PURPOSE: To explain creation and submission of the Manufacturing Quality Chart (MQC) / Control Plan (CP)

SCOPE: Applies to all products or parts supplied to TMI at all phases as explained in TMI SQAM Section 3.

EXPLANATION: The MQC / CP is used to identify and define the following from incoming raw material to shipping of finished goods:

- Key parts
- Process control points
- Control criteria - Location, acceptance targets, control method, control frequency

RELATED DOCUMENT(S):

TMI QUALITY ASSURANCE PROJECT PLAN (TMI SQAM Section 25)
QUALITY ASSURANCE SCHEDULE (TMI SQAM Section 4)
INSPECTION STANDARD (TMI SQAM Section 7)
PFMEA (TMI SQAM Section 9)

REQUIRED DOCUMENT(S):

MANUFACTURING QUALITY CHART / CONTROL PLAN (MQC / CP) - TMI APPENDIX 10A

RESPONSIBILITIES:

1) The supplier must develop a cross functional team to develop the MQC / CP.

2) The supplier must submit an MQC / CP (TMI Appendix 10A) for each part supplied unless parts have identical processes except for tooling. Submission is made per the TMI QC timing as specified by QAPP and detailed on the QAS with target timing at 1A. A process flow chart should be attached to the MQC / CP when submitted.

3) The supplier will base the MQC / CP on the drawing, inspection standard, process layout, and PFMEA results. (See Attachment 10A for document relationship.) Each potential cause identified by PFMEA should have controls listed in the MQC / CP.

4) The supplier must conduct testing and process analysis to support the contents of the MQC / CP, and the MQC / CP must be revised as necessary at each production trial

5) The MQC / CP must contain the following information:

   A) Identification information
   B) Number - Sequence of process steps beginning with receiving inspection and ending with shipping
   C) Process name - List each process that affects the final quality characteristics of the part
   D) Machine - List specific equipment type used for each process
   E) Characteristics to be controlled - List each product or process that influences final product quality as a line item within this category. Each [Pc] designated part characteristic must be listed separately.

F) Classification - Indicate any evaluation items (product or process) having special regulation or inspection requirements as identified in the inspection standard by use of the appropriate symbol (See Section 7 - Part Inspection Standard - Attachment F1 for symbol application).

G) Criterion - Enter general part inspection characteristics per the inspection standard, the nominal dimension and tolerance for [Pc] items, and established operating ranges for process parameters.

H) Control level - Enter the more restricted range than criterion which tends to signal the supplier to investigate variation prior to producing nonconforming product

I) Process / part inspection method - (Special) - identified as anything prior to or outside mass production such as C/F, 1A, 2A, QCS, etc.

a) Sampling frequency - Enter how often samples will be checked. If initial set – up, enter the word "initial".

b) Sample size - For process parameters, enter "set-up". For parts characteristics, enter the applicable number of parts (i.e. - first three pieces).

c) Operator / authorizer - Using the symbol key at the bottom of the page enter the identification of the person completing the task / Enter the identification of the person who supervises the task.

J) Process / part inspection method - (Mass production) - which is applicable to continuous production.

a) Sampling frequency - Enter how often samples will be checked. The frequency must match the inspection standard criteria at minimum unless otherwise specified by TMI plant QC.

b) Sample size - For process parameters, this should normally equal "1"; and, for part characteristics, sample size must meet the inspection standard criteria.

c) Operator / authorizer - Using the symbol key at the bottom of the page enter the identification of the person completing the task / Enter the identification of the person who supervises the task

K) Inspection instrument gauge - Identify the device to be used to check the actual condition of the parameter or characteristic.

L) Control chart - Identify the type (X – bar and R, P, etc.) and the internal number of the control chart in use.
Control charts are mandatory for all [Pc] characteristics identified in the inspection standard.

M) Check sheet number - Identify any internal data record sheets by their internal number.

N) Instruction sheet number - Identify any work instruction by its internal number or by SOP number.

O) Remarks / reaction plan - List any miscellaneous information and documented actions to be taken in the event of nonconformance.

P) Revision record - Enter the date for the initial submission and update with each revision. The date should reference the completion of the document only. It does not reflect the dates for physical change to the part.

Q) Signatures - Obtain approval signatures from the document creator, quality management, and manufacturing management at initial submission and at each subsequent revision and resubmission.

6) The supplier must resubmit a copy of the mass production level MQC / CP to TMI - QC for Provisional and Final Approval unless otherwise specified and approved by TMI QC. This resubmission also requires the attachment of a process flowchart and a diagram of the process.

7) After provisional approval, the supplier must notify TMI - QC of any changes to the MQC / CP. In the event that the proposed change requires the submission of a PCR, a marked – up MQC / CP must be submitted with the PCR, and no changes can be implemented until the PCR process is completed. Any change must be clearly documented and referenced in the revision record of the MQC / CP.

REVISION	REVISION DATE	SECTION	CHANGE DESCRIPTION
0	07/09/01	ALL	Initial release
1	05/20/03	ALL	Added revision record
2	08/09/04	SCOPE & RESP - 2	Added QAPP