



QUALITY CONTROL OPERATIONS

TRI-METAL INDUSTRIES, INC.

AMHERST, NEW YORK

2005

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SECTION I - SCOPE AND PURPOSE OF MANUAL

OBJECTIVE

This manual sets forth the present Tri-Metal Industries' procedures for the maintenance of the inspection function with that of manufacturing procedures to result in the consistent compliance of all contractual obligations assumed by Tri-Metal Industries, Inc.

Customer quality requirements are expressed in various ways including notes, tolerance notations on drawings, references to specifications, and specific instructions on purchase orders. In addition, there are general accepted standards of quality resulting from good shop practices. The application of these factors form the basis of our Quality Control System.

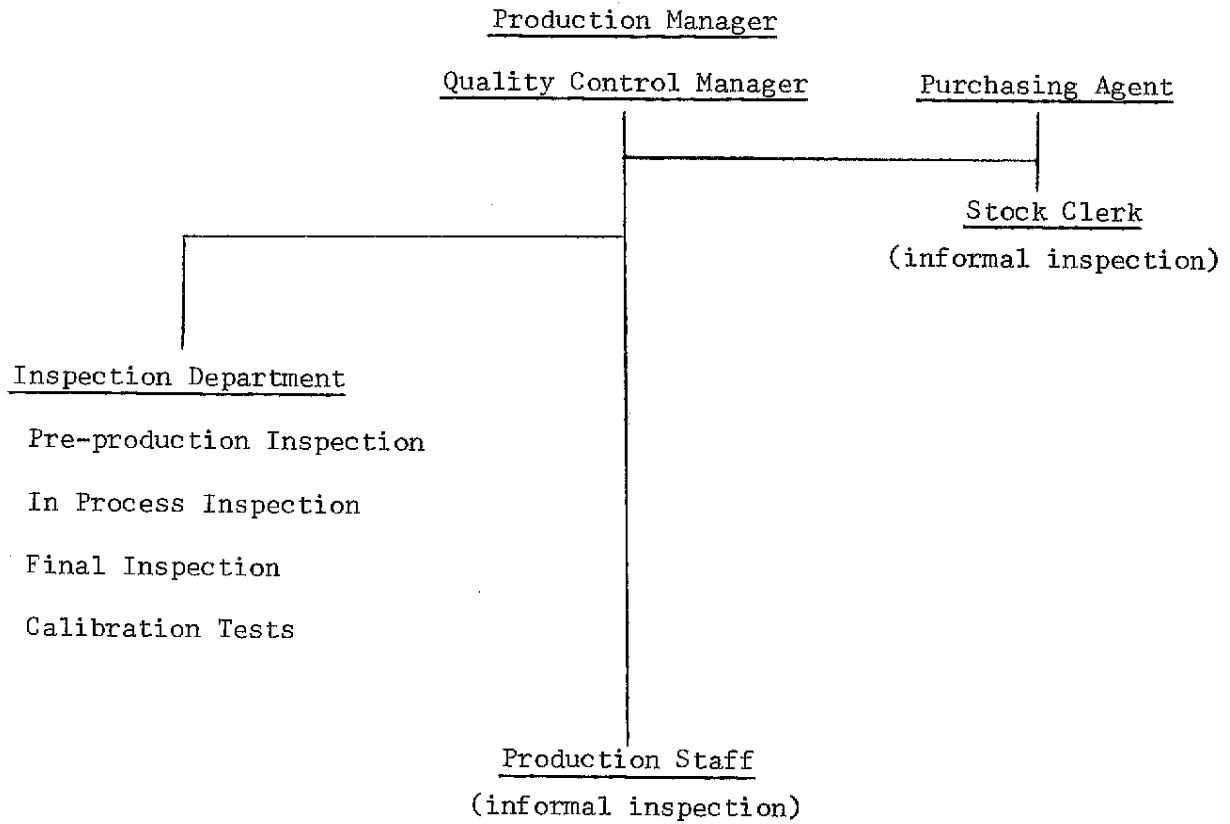
From an economical standpoint this program ought to be self sustaining, and the proper maintenance of records can result in minimized rejections as well as the upgrading of quality.

Additionally, TMI recognizes that quality control is everyone's responsibility, and not that of the inspection department alone. Therefore, employees are encouraged to take an active role in the inspection function.

It is the intention of TMI to conform to MIL-I-45208A as the foundation of our quality control operations.

Please note that any certification furnished with the material shipped will be signed by an officer of Tri-Metal Industries.

Table of Organization: Quality Control Function



GENERAL CONTROL

The Inspection Department works from blueprints and specifications in its possession. These are received from the Quality Control Manager or the Production Manager along with the items to be inspected. It is, therefore, the responsibility of Management to control the flow of accurate information into the shop.

The most significant item in this category is the blueprint. Before any work is released to the shop, Management must check all blueprints or drawings against the customer's purchase orders. When working from prints used on previous jobs, it must be ascertained that the latest revisions are used. It is also good policy on behalf of the members of the Inspection Department to also perform this review when receiving N/C tape revisions or materials from the Stock Room.

