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1.1 PURPOSE

- 1.1.1 To establish the responsibilities, policies and general functions of the Quality Assurance Department.
- 1.1.2 It is the responsibility of the Quality Assurance Department to constantly analyze production performance and to guarantee adherence to company quality standards, and customer specification. It is the objective of The Quality Assurance Department to assure the delivery of quality products. To insure that the optimal level of quality is maintained, Cordova shall use a procedure of proper effectiveness and scope. These procedures shall be flexible enough to be modified as required by contracts, specifications or drawings, while providing evidence of quality surveillance and control. Customer representatives shall make all inspection records available for review.

1.2 SCOPE

- 1.2.1 Compliance with the provisions of this manual are required for all production and quality control personnel unless superseded.

1.3 FUNCTIONS

- 1.3.1 The Quality Assurance Department shall exercise authority over the following:
- 1.3.1.1 The publication of the Quality Assurance Manual will be reviewed annually or as required by management for necessary changes or revisions to the procedures.
- 1.3.1.2 The segregation and disposition of material, which depart from required quality standards.
- 1.3.2 Inspection shall insure effectiveness and quality of:
- Purchased materials.
 - Processes.
 - Fabrication/manufacturing.
 - Completed products for shipment.
 - Material review/non-conforming material.
 - Packaging/shipping.

- 1.3.3 To assure compliance with the customer's specifications and requirements, the performance of this function shall require a continuous liaison with suppliers, other company departments and the customer's representatives. A file shall be maintained of each customer's specifications.
- 1.3.4 There shall be a control of measuring equipment, testing methods and equipment, and other procedures employed in the determination of quality of the end product and its tooling.
- 1.3.5 A corrective action shall be initiated to prevent the recurrence of quality deficiencies.
- 1.3.6 Adequate records and reports necessary to support the performance of all functions shall be maintained.

1.4 REVIEWING CUSTOMER REQUIREMENTS

- 1.4.1 Members of the engineering, production and quality teams shall review each order in its entirety to determine optimum manufacturing quality and production procedures. These procedures should be reflective of:
 - A. Contact Performance
 - Delivery Schedule
 - Process Planning and Scheduling
 - Preservation and Packaging Requirements
 - B. Product Specifications
 - Performance Required
 - Production Processes
 - First Article and Production
 - Special Tools and Fixtures
 - Artwork Inspection
 - C. Quality Assurance
 - Source Inspections
 - Certifications
 - Approved Vendor List

1.5 Artwork Inspection

- 1.5.1 All working panelized plots must be inspected using the customer's plotted master artwork. If modification is necessary to produce the desired product a "Deviation Notice" must be filled out detailing the nature of the modification and forwarded to the customer for their approval. The job will be placed on hold until we receive a signed customer approved "Deviation Notice."

2.1 PURPOSE

2.1.1 To outline procedures for control of material suppliers and subcontract services to insure that all standards are met.

2.2 VENDOR APPROVAL

2.2.1 All vendors of materials or services must be approved and listed as acceptable sources by the Quality Department. The Quality Department reserves the right to survey any supplier prior to purchase.

2.2.2 Surveys of vendors shall be made while considering the applicability of all requirements imposed by customer specifications. This manual shall be used as a guide to evaluate the capabilities of a vendor.

2.2.2.1 Vendor Survey Checklist (see sample 1).

2.3 APPROVED VENDORS

2.3.1 The master list of approved vendors shall be maintained by the Quality Manager and shall be issued to the Purchasing Department. Continued surveillance of vendors shall be maintained by timely visits, review of their ongoing acceptance records and historical performance.

2.3.2 The master list of approved vendors shall be coordinated with sources approved by various customers. When required, only vendors approved by the customer shall be used.

2.4 PURCHASE ORDER REQUIREMENTS

2.4.1 All out-going purchase orders to vendors shall have complete information regarding the identity of material, service, parts, processes, etc. which are to be performed. The Quality Manager shall advise the Purchasing Department as to the minimum requirements that must be included on the purchase order as well as any special requirements.

