or their designee, reviews and dispositions nonconforming product by signature or stamp and date on the Discrepant Material Report and the Reject Tag.
- I. M&M does not use dispositions of use-as-is or repair (not required), unless specifically authorized by the customer. M&M will obtain a letter of

concession before shipment and the record of concession is maintained in accordance with contract requirements. M&M product is produced to customer design, and a nonconformance results in a departure from the contract requirements.

- J. Product with a scrap disposition is conspicuously and permanently marked, or positively controlled, until physically rendered unusable.
- K. In addition to any contract or regulatory authority reporting requirements, M&M reports delivered nonconforming product that may affect reliability or safety to the customer in a timely manner. Notification per the Discrepant Material Report includes a clear description of the nonconformity including, as applicable
- parts affected
customer and/or M&M part numbers
quantity
 - description of nonconformity
date(s) shipped or delivered

Work in process and inventory stock will be purged to determine and identify other products that may be nonconforming.

- L. Organizations requiring notification of nonconforming product may include suppliers, affected M&M personnel, customers, and regulatory authorities.
- M. M&M does not authorize the use of nonconforming product without specific written customer approval.
- N. Rework and applicable re-inspection instructions for product are normally the same as original work and inspection instructions, as described in rework Job Traveler issued to the nonconformance. The applicable Discrepant Material Report is accessible to and utilized by appropriate personnel in the area where the rework and re-inspection are performed.
- O. Customers are promptly informed of the unintended release of nonconforming product as described in the Discrepant Material Report.
- P. M&M takes corrective/preventive action to eliminate the cause of product nonconformance as described in Section 8520 Corrective and Preventive Action.
- Q. Discrepant Material Reports, Concessions, Notification of Escapes are maintained in accordance with section 4230.

Section: **8400 Analysis of Data**

Section Owner: President

- A. Appropriate data from monitoring and measurement are determined, collected and analyzed to demonstrate the quality management system's effectiveness and suitability. Data analysis provides information related to
- customer satisfaction as described in Section 8210 Customer Satisfaction and from Section 8230 Process Monitoring and Measurement
 - conformance to product requirements as described in Section 8240 Product Quality Monitoring and Measurement
 - ongoing trends and characteristics of processes and products for opportunities for corrective and preventive action
 - supplier quality performance as described in Section 7400 Supplier Quality
 - quality management system performance as described in Section 8220 Internal Quality Auditing and as described in Section 5600 Management Review
- B. Data are analyzed and reviewed to evaluate where opportunities for continual improvement to the quality management system in Management Review, as described in the Management Review Checklist. Quality and operational performance trends are compared with progress towards M&M Quality Policy and M&M Quality Objectives.

Manufacturing, Inc.

Section: **8510 Continual Improvement**

Section Owner: President

- A. The effectiveness of the quality management system is continually improved as described in the Continual Improvement Project Plan. Continual improvements are initiated by
- Management Review as described in Section 5600 Management Review
 - periodic review and assessment of the M&M Quality Policy and M&M Quality Objectives, as described in Section 5300 Quality Policy, Quality Objectives, Quality Planning
 - subsequent action taken based on the results of external and internal audits as described in Section 8220 Internal Quality Auditing and 8210 Customer Satisfaction
 - analysis of data reported as described in Section 8400 Analysis of Data

Records generated by these processes are analyzed to identify and prioritize the target areas for continual improvement.

- B. Improvement activities are monitored and effectiveness of the results of activities is evaluated. Continual improvement opportunities can result from lessons learned problem resolutions and benchmarking best practices.



Manufacturing, Inc.

Section: **8520 Corrective and Preventive Action**

Section Owner: Quality Manager / Management Representative

- A. Appropriate and effective action is taken to eliminate the causes of nonconformities, in order to prevent recurrence.
- B. Corrective action is completed and documented for either product-related or process-related nonconformance. Per the Corrective/Preventive Action Request (CPAR)
- Nonconformance, including customer complaints, are reviewed to determine the cause(s) of the nonconformance
 - The need for corrective action is evaluated
 - Effective corrective action is determined and implemented to assure nonconformities do not recur
 - Results of action taken are documented on the CPAR
 - Action taken is verified for effectiveness, and verification is documented on the CPAR
 - Supplier corrective/preventive actions are requested from a supplier, as applicable, when it is determined that the supplier may be responsible for the root cause of the nonconformance
 - Specific actions are taken when timely response is not received or corrective action is not effective
 - Further action is taken to determine if additional nonconforming product exists. Action can take the form of a stock purge and re-inspection, notification to suppliers and customers, change in processing, revised manufacturing plan or procedure, etc.
- C. Similarly, appropriate and effective action is taken to eliminate the cause of potential nonconformance, in order to prevent their occurrence. As applicable, corrective action and controls are applied to similar processes and products, to eliminate the cause of a potential nonconformance.
- D. Preventive action is completed and documented for either product-related or process-related nonconformance. Per the Corrective/Preventive Action Request (CPAR)
- The need for preventive action is evaluated
 - Preventive action is determined and implemented to assure nonconformance do not occur

AS9100 Quality Manual

- Results of action taken are documented on the CPAR
- E. Action taken is verified for effectiveness, and verification is documented on the CPAR.
- F. To identify and eliminate root cause of a nonconformance, normally the Five Why analysis process is used for problem-solving, as described in the CPAR. If a customer specifies a different problem-solving process, that process is used. Some tools to be used in the analysis process may consist of, but may not be limited to
- Evaluation of the overall Manufacturing Process
 - Types of tooling and fixturing used
 - Inspection points and data gathered were consistent and correct
 - Evaluation of capabilities of personnel
- G. Error-proofing methods are applied to the corrective/preventive action process, as applicable.
- H. CPAR(s) are handled in a timely and effective manner. In the event timely and/or effective action is not achieved regarding internal and supplier-based CPAR(s), specific action to ensure product or process quality may include
- Management Review to determine severity and necessary action(s) that may require immediate attention
 - Review by applicable Process or Section owner
 - Re-evaluation of the allowable time for completion
- I. CPAR (s) are logged on the CPAR Log. This log and the associated CPAR (s) are reviewed monthly by the Quality Manager and/or the Management Representative to ensure that CPAR (s) are being completed, action is taken in a timely manner and that appropriate verification is being conducted.