All prints and other applicable documents are assigned a work order number. This will be recorded on all customer purchase orders and inspection records. It will be used by the Purchasing Department as a coding system in ordering stock and materials for each job and will appear on material certifications furnished by vendors. This number consists of two parts. The first two digits identify the customer and will be followed by a hyphen than a number in numerical sequence.

The Inspector does not check any item against a blueprint that does not show this work order number. When a print is used more than once, the work order number is crossed off with red ink or pencil and a new number assigned.

JOB DESCRIPTION

QUALITY CONTROL MANAGER

1. The Quality Control Manager shall have the responsibility of co-ordinating all functions of the Inspection Department with all other phases of production in all matters concerning quality.
2. He shall supervise and instruct members of the Inspection Department concerning application of the procedures set forth in the manual.
3. He shall be responsible for all inspection decisions.
4. He shall see that all inspection forms and reports are properly used, recorded, and filed.
5. He shall work with Management in determining the disposition of rejected material.
6. He shall report the receipt of any purchased materials that do not meet all requirements of TMI purchase orders.
7. He shall supervise the inventory of all inspection tools, instruments, and gauges, including the organization of a tool control record system oriented to regularly scheduled calibration testing of TMI owned inspection equipment.

INSPECTOR'S RESPONSIBILITIES

At TMI the Inspector's responsibilities are in the following areas:

1. The inspection of materials used on an order. This includes the following items:

| | | |
|--------------|----------|------------|
| Stock | Layouts | Assemblies |
| Hardware | Setups | Procedures |
| Wales sheets | Fixtures | Finishes |
| N/C tapes | Tooling | |

This involves the inspection of samples while the work is in process at the various stations, and an inspection of a random sampling per MIL-STD-105D, AQL 2.5 with the necessary documentation signifying the items meet customer specifications.

2. The Inspectors are responsible for the maintenance of a sampling plan per MIL-STD-105D, AQL 2.5 and the appropriate documentation of inspection activities.
3. The maintenance of a systematic tool calibration system as required by MIL-Q-9558A and MIL-C-45662A with a standard of measurement with certification traceable to the National Bureau of Standards.
4. The maintenance and application of both physical and non-physical standards of inspection. This includes both a standard of measurement and material specifications.

5. The Inspectors will also assist the Production Manager by means of the inspection of setups, clarification of data, or the instruction of personnel in the usage of equipment and data.
6. The Inspectors are responsible to the Quality Control Manager to ensure that all work is being done to the customer's specifications and to report shortcomings in quality both during and after production.

Section I - Drawing Control

The Production Manager will be responsible for distributing drawings and applicable changes to the working personnel. The Production Department will note on their file copy of drawings, the recipients of that drawing. Revised drawings will be distributed to the distribution noted on original drawing and obsolete drawings retrieved by the Production Department noted, and disposed of accordingly. Revised drawings will note point of effectivity (serial number and or date) and initialed by the Production Manager. On applicable vendor material, the Production Manager will coordinate drawings and change with the Purchasing Agent who will document such information to the vendor.

SECTION II - INSPECTION PROCEDURES

INCOMING INSPECTION

1. Incoming inspection of NON-CERTIFIABLE PARTS such as hardware and fittings is performed by the Stockroom Clerk. In this informal inspection the following is performed:
 - a. Material is labelled.
 - b. Purchase orders are checked.
 - c. Quantities checked.
 - d. Material is compared to description and to specifications.
 - e. Material is counted out and assigned for various work orders.

Rejections are returned for replacement through the Purchasing Agent. Any questionable material is referred to the Inspection Department for verification prior to any action being taken.

2. Incoming inspection of NON-CERTIFIABLE SHEET METAL is performed upon receipt by the shear operator. Here the procedure is as follows:
 - a. Old stock is used prior to using new stock. Stock racks are stacked accordingly.
 - b. Non-certified stock is separated and kept separate from certified stock.
 - c. Stock is labelled to gauge or thickness, hardness, temper, or metal.
 - d. Stock is not used until paperwork is received by shear operator and logged in according to type, vendor, and date.

Stock that is any way questionable regarding finish, marking, flatness, etc. is brought to the attention of the Quality Control Manager.

3. Incoming inspection of CERTIFIABLE PARTS is performed by a member of the Inspection Department and is inspected according to MIL-STD-105D, AQL2.5, Inspection Level 1 (Table 1). This includes an inspection of a sample to specified dimensions, material, and finish.

Items that are rejected are tagged and discrepancies listed.

This is brought to the attention of the Quality Control Manager.

4. Incoming inspection of CERTIFIABLE SHEET METAL per MIL-A-9868A is performed by a member of the Inspection Department. The following items are inspected on all certifiable sheet stock:

- a. Thickness is inspected by micrometer.
- b. Flatness is visually inspected.
- c. Stencilling is compared to data on purchase order.
- d. Visual inspection of sheets for blemishes, laminations, or other obvious defects.
- e. Test results on strength and composition are compared to manufacturer's and customer's specifications.
- f. Each sheet is labelled with the following:

| | |
|---------------|-----------------------|
| Thickness | Purchase order number |
| Type of stock | Date of inspection |
| Stencilling | Inspector's initials |

After the Inspector has inspected the certified stock, all test results and invoices are given to the Quality Control Manager.