2.4.2 In an attempt to track all purchased items, purchase orders shall reference shipper numbers, lot numbers, dates and any other pertinent information.

2.5 VENDOR PERFORMANCE

2.5.1 Summary records shall be maintained on all vendors to evaluate quality and delivery.

2.5.2 Corrective action procedures, when applicable, shall be initiated.

3.1 PURPOSE

3.1.1 To insure that all materials received meet the applicable specifications of quality and any other special requirements that may be specified on the purchase order.

3.2 SCOPE

3.2.1 This procedure applies to all in-coming raw, semi-finished and finished materials, which are used in products manufactured to customer specifications (including customer furnished materials unless the customer waives the requirement via written authority to the Quality Control Department).

3.3 GENERAL

3.3.1 The Quality Assurance Manager shall keep Vendor History Records and Vendor Approval Records. Once materials have been received, the appropriate department manager shall verify that the material meets the purchase order and has a Certificate of Conformance and/or Certificate of Compliance. The Quality Assurance Manager shall retain Certificates of Conformance and Certificates of Compliance. Certificates shall be made available to any customer representative upon request.

3.4 PROCEDURE

3.4.1 Materials shall be delivered to the Receiving Department. Inspection requirements are derived from the subject purchase order and/or vendor specification. The inspector shall check the material against the purchase order to determine whether the material received is as ordered and is adequately identified. Raw data shall be collected as required.

3.4.2 The Receiving Department originates the order for inspection of received and processed material. To start the inspection procedure of any received material a copy of the corresponding purchase order and a copy of the required Certificate of Compliance must accompany the material.

3.4.3 If the certificate or reports are not received with the material, it shall be tagged with "Hold For Test Report" and placed in a designated holding area pending receipt of the required information or documents.

3.4.4 Materials shall be inspected for compliance with terms of the purchase order and:

- Physical Damage.
- Color.
- Finish.
- Workmanship.
- Correct material.
- Proper marking (if required).
- Certifications.
- Surface defects.
- Shipping damage.

3.5 **ACCEPTED MATERIAL**

3.5.1 All accepted material should be identified as acceptable by inspection stamps or tagged as required using an acceptance tag on which the following information shall be recorded:

- Vendor.
- Part Number.
- Purchase Order Number.
- Lot Number.
- Inspection Stamp.

3.6 **SHELF-LIFE CONTROL**

3.6.1 Chemicals or other materials with a limited shelf life shall be labeled, indicating the expiration date, upon receiving inspection.

3.6.2 All limited shelf-life material shall be stored in accordance with manufacturers or other applicable requirements/recommendations and issued on a first-in, first-out basis.

3.6.3 Limited shelf-life material shall be audited monthly by the responsible department personnel to insure compliance with the requirements of the document.

3.6.4 Expired material shall be deemed 'scrap' and disposed of by the responsible department supervisor.

3.7 REJECTED MATERIAL

3.7.1 Rejected material shall be tagged and returned to the responsible vendor or stored in a holding area until a disposition decision has been reached.

3.7.1.1 Material Rejection Form (see sample 2).

4.1 PURPOSE

4.1.1 To insure the optimum level of quality is maintained, Cordova shall make use of an inspection system of proper effectiveness and scope. The inspection process shall be flexible enough to be modified as required by customer contracts, specifications, or drawings while providing evidence of quality surveillance and control. All records shall be available for examination by authorized customer representatives. Cordova shall make every effort to conform to any customer's production, test, or quality requirements.

4.2 GENERAL

- 4.2.1 Inspection of Drilling
- 4.2.2 Inspection of Copper Plating
- 4.2.3 Inspection of Image Transfer
- 4.2.4 Inspection of plating
- 4.2.5 Post Etch Inspection (Use appropriate test panel)
- 4.2.6 Inspection of Lamination
- 4.2.7 Inspection of Tab Plating
- 4.2.8 Inspection of Fabrication
- 4.2.9 Inspection of Secondary Image (Solder mask and ID)
- 4.2.10 Solder mask Thickness and Adhesion
- 4.2.11 Handling

4.3 DRILLING

- 4.3.1 On all holes, un-plated as well as plated, we shall insure that the drill size used is large enough to give the required wall thickness (after plating) to meet specifications on the drawing or specification. The location and hole count shall be checked with negative film image and/or appropriate gauges to verify positional accuracy.
- 4.3.2 Hole sizes shall be checked with precision pin gauges.
- 4.3.3 Holes shall be free of burrs and clean inside. Holes to be plated through must be smooth and clean after the sanding (deburring) operation. We shall verify hits per drill pertaining to drill and re-point.