If any certified sheet stock is rejected on any of the proceeding items the following procedure is followed:

- a. Defective material will be segregated from all other material and labelled as defective.

- b. Defects will be delineated in some manner.
- c This material is then brought to the attention of the Quality Control Manager, and its disposition reported.

5. Receiving Inspection Report

The results of receiving inspection will be recorded on Form I-182.

Tri-Metal Industries Inc.
RECEIVING INSPECTION REPORT

Customer _____ Work Order _____
Part Number _____ Rev. Level _____
Lot Quantity _____ Sample Size _____ AQL _____

Inspection results:

Accept lot

Reject lot

Q.C. Signature _____

Disposition of Lot: (description of non-conformances and actions taken)

Signature _____

Copy to Purchasing Agent

TABLE 1

MIL-STD-105D, AQL 2.5, Inspection Level II

This plan is used when checking the conformance of standard purchased items requiring certification to purchase order requirements. This does not apply to non-certifiable items or to certifiable sheet stock.

AQL 2.5 Inspection Level II

| <u>Lot Size</u> | <u>Sample Size</u> | <u>Accept</u> | <u>Reject</u> |
|-----------------|--------------------|---------------|---------------|
| 2-8 | 5 | 0 | 1 |
| 9-15 | 5 | 0 | 1 |
| 16-25 | 5 | 0 | 1 |
| 26-50 | 5 | 0 | 1 |
| 51-90 | 20 | 1 | 2 |
| 91-150 | 20 | 1 | 2 |
| 151-280 | 32 | 2 | 3 |
| 281-500 | 50 | 3 | 4 |
| 501-1200 | 80 | 5 | 6 |

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IN-PROCESS INSPECTION

In-process inspection is defined at TMI as the inspection of materials and setups as they fulfill their functions in meeting a customer's blueprint specifications. This is performed on all jobs as they travel through the various stations in the shop.

Though it is expected that the Inspectors take the initiative for this type of inspection it is recognized that they cannot be in all places at all times and thus the members of the production staff are encouraged to take responsibility for their own work by performing informal inspections of their own work in addition to a formal inspection by an Inspector.

1. In-process inspection is performed at any time and at any station where production work is being performed. In the course of a shift the following areas are touched:

Shear

- a. Stock used: alloy type, thickness, and whether material is to be certified.
- b. Front guage setups
- c. Shear dimensions: $\begin{matrix} + \\ - \end{matrix}$.010 on single blanks dims.
 $\begin{matrix} + \\ - \end{matrix}$.005 on multiple blank width.
- d. Squareness and taper.
- e. Surface condition of vinyl stock.
- f. Excessive burrs on sheared parts. This may indicate that the shear requires regapping or a new blade and is reported to the Quality Control Manager.

N/C

- a. Punch size: TMI standards are $-.002$; $+.005$ tol.
- b. Punch alignment and sharpness.

- c. X & Y starting dimensions on previously run tapes.
- d. X & Y starting dimensions plus a random dimensional check on a new tape.
- e. Visual inspection for hole quantity.
- f. "Touch" inspection for burrs on vinyl stock.

Wales

- a. Punch size, alignment, and sharpness.
- b. 100% inspection on the first part.

While TMI has set a hole tolerance standard of $-.002''$ and $+.005''$ customer requirements take precedence.

Time Saver

- a. Grade of finish and uniformity (Table 3)
- b. Grade on the correct side of part as required.
- c. Grain direction if specified by customer.

Table 3 TMI Finish Grades

| <u>Grade</u> | <u>Condition</u> |
|--------------|------------------------------|
| A | Satin finish, no marks |
| B | Most marks removed, no burrs |
| C | Remove burrs |

When written, two letters are used (e.g. A-B). The first letter applies to the condition desired on the front of the part and the second on the reverse side of the part.

- d. Condition of edges.
- e. Flatness after timesaving operation.

Blind Holes

- a. Size and location.
- b. TMI has set a standard tolerance of location at $\pm .005$.

Tapping

- a. Inspected with thread gauges.
- b. Checked against blueprint for location.

Countersinks

- a. Location.
- b. Proper angle on tool.
- c. Diameter within -0.000 ; $+ .008$.

Forming

- a. Flange and overall size.
- b. Degree of bend.
- c. Diameter of radius.
- d. Die marks.
- e. Proper relief.

Notching

- a. Layout.
- b. Notching setup.
- c. Dimensions of notch or mitre.

Alodine

- a. Proper finish (e.g etch, clear alodine, or gold alodine)
- b. Proper application. It must not rub off, have bare spots, nor excessive run marks.
- c. Insure that only stainless steel hardware is in part when alodined.
- d. Inspection of welded assemblies to detect excessive oxidation.

Hardware

- a. Accuracy to blueprint requirements in quantity, location, and direction.

- b. Installation per (1) Bell Material and Process Bulletin MPB 13-51 and (2) Harris Standard of Workmanship QC 3000.

Assembly

- a. Accuracy to blueprint requirements with procedure examined in view of:
 - (1) Bell Process Specification BPS 4171 (Adhesive Bonding)
 - (2) Bell Process Standard 66200-001 (Riveting)
 - (3) Bell Process Specification BPS 4032 (Riveting)

Cosmetic Appearance

- a. Part checked after it has been completed.
2. Data of all in-process inspections are entered on the In-Process Inspection Record (TMI Form I-282.)

N/C TAPE INSPECTION

1. N/C tape inspection is a form redundancy designed to reduce error and ensure that layouts will produce items desired by TMI's customers. Under this system no individual generating a N/C tape is allowed to inspect his own work. All work of this type, except those tapes exempted by the Quality Control Manager, are submitted for inspection. This presupposes that the members of TMI's Inspection Department have a familiarity in the programming of TMI's tape controlled automatic punching machinery.

The responsibilities of the individual performing an inspection of this type are as follows:

- a. The comparison and inspection of tapes against revisions.
- b. An inspection of the development of a job.
- c. An inspection of job format, procedure, and a mathematical examination of all punch coordinates on a L:1 or a L:2 document.
- d. An inspection of both the job sheet and punch set-up sheet against information presented on the blueprint, required punches, and required procedure.

The Inspector completes an In-process Inspection Record (TMI form I-282) and places it in the jacket with the rest of the work order's paperwork. On it will be recorded the disposition of the tape inspected.

2. Rejected tapes are returned to the individual who had programmed them. At TMI each layout man programs his own work.

The Inspector indicates which data is suspect on the L:1 or L:2 document, along with data to support the rejection, and data to make corrections. The latter includes both drawings and computer

readouts. Both the inspecting individual and the programmer review the material and determine the best remedial action to take.

3. The Inspection Department generates and maintains a set of N/C tapes for the purpose of inspecting the performance of the automatic punching machines should error be suspected due to wear or damage.

The acceptable tolerance for TMI's tape control equipment is $\pm .005''$. Any deviation from this norm is cause for a performance inspection. Data relating to a suspected problem is presented to the Quality Control Manager and to the machine operator.

SPOTWELD INSPECTION

Spotwelds are inspected on each order requiring such welding. This is done periodically during the shift. Spotweld inspection at TMI encompasses the following two areas:

1. A dimensional inspection of a first-piece sample. Hole location, squareness, and assembly will be checked against blueprint specifications. Recommendations by the Inspector are made on the basis of this inspection.
2. Weld strength is tested by forcefully attempting to break a specified number of welds on a sample comprised of material equivalent in thickness and stock type to that being welded. Where practicable, an actual production item will be tested for weld strength.

Any deficiencies in weld strength are corrected, and new samples taken.

Weld test results are in the Spotweld Inspection Log, noting the date, work order, time, disposition, and the name of the person spotwelding. The Spotweld Inspection Log is used in lieu of the In-process Inspection Record (TMI form I-282) and remains in the Inspection Department.

GAS WELD INSPECTION

First-part and production samples are taken of work orders and checked in the Inspection Department for penetration, warpage, dimensional integrity and assembly of the weldment to blueprint specifications. Any deficiencies are brought to the attention of both the welder and the Quality Control Manager, along with the Inspector's recommendations.

FINAL AND OUTGOING INSPECTION

1. Final or outgoing inspection at TMI is performed on all work leaving TMI. Under normal circumstances a random sampling is taken in accordance to MIL-STD-105D, AQL 2.5, Inspection Level 2. Results are entered on the Final Inspection and Disposition Report (TMI form I-382.)
2. A random sampling (table 2) is inspected against a blueprint with TMI form I-382 used as an outline by the Inspector. Items checked are:
 - Material.
 - Accuracy of forming.
 - Accuracy of perforating.
 - Hardware installation (per Harris Workmanship STD QC 3000.)
 - Accuracy of assembly (per Bell Process Spec. BPS 4032.)
 - Alodine work.
 - Machining.
 - Finish and appearance.
3. Disposition of Material
 - a. Passable material is sent on to the Shipping Department for processing. This will include plating, painting, and anodizing. Material returned after these processes are re-inspected if hardware or assembly is required. The disposition of material is noted on the Final Inspection and Disposition Report.
 - b. Rejected items are re-inspected by the Inspector or verified by a second individual. The rejected material is segregated from other work and its disposition delineated in some fashion to prevent accidental use or shipment. A sample of

the rejected material and documentation (e.g. TMI form I-382, blueprints, or computer readouts, etc.) is presented to the Quality Control Manager who will examine the item and instruct the Inspector specifying disposition and any corrective action.

4. When required by a customer, a 100% inspection is made of items produced. An Objective Data Report (TMI form I-583) is prepared by an Inspector giving data on all blueprint specifications.

TABLE 2

MIL-STD-105D, AQL 2.5, INSPECTION LEVEL 2

This plan constitutes our normal inspection sampling plan for all outgoing materials. It is used for all visual inspection when checking metal condition, painting, plating, and marking. It is also used for all dimensional inspections of parts during the final inspection.

AQL 2.5 Inspection Level 2

| <u>Lot size</u> | <u>Sample Size</u> | <u>Accept</u> | <u>Reject</u> |
|-----------------|--------------------|---------------|---------------|
| 2-8 | 5 | 0 | 1 |
| 9-15 | 5 | 0 | 1 |
| 16-25 | 5 | 0 | 1 |
| 26-50 | 5 | 0 | 1 |
| 51-90 | 20 | 1 | 2 |
| 91-150 | 20 | 1 | 2 |
| 151-180 | 32 | 2 | 3 |
| 281-500 | 50 | 3 | 4 |
| 501-1200 | 80 | 5 | 6 |

STANDARDS

1. TMI maintains a system of calibration for company owned measuring and test equipment in accordance to MIL-C-45662A. The standard of measurement used by TMI is a set of gauge blocks certified annually by a qualified facility with certification that is traceable to the National Bureau of Standards per MIL-C-45662A. Documentation of the certification of the gauge blocks is kept on file by the Quality Control Manager and a duplicate is kept on file within the Inspection Department. This documentation consists of both the Certificate of Inspection and the actual inspection results.

The gauge blocks are the primary instruments of TMI's calibration.

2. The Inspection Department maintains a set of standards which exist as a "plumbline" to control shop procedure. This is divided into three categories:
 - a. The maintenance of mathematical formulae and procedures for plant use.
 - b. The maintenance of materials specifications of both customers and suppliers for purposes of reference and inspection.
 - c. The maintenance of an Inspection Sampling Plan per MIL-STD-105D at AQL 2.5

TOOL CALIBRATION

TMI provides and maintains measuring and testing equipment necessary to assure that material conforms to the technical requirements (REF. MIL-I-45208A.) These instruments are checked periodically to assure their accuracy in conformance to MIL-C-45662A.

1. The TMI Inspection Department maintains a calendar scheduling inspection at an interval determined on the basis of usage. That is, the more frequently an item of equipment is used, the greater in frequency will its calibration be checked. The interval of calibration is basically set on degree of usage, and stability. Control of interval adjustments will be based on previous calibration. Major changes in the equipment usage will be promptly taken into consideration. Any measuring instruments to be found out of calibration tolerance; the interval of calibration will be increased. Ninety-five percent of the same type equipment must be within the tolerance established as shown on the calibration record card. If more than five percent of a particular type of equipment is out of tolerance at the end of its interval, the interval will be shortened.

A great number of measuring instruments will be calibrated by an approved commercial calibration laboratory. The calibration record card will reflect this information. The frequency or interval of calibration is entered on a Tool Calibration Record (TMI form 482).

2. The standards of measurement used by TMI for calibration testing are certified gauge blocks per MIL-C-45662A. The allowable deviation on inspection equipment has been established and shown on the tool calibration record. The inspection method used, the results obtained, and disposition are recorded on TMI form 482, Tool Calibration Record and signed by the individual performing the calibration test. Instruments failing

to meet the established standards of accuracy are flagged and so indicated on the individual Tool Calibration Record.

Actions taken are:

- a. Re-adjustment and cleaning of instrument whenever possible.
This does not have to be reported to the Quality Control Manager.
- b. Repair or refurbishing of the instrument by an outside company qualified to perform this work. This is decided upon by the Quality Control Manager.
- c. Replacement of the instrument upon the authority of the Quality Control Manager.
- d. The assignment of "restricted usage" status to an instrument with the Quality Control Manager's permission, provided that the instrument's reliability is not impaired for the work in which it is used.

When a "flagged" instrument is returned to passable condition it is reinspected against the TMI standard gauge blocks with the results recorded on the Tool Calibration Record and returned to unrestricted usage.

3. Records are kept on all TMI inspection equipment in accordance to MIL-C-45662A. TMI form 482 has been generated to meet this requirement. It is kept on file in the Inspection Department and the following data regarding the instrument is entered:

| | |
|---------------------|---------------------|
| Type of instrument | Manufacturer |
| Serial number | Location |
| Size | Allowable tolerance |
| Inspection interval | |

Inspection data entered by the Inspector performing the calibration tests are:

| | |
|----------------------|-------------------------------|
| Date | Results of inspection |
| Method of inspection | Adjustments performed |
| Findings | Comments regarding instrument |

WELDER CERTIFICATION

The Inspection Department maintains a schedule and ensures that the welders' work is sampled semi-annually. This entails informing Management of upcoming tests.

Original certification notices and test results are kept by Management and copies are kept on file by the Inspection Department.

TMI welders who are tested are certified to MIL-STD-248C.

ALODINE WORK

TMI by contractual obligations performs Chromic Conversion work (alodining) when specified on a purchase order or by blueprint. Alodine work is performed in accordance to MIL-C-5541C less the salt-spray test.