4.3.4 First article inspection is required prior to production drilling and sampling thereafter. (Refer to Section 5)

4.3.5 Quality Assurance shall review drilling records and prepare a first article record to insure proper process documentation.

4.4 ELECTROLESS COPPER PLATING

4.4.1 Hole barrels shall be viewed to assure complete coverage of electroless copper prior to circuit imaging and subsequent electroplating.

4.4.2 The copper plating shall be examined for pits, bubbles, flakes, excessive porosity, or any other evidence of non-adhesion or inadequate coverage.

4.5 IMAGE TRANSFER

4.5.1 First article inspection shall be performed on all set-ups made in the image transfer department. (Refer to Section 6)

4.5.2 Monitoring, on a random basis, shall be performed a minimum of once every hour.

4.5.3 The inspector shall inspect a minimum of three panels at each process station.

4.5.4 The inspector shall inspect the photo or screened images for correct hole pattern/registration, front to back registration and measure and note critical line and space widths.

4.5.5 The image transfer supervisor shall be notified of any defect that may require set-up or tear down.

4.5.6 Inspection Criteria

The application of plating resist, either inks or photo-resist, shall be checked using the following documents for specific customer requirements:

- Traveler.
- Drawings.
- Specifications.
- IPC-A-600 (Acceptability Criteria).

4.6 FINISH ELECTRO PLATING

4.6.1 Circuits shall be examined visually for discoloration, voids, blisters and bridging between all circuit or pad areas. No bridging shall be allowed.

4.6.2 Copper thickness on the hole wall shall be 0.001" (inch) minimum unless the customer requirements specify otherwise. Copper thickness on the hole walls shall be determined by micro sectioning or by microderm or other non-destructive methods. Use of Cordova in-process coupon is required as well as actual production as deemed necessary by Process Engineering.

4.6.3 All plated-through holes shall be inspected for smoothness and cleanliness. Using a back light source, all holes shall be inspected for voids. Voids are acceptable at the junction of the hole up to 20% of the circumference. Voids on the hole wall are acceptable to 20% of the wall area. Not over 5% of the holes on the circuit shall have voids as listed above. Customer specifications shall supersede the above listed requirements.

4.6.4 Exposed copper areas on the surface of circuits (prior to etch) or pads are a cause for rejection.

4.6.5 Circuits shall have a smooth surface and be clean of all tape residues.

4.6.6 Plated through holes shall be clean, bright, and evenly plated. In the case of matte tin, there shall be a uniform, satin finish.

4.6.7 Micro sectioning, microderm, scope, or before/after plating hole size checks may determine plating thickness.

4.7 POST ETCH INSPECTION

4.7.1 The etch pattern coupon panel shall be ran to verify measurements. When inspecting inner layers, determine if line width of circuit meets specification. An A.O.I (scan and verify) shall be used on all inner layer details over 6 layers or trace widths below 6 mils. Film work and/or microscopes shall be used for other close inspections.

4.7.2 When inspecting outer layers, we shall determine that any pits and voids in plated through holes and circuit lines do not exceed specifications.

4.7.3 We shall inspect all circuits for traces of copper in etched areas. These are causes for rejection and must be removed.

4.7.4 We shall inspect all plated-through holes closely for resist or any other foreign substance residue. Holes shall be cleaned after etching.

4.8 LAMINATING

4.8.1 Panels shall be inspected for pits, dents, and any other foreign materials that might mar the surface of the panels.

4.8.2 Panels shall be checked for warp and/or twist that might exceed specifications.

4.8.3 All panels shall be checked for thickness, using a micrometer, and measurements taken in three (3) places across the panel.

4.9 TAB PLATING

4.9.1 Area calculations shall be verified.

4.9.3 We shall inspect for pitting, scratches, blisters, voids and lack of adhesion.

4.9.4 Plated areas shall be bright and uniform in appearance.

4.9.5 Plating thickness shall be determined by a microderm.

4.10 FABRICATION

4.10.1 The first article inspection procedures shall be followed at all times.

4.10.2 When a production run of parts has tolerances of plus or minus 0.003" or less, every tenth part shall be checked by the fabrication lead to assure that the process is staying within specified limits. If the lot is 10 pieces or less, only the first article shall be examined. After any tool change, it is required to have an immediate part inspection.

4.10.3 In all cases, the part inspected shall remain identified during the entire fabrication process. The inspector, upon receipt of the entire lot of parts from the Fabrication Department shall:

- A. Check shop work order for evidence of first article and any subsequent inspections.
- B. Separate the parts previously inspected from the total parts submitted.
- C. Sample the remainder of the lot for conformance to the specification and, based on this sample, accept lot or report any deviation to the Quality Assurance Manager.

4.11 SOLDERMASK & LEGEND (SECONDARY IMAGING)

4.11.1 Images shall be verified by the photo work as to registration. On the drawing the type of epoxy ink and required color shall be listed.

4.11.2 Solder mask shall be uniform in appearance and exhibit no skips, voids, or bubbles in or on the surface of the ink(s). Legend shall be consistent in letter width and contrast.

4.11.3 A beam balance shall be used to formulate two-part epoxy inks.

4.11.4 Peel and cure tests shall be performed on each lot processed.

4.11.5 Smear solder masks or missing letters, symbols, or numbers shall be cause for rejection. Absolutely no solder mask is to be permitted on surface mount device pads.

4.11.6 Poor workmanship is cause for rejection. The manufacturing inspector shall view mask and legend prior to thermal cure.

4.12 SOLDERMASK THICKNESS AND ADHESION

4.12.1 Registration shall be compared to the land pattern, per the master drawing. If not specified on the master drawing, the maximum encroachment of solder mask on the land patterns shall not reduce the annular ring below the minimum annular requirements for lands intended to be soldered. No encroachment of solder mask on surface mount device pads shall be permitted.

4.12.2 Using the coupon processed with the circuit, the permanency and adhesion of cured solder mask to circuits shall be determined in accordance with PIC-SM 840 and method 2.4.28.1 of IPC-TM-650.

4.13 HANDLING

4.13.1 Proper measures including use of racks, interleaving, etc., shall be taken at all times, considering the stage and type of operation, to protect material and articles from mishandling, corrosion, dirt and transportation.

5.1 PURPOSE

5.1.1 To establish a procedure which shall outline the responsibilities of the Quality Assurance Department with first article inspections.

5.2 GENERAL

5.2.1 This procedure shall outline the different production operations that require first article inspection.

5.3 PROCEDURE

5.3.1 The shop supervisor shall be responsible for submitting the first article part to the Inspection Department as required.

5.3.2 A first article shall be submitted to inspection for each listed operation. The inspector shall enter the operation on the traveler and quality history record which he/she inspected and shall place his/her acceptance signature on the traveler in the appropriate place.

5.3.3 If the inspector finds the first article to be discrepant, he/she shall place his/her "D" stamp on the work order and quality history record and return the first article part to the shop. The shop shall repair or alter their set-up and resubmit another first article prior to continuing production.

5.3.4 The following operations require a first article:

- Drilling (All types, including double, single, and multi layer).
- Post Lamination multi layer drill panel.
- Image transfer (Inner and outer layers).
- Etching.
- Solder mask.
- Fabrication.

5.3.5 A first article shall be presented to inspection at the beginning of each shift or when a set-up has been changed. A first article shall be submitted before using any new or reworked drilling and/or milling tool.

6.1 FINAL INSPECTION

6.1.1 All circuits shall be 100% visually examined after a sample plan inspection (per Mil. 10SD) has been performed unless the Quality Assurance Manager supersedes. This visual inspection shall be in addition to bare board electrical testing. The following visual inspection shall be done before electrical testing on the following:

- Outer layers/conductors.
- Plating coverage.
- Circuits tips and pads.

6.1.2 The following shall be checked at final inspection:

- Verify all required inspections have been performed.
- Verify all forms and attachments have been completed properly.
- Confirmation of correct data and revision level.
- Proper marking and identification.
- Workmanship conforms to IPC-A-600.
- Proper hole sizes and placement.
- Conductor patterns.
- Warp and twist.
- Lifted tips, circuits and pads.
- Complete plating coverage.
- Cleanliness.
- Count/quantity.

6.2 QUALITY HISTORY RECORD (WORK ORDER)

6.2.1 All inspection points shall be recorded in the quality history record. This form must accompany all jobs through the complete fabrication and inspection cycles.

6.2.2 After final inspection has been performed and parts accepted, all quality history records shall be maintained and be made available to the customer upon request.

6.3 SAMPLE INSPECTION PROCEDURE

6.3.1 The sampling plan for inspection of circuits shall be in accordance to MIL-STD-105D.

7.1 TRACEABILITY

7.1.1 Traceability shall be maintained throughout the manufacturing process.

7.1.2 The process sheet (traveler) shall be identified with the appropriate lot/date code for all raw materials used in the manufacturing of the circuits (i.e. base laminate, pre-preg, solder mask and nomenclature inks, etc.).

7.1.3 When applicable, test coupons shall be marked with traceability information to match that of the corresponding production panel/board. This information shall include the following as a minimum:

7.1.3.1 Lot or date code to identify the plating week and year of manufacture (type and format at the discretion of the manufacturer unless otherwise specified).

7.1.3.2 PWB part number.

7.1.4 Certification referencing purchase orders shall be kept on file for a minimum period of three years.

7.1.5 When required, actual samples, specimens, test articles, etc. shall be attached to the certifications or stored in a suitable manner for immediate reference, with identity to lot number, purchase order, etc.

7.2 RECORD OF INSPECTIONS AND TESTS

7.2.1 Adequate records shall be maintained as required. They shall be legible, permanent, dated and shows evidence that all required inspections and tests have been performed.

7.2.2 Inspection records, work orders, or other documents showing inspection action shall reference:

- Identification of parts involved.
- Inspection or test being conducted.
- Raw data measured.
- Number of conforming articles.
- Number of non-conforming articles.
- Nature of defects.
- Disposition of defective material.

7.2.3 When required by purchase order or contract, all records shall be made available for customer evaluation.

7.2.4 Any and all defects shall require initiation of a Discrepant Material Report.

8.1 PRODUCTION EQUIPMENT

8.1.1 The following equipment shall form a part of the overall calibration program under the Quality Assurance Department's responsibility:

- Temperature controls used in processing.
- Voltmeters, Plating Room.
- Amp meters, Plating Room.
- Temperature Ovens.

8.2 RECORDS

8.2.1 Records on items in 8.1.1 shall be maintained by production as required and shall be identified with stickers. These stickers (tags) shall show calibration status date and the next due date.

9.1 CHEMICAL ANALYSIS, PLATING ROOM

- 9.1.1 The Laboratory Technician shall maintain records.
- 9.1.2 The Laboratory Technician shall monitor each plating tank and log all additions and corrections on the proper forms and/or charts as directed by the Statistical Process Control (SPC) program.
- 9.1.3 The Laboratory Technician shall provide summary reports to the Quality Assurance team on a consistent basis.
- 9.1.4 Quality Assurance shall weekly monitor the logs and charts of all chemical analysis to verify continuity of process maintenance.

10.1 PURPOSE

10.1.1 To establish a policy and procedure for the detection, control, and disposition of materials which do not conform to appropriate drawing and/or specification requirements.

10.2 GENERAL

10.2.1 A preliminary review, which involves rework to specification, scrap or return to vendor disposition, shall be conducted by the Material Review Group which shall be comprised of one representative from Quality, Process Engineering, Manufacturing and the General Manager. The group shall be comprised of individuals that are familiar with the end customer and the processes required on the material in question.

10.3 DISCREPANCIES

10.3.1 For discrepancies involving in-coming materials, the Quality Assurance and Production Manager shall make a preliminary review decision to scrap or return the material to the supplier for credit or replacement. Under no circumstances will discrepant material be allowed into production operations. If the discrepancy is the supplier's responsibility, a corrective action request shall accompany the returned material.

10.3.2 Deliverable materials containing discrepancies of non-conformance, which cannot be reworked to specification, shall be rejected and placed in bond to assure segregation from acceptable material.

10.3.3 When non-conformance is detected during processing, other than first article inspection (see Section 5), the discrepancy shall be noted on the shop traveler, the affected parts shall be identified as rejected, and the operation halted for preliminary review action by the Material Review Group. This action may result in a decision to scrap, or if at all possible, rework to specification.

10.3.4 If rework to specification is deemed not possible and the discrepancy are judged to be minor, the parts shall be placed in bond and a Material Review Group disposition shall be sent to the customer. This document shall define the discrepancy, list the cause and corrective action taken to prevent recurrence, and shall include a disposition recommendation.

10.3.5 All action shall be recorded on the shop traveler/inspection data sheets for future reference and the Material Review Group dispositions shall accompany the shipment of parts.

10.3.6 In the case of a customer specification or artwork change, which would allow acceptance of rejected parts, the revised specification/artwork must be officially incorporated into the purchase order (contract) before parts, may be shipped.

10.3.7 Non-conformance detected in final inspection shall be handled in the same manner as in-process discrepancies as outlined above.

10.4 RECORDS

10.4.1 The Material Review Group evaluations shall be recorded on the Non-Conforming Material Report form. Acceptance shall be noted as to the disposition of the Material Review Group.

10.5 IDENTIFICATION

10.5.1 A nonconformance tag on lot containers shall identify non-conforming materials being held for disposition.

10.5.2 Non-conforming materials, which have been released by the Material Review Group for further processing, shall be treated as normal articles. Records of the Material Review group and part identification shall be carried through to final inspection.

11.1 PURPOSE

11.1.1 To define a method of controlling inspection stamps.

11.2 STAMPING OF PARTS

11.2.1 As a general rule, circuits shall not be individually stamped with the inspection status. All such stamping shall be made on the accompanying paperwork.

11.2.2 Where circuits must be stamped as required by customer, method and location shall be specifically noted on the drawings.

11.2.3 Rubber stamp ink used on paperwork shall be ordinary ink, which is permanent on paper. Ink for stamping parts shall be as specified by the customer specification or drawings.

11.2.4 Stamping of parts, when required shall be located so that further operations or assembly will not obscure the marking.

11.3 ISSUANCE OF STAMPS

11.3.1 All stamps shall be serialized.

11.3.2 Records shall be kept for all stamps and shall show to whom they are issued, date of issue and date of recall.

11.3.3 Each inspector shall be responsible for the safekeeping and use of his/her assigned stamps.

11.3.4 Stamps shall be capable of producing clear and distinct impressions at all times.

11.4 CONFIGURATION AND APPLICATION OF STAMPS

11.4.1 The inspection departments shall use the following stamps:

- First article.
- In-process acceptance.
- Electrical test acceptance.
- Final acceptance.

12.1 PURPOSE

12.1.1 This document control procedure encompasses:

- Drawing change.
- Specification control.
- Production.
- Process documentation.
- Inspection documentation.
- Quality assurance documentation.

12.2 SCOPE

12.2.1 This procedure is applicable to all engineering drawings, sketches and specifications used in the manufacture of printed circuits.

12.2.2 Copies of purchasing documents required for inspection purposes shall be furnished in accordance with the instructions of a customer representative.

12.3 DRAWING CHANGE CONTROL

12.3.1 The Production Control Department shall maintain a central file for drawings and specifications.

12.3.2 Each released print shall have customer name, part number with latest revision, E.C.O.'s and date.

12.3.3 Job releases shall be handled by Production Control. Shop travelers shall reflect customers' part number and revision letter/number and E.C.O.'s, artwork number and revision.

12.3.4 The Quality Assurance Department shall, through constant surveillance, determine that the correct drawing is in use. In the event that the drawing number, specification number, or revision letter/number does not agree with that shown on the shop traveler, the job shall be withheld from further processing by the Quality Assurance Department. In this case, the Quality Assurance Manager shall consult the production control print release file to determine the proper print revision required.

12.3.5 Use of marked drawings shall be permitted when they are signed and dated by the customer's representative or Quality Assurance Manager.

12.3.6 No drawing, specification, or other document shall be changed without the approval of the Quality Manager who has considered requirements, performance, customer approval and affect on price or delivery.

12.3.7 When prior approval of change is controlled by customer requirements, customer approval is required before the Quality Manager can approve the change.

12.4 ORIGIN OF CHANGE REQUESTS

12.4.1 Customer requests for design change shall be directed to the Sales or General Manager for review of the change and its affect on price or terms of the purchase order.

12.4.2 All customer change orders for jobs in progress must be transmitted directly from contracts to production control and quality control. All drawings, specifications and work orders shall then be upgraded to the latest revision. If the requested change cannot be made, the order shall be placed on hold and the Quality Assurance Manger shall notify the customer for disposition.

12.5 PRODUCTION AND PROCESS DOUMENTATION CONTROL

12.5.1 The Process Engineering Manager shall maintain all process procedures.

12.5.1.1 Request from the Production or Quality Departments for process change to correct errors, facilitate production, improve inspection, simplify procedures, etc., shall be submitted to the General Manager for review of its effect on customer requirements and other process considerations.

12.5.1.2 Engineering request for process changes to improve performance, reliability, simplicity, etc. must be approved by the Process Engineer.

12.5.2 The Quality Assurance Department shall, through constant surveillance, determine that the correct production procedures are in use. In the event that the procedure number or revision letter does not agree with that shown on the shop traveler, the job shall be withheld from further processing by the Quality Assurance Department. In this case, the Quality Assurance Manager must contact the Production Manager and the job should be reviewed for disposition. The Production Manager must insure that the correct procedure is issued.

12.6 INSPECTION DOCUMENTATION CONTROL

12.6.1 The Quality Assurance Department shall maintain all inspection procedures.

12.6.2 All inspection documents referring to test and inspection methods and accept/reject criteria shall be extracted from customer drawings, customer specifications or IPC specifications.

13.1 SCOPE

13.1.1 The corrective action procedure is designed to define the cause of material, process or procedure deficiencies and to limit the occurrence of those discrepancies in future processing.

13.2 DEPARTMENTS AFFECTED

13.2.1 Quality Control

13.2.2 Manufacturing

13.2.3 Management

13.3 FORMS USED

13.3.1 Corrective Action Request (see sample 3).

13.4 PROCEDURE

13.4.1 The corrective action program is administered by the Quality Department and provides for informational feedback and corrective action follow-up on deficiencies discovered in any area of test or inspection.

13.4.2 When the need for a corrective action is indicated, the Quality Department will initiate a Corrective Action Request describing the discrepancy in detail and the time allotted for correction. It is then forwarded to the department supervisor and all those concerned.

13.4.3 All corrective action replies must state the cause of discrepancy, the action taken to prevent recurrence and the effective date of such action. The Quality Department shall perform follow-up procedures within thirty (30) days from the effective date of the corrective action to insure that the action taken is, and continues to be, effective.

13.4.4 In the event the corrective action cannot be agreed upon or completed in a timely manner by the affected department, the General Manager shall make the final decision on the action to be taken.

13.4.5 Quality Assurance shall maintain all records on corrective actions required and taken.

14.1 PURPOSE

14.1.1 To establish a record of our quality history for each customer.

14.2 PROCEDURE

14.2.1 Material certifications, test reports, calibration certificates, chemical analysis certifications and receiving inspection records shall be filed and retained for a minimum of two years.

14.2.2 Material review records and customer deviation authorizations shall be filed and retained for a minimum of two years.

14.2.3 Corrective action requests shall be retained in active file until cause and effect of corrective measures are completed. They shall then be retained in an information file for a minimum of one year.

14.2.4 Inspection records (shop travelers) shall be filed in the completed job files and retained for a minimum of three years.

15.1 PURPOSE

15.1.1 To define the procedures for receiving, handling, storage and distribution of all material from the stockroom.

15.2 RESPONSIBILITIES

15.2.1 The Quality Department shall inspect the methods used in handling, transportation and storing material to insure protection against damage, deterioration, corrosion, foreign material, etc., both inter-plant and intra-plant.

15.2.2 The Quality Assurance Manager is responsible for verification of storage procedures and records of all material procured for specific contracts and also for general stock.

15.3 PROCEDURE

15.3.1 The stockroom shall be maintained as a closed area. Only the persons assigned to this area and Quality Control personnel shall be allowed into this area unescorted.

15.3.2 Complete, current records shall be maintained for all material in stock by the use of a continuous inventory system. Regular inventory shall be performed as further assurance that inventories are correct and that no unauthorized material is being issued or received. Identification shall consist of a lot number, material type, specifications, purchase order number and manufacturer name.

15.3.3 All items shall be handled and stored in such a manner as to elude the possibility of damage or deterioration while in stock. Special care shall be exercised when gathering material to assure that damage at that point shall be avoided.

- 15.3.4. Items with a limited shelf life shall be stored in environmentally controlled areas and shall be properly marked as to storage conditions and expiration dates.
- 15.3.5 Raw materials shall be marked for proper material identification, lot number and shipment number
- 15.3.6 Whenever possible, material shall be issued on a first in - first out basis. No material shall be issued without completion of a withdrawal request, which becomes a permanent part of the stock records.
- 15.3.7 Where required by contract, all material purchased for a given contract shall be stored in the bonded area, identified by contract number, and released only for use on that contract.

16.1 Purpose

16.1.1 The Quality Audit is intended as a method of evaluating, revising and improving the effectiveness of the Quality Program and Inspection System as outlined in this manual.

16.2 Scope

16.2.2 The Quality Audit shall be conducted, at twelve-month intervals and shall be performed as a part of the annual review and revision of the manual. The Quality Manager, or his/her designee, is responsible for conducting internal audits.

16.3 Procedures

16.3.1 Audit reports, as applicable, shall identify the period of audit and area audited.

16.3.2 A copy of the audit report shall be transmitted to the appropriate department supervisor.

16.3.3 Corrective action procedures shall be implemented when areas of nonconformance are found. The corrective action shall be documented and included as part of the audit report.

16.3.4 An evaluation of the following items shall be included as part of the Quality Audit:

- Condition of inspection and test equipment.
- Conformance to Quality Program and Inspection System procedures as set forth in this manual.
- Conformance to safety regulations.
- General condition of processing and manufacturing equipment.

17.1 Scope

17.1.1 All production employees shall be trained and certified before they may perform any task without supervision and verification of their work is required when completed.

17.2 Procedures

17.2.2 Training shall consist of formal training and on-the-job training.

17.2.3 Formal training shall be given to all new employees or employees that cross-train. Formal training shall consist of Cordova written material, textbooks, vendor technical data, educational video, film, or other industry standard information as applicable. Senior management or engineers shall give the material to the employees along with classroom instruction and hands-on instruction.

17.2.4 On-the-job training shall be instituted for all employees. The length of on-the-job training shall be determined by employee performance as judged by the department manager and/or immediate supervisor.

2.2.2.1*3 Sample 1

Vendor Survey Checklist

Company:		
Address:		
City:	State:	Zip:
Phone:	Email:	
Contact:		
Services Provided:		
General Remarks:		
Quality Controls:		
Inspection Standards:		
Statistical Quality Controls:		
Calibration System:		
Inspection Stamps:		
Record Retention:		
Approved: Yes	No	Circle One
		By:
Comments:		

3.7.1.1*3 Sample 2

Material Report

Report By:	Date:
	P.O.#:
Supplier:	