1. At TMI the procedure is as follows:

- a. Aluminum parts are timesaved to remove surface blemishes and sent either to the Inspection Department or to the alodining tanks.
- b. At the tanks parts are cleaned in a soap solution if needed and sent through the appropriate tanks.
- c. Work is alodined by immersion in the tanks required to produce the necessary finish. This is noted on the job sheet as well as the blueprint and falls into the categories of etching, clear alodining, or gold alodining. A list of Chemical codes has been published and posted by the tanks:

| | |
|-------|-------------------------------------------------------------|
| E 300 | Passivate |
| E 511 | Anodize - not performed at TMI |
| E 512 | Clear alodine |
| E 513 | Gold Alodine |
| E 515 | Gold alodine and paint. The latter is not performed at TMI. |

- d. Alodined materials are normally sent to the Inspection Department unless otherwise specified (e.g. assembly). Alodined parts are normally inspected after the conversion process is complete.

2. The Inspection Department inspects alodined work by random sample as part of its final inspection. This does not preclude an in-process inspection at any time. The following characteristics are inspected:
 - a. A uniform appearance both on a single part and uniformity within the members of a sample.
 - b. Bare spots.
 - c. Corrosion or continued oxidation particularly on welded assemblies.
 - d. Color: as required by customer - light gold, gold, or clear. Discolored parts are rejected - blue, brown or orange.
 - e. Freedom from powder or loose film.

Any items that do not meet customer requirements are rejected and depending on the nature of the rejection either re-alodined or brought to the attention of the Quality Control Manager.

3. TMI operates two lines of processing tanks for the purpose of Chromic Conversion. Each tank has its own solution control record filled out by the tank operator and retained in the Alodine Department.

Tank solution strength is checked by the operator and adjusted as needed, "per traffic." Old alodine is disposed of through an outside contractor.

Documentation is kept on both sets of the following tanks:

- a. Soap.
- b. Etch.
- c. De-ox.
- d. Alodine
- e. Nitric acid for passivating.

This documentation is broken down into three areas and kept in individual folders:

- a. Charging, operating, and dumping procedures.
- b. Solution control record including:

Date

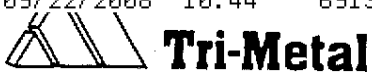
Operation (start, charge, dumping).

Quantities used by weight.

Authorization

Individual performing operation.

- c. Safety and First Aid information. First aid materials are kept in close proximity to the tanks for application when needed.



MEMO: 2 January 2007

From Don Chatwin Jr.

To: Tri-Metal Customers
Subject: Mil-C-5541 and RoHS (Chromate Coating for Aluminum)

Dear Customers,

In response to the many inquiries and concerns about the European Directive called RoHS and our Chromate Conversion Coating for Aluminum, I respectfully submit to you the following:

- 1) Effective February 1st, 2007, Tri-Metal Industries will have "In House" capabilities for both Mil-C-5541 and Non-Hex Chromium Coating (RoHS Compliant).
- 2) This is being accomplished by running 2 lines at our Plant. One line with a product capable of conforming to Mil-C-5541 Class 1A and Class 3 (Chromacoat 103). The other line will have a product called Metalast TCP-HF which is RoHS compliant and also Military QPL'd by some of our customers.
- 3) The new line should be fully functional on or before February 1st 2007. The startup costs are reasonable enough to conclude that we will be able to provide RoHS compliant coating on Aluminum at or below the cost of subcontracting this process to an outside source.
- 4) As Metalast TCP-HF becomes more accepted by Mil Spec houses, we plan to eventually phase out the current line using Hex Chromium and run one process only. This will NOT happen, however, till all our customers are satisfied that this process meets both Mil-C-5541 and RoHS compliancy. (Which many experts agree is the case right now.)
- 5) In conclusion, I want to assure that Tri-Metal Industries has done all the proper research and testing that led us to this decision. All testing results, (i.e. salt spray, conductivity, resistivity, RoHS compliancy, etc.), are available upon request.

Very Truly Yours,

Don

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SECTION IV - DOCUMENTS

TOOL CALIBRATION RECORD (TMI form 482)

This form has been generated in compliance with MIL-I-45208A and MIL-C-45662A. It is coordinated to a calendar coordinating calibration testing over a period of twelve months in compliance with MIL-C-45662A.

A calendar scheduling calibration testing and welder certification testing are established and maintained by the Inspection Department and reviewed annually.

The Tool Calibration Record is coordinated to this schedule with inspection intervals determined on the basis of purpose and degree of usage.

Used for all TMI owned testing and measuring instruments this record is filled out by the individual performing the calibration tests and is on file for a period of eighteen months (twelve months active use, six months on file.)

The Tool Calibration Record is divided into the following three sections:

1. The first section identifies the tool:

| | | |
|---------------------|---------------|---------------------|
| Type of instrument | Size | Allowable tolerance |
| Manufacturer | Location | |
| Inspection interval | Serial number | |

The record is filled out at the beginning of the year and upon receipt of each new piece of equipment. Initially calibration tests are scheduled for a monthly interval and changed no earlier than within six months if it is determined upon the basis of usage and purpose that the inspection interval can be lengthened. This is normally determined at the level of the Inspection Department rather than by the Quality Control Manager.

2. The second section provides space for thirteen individual calibration tests with six categories requiring the Inspector's attention:
 - a. Inspection date: inspections are scheduled normally every thirty days, \pm seven days, and ninety days, \pm seven days on a quarterly inspection
 - b. Method: by comparison to TMI's certified gauge blocks, or to an interim standard.
 - c. Findings: findings are presented in terms of \pm thousandths in deviation. Any adjustments made to an instrument are noted here.
 - d. Disposition: notation that the instrument has been passed, failed, or flagged.
 - e. Inspection stamp: date of inspection, Inspector's signature, and inspection stamp.
3. Section three provides space for any comments made by the Inspector.

IN-PROCESS INSPECTION RECORD (TMI form I-282)

1. This form has been designed to travel with a work order through the various stations where work is performed on a particular job, and becomes a semi-permanent record that is kept on file with an item's blueprints and job sheet as a record for reference to any problems or difficulties encountered during previous production runs.
2. The In-Process Inspection Record is filled out by an Inspector as he is making his in-process inspection rounds or by an Inspector performing inspection of an N/C tape.
3. The record is divided into two sections:

- a. Section one carries the basic data of the work order with space provided for:

| | |
|----------------|-------------------|
| Customer | Work order number |
| Part number | Quantity required |
| Revision level | |

- b. Section two provides space for the Inspector's comments regarding inspection while the material is being processed.

This space covers operation:

| | | |
|-----------------|-------------|-----------------------|
| Tape inspection | Drilling | Welding |
| Shearing | Machining | Hardware installation |
| Perfing | Flattening | Assembly |
| Filing | Time saving | Alodining |

Further space in this section is provided for the Inspector's remarks, his initials, date, and quantity inspected.

4. Spotwelded items may be recorded but test results taken by the Inspector are recorded in a separate log. The reason for this being that work orders with multiple production dates require work materials and documents be scattered at different stations, and it has been found impractical to keep test records in anything but a single log denoting date, time, work order, test results, and welder.

5. In the case of an assembly with mutiple parts individual In-Process Inspection Records are filled out for each item, then collected at the end of the run.

FINAL INSPECTION AND DISPOSITION REPORT (TMI form I-382)

This form has been generated as a final report on a sampling of a work order. It has been printed on the reverse of the In-Process Inspection Record for the purpose of efficient record keeping. The report is divided into three sections and is filled out by the Inspector performing the final inspection.

1. The first section covers basic information:

| | | |
|--------------|----------------|-----|
| Customer | Work order | AQL |
| Part number | Revision level | |
| Lot Quantity | Sample size | |

2. Section two is divided into eleven categories that provide an outline for inspection:

- a. Material: thickness, type, size, flatness.
- b. Perfling: hole location and size
- c. Forming: dimensional accuracy
- d. Time save finish
- e. Chemical finish: etch, clear or gold alodine
- f. Hardware: location, installation and quantity
- g. Cosmetic appearance
- h. Assembly: accuracy to blueprint specifications.
- i. Quantity: actual or estimated count.
- j. Weld/spotweld
- k. Sub contract: Certified alodine, painting, plating, silk-screening and engraving.

Each category is marked as either satisfactory (S) or unsatisfactory (U) with discrepancies or comments in the space provided.

3. Section three provides space for the Inspector to denote the order's disposition as "requiring further work", "rejected", or "acceptable for shipment". In the case of the last, "O.K. to Ship" is stamped.

In all three dispositions, the Inspector signs and dates the form.

4. Rejected material is brought to the attention of the Quality Control Manager along with a description of the discrepancy. His decision is final regarding action taken on this material.

TRI-METAL INDUSTRIES, INC.

FINAL INSPECTION and DISPOSITION REPORT

Customer _____

Work Order _____

Part Number _____

Rev. Level _____

Lot Quantity _____

Sample Size _____ AQL _____

| OPERATION | S | U | DISCREPANCY |
|--------------------|---|---|-------------|
| Material | | | |
| Perfing | | | |
| Forming | | | |
| t/s Finish | | | |
| Chemical Finish | | | |
| Hardware | | | |
| Appearance | | | |
| Assembly | | | |
| Quantity | | | |
| Weld/ Spot weld | | | |
| Sub Contract | | | |
| | | | |

_____ Final Inspection _____ Defective Material Report

DISPOSITION:

Inspector _____

Date _____

IV-9

OBJECTIVE DATA SHEET (TMI form I-583)

This form has been generated to meet the requirement of a 100% inspection of a customer specified item that is produced at TMI. This is normally performed by a member of the Inspection Department, but may be completed by an individual so designated by the Quality Control Manager.

The Objective Data Sheet is divided into two sections. The first section contains pertinent information regarding the contract. This information consists of the following:

Customer

Description (nomenclature) of item

Drawing number and revision

Purchase order number

Sheet number

Inspector's signature and date of inspection

The second section provides space for the recording of the results obtained in the inspection. Columns are provided for the following categories of information:

Blueprint dimension

Allowable tolerance

Reference zone

Inspection results

Space is provided to record the dimensions obtained in this type of inspection for four items.

Standard practice is to label or tag each sample and record the inspection results in the appropriately numbered column. Extra forms are used when data requirements exceed the capacity of a single form.

This form accompanies the inspected materials when they are delivered to the customer.

REFERENCES

| | | |
|--------------|--------------------------------------------------------------|------------------|
| MIL-C-5541C | Chemical Conversion Coatings on Aluminum and Aluminum Alloys | 14 April 1981 |
| MIL-I-45208A | Inspection System Requirements | 16 December 1963 |
| MIL-C-45662A | Calibration System Requirements | 9 February 1962 |
| MIL-Q-9858A | Quality Program Requirements | 16 December 1963 |
| MIL-STD-105D | Sampling Procedures and Tables for Inspection by Attributes | 29 April 1963 |
| MIL-W-45210A | Welding, Resistance, Spot: Weldable Aluminum Alloys | 15 January 1965 |
| MIL-STD-248C | Welding and Brazing Procedure and Performance Qualification | 12 October 1973 |

Section IV - Rejection of Material

Identification: In the event that any material is rejected at any given point in the receiving, manufacturing, and testing process, it shall be immediately red-tagged in a prominent place, and segregated, as necessary, until final disposition is determined.

The rejection tag shall be filled out with the following information:

- (a) Purchase order number
- (b) Part Number, SN and quantity
- (c) Nature of Defect
- (d) Date and Inspector's Initials

Under no circumstances shall any further normal production work be undertaken on rejected material, except authorized rework, until this disposition is made.

Report: In all cases of rejected parts, a brief report shall be prepared on a Rejection Report form delineating the following information:

- (a) Purchase order number
- (b) Part number and SN and quantity affected
- (c) Description of defect
- (d) Determination of cause of rejection:
 - 1) Manufacturing error
 - 2) Defective Material
 - 3) Vendor error
 - 4) Drawing discrepancy
 - 5) Other
- (e) Proposed disposition

The proposed disposition shall be arrived at through joint agreement of the Quality and Production Departments. The report shall be submitted to the vice president for review and approval.

Disposition: When the report--and more specifically, its recommendation for material disposition--has been approved by the vice president, the disposition shall be initiated by a Quality Department representative noting the disposition on the reverse side of the defective unit's red tag. The Rejection Report shall be filed in the Purchase order folder and become a permanent part of the Quality records. Upon completion of any rework, it shall be inspected and acceptance noted by:

- (a) Placing the inspector's stamp, initials and date on the Rejection Report in the Purchase order folder.
- (b) Replacing the red inspection tag on the reworked unit with a white tag, restoring it to normal operations.

It must be recognized that a number of significant factors are involved in the disposition of rejected material, and that these do not necessarily come within the prerogatives of the company to resolve.

These may include:

- (a) Contractual responsibility
- (b) Cost
- (c) Delivery schedule
- (d) Requirements for customer approval of proposed rework

It is therefore imperative that any disposition be properly approved prior to its implementation.

Most important of any rejection is the corrective action to preclude recurrences. The Quality Control Manager will initiate appropriate corrective action. On vendor supplied material the Quality Control Manager will coordinate the corrective action with the Purchasing Agent.

TRI-METAL INDUSTRIES INC.
AMHERST AUDUBON INDUSTRIAL PARK

REJECTION REPORT

Date: _____

Contractor: _____

P. O.No. _____

Part No. _____

Quantity: _____

Description of Defect:

Responsibility:

Mfg. Error

Vendor Error

Defective
Material

Drwg. Discrepancy

Other(Explain)

Proposed Disposition:

Corrective Action:

Production Approval _____

Quality Control Approval _____

Final Approval Vice-Pres. Mfg. _____

SECTION V - GOVERNMENT FURNISHED MATERIAL (GFM)

Section V - Government Furnished Material (GFM)

Should TMI receive government furnished material the following inspection procedure will be implemented:

1. Examination of GFM upon receipt to detect any shipping damage. This examination may be limited to visual inspection, and disassembly or testing may be neither required nor desirable.
2. Inspection will be made to make certain of proper identification, completeness, and quantity.
3. The inspection results of GFM will be reported on TMI form - 382. Any discrepancies will be immediately reported to the authorized government representative or prime contractor's representative. If unsuitability is found during or after installation, the contractor shall determine the probable cause and determine if it is necessary to avoid the use of the material.
4. TMI will perform periodic inspection during storage to detect any signs of deterioration, guard against damage from mis-handling and assure maintenance of proper storage conditions.
5. Functional testing by qualified personnel will be performed before or after installation as required by the contract
6. Appropriate identification and safeguarding of the GFM will be maintained to prevent improper disposal or unwarranted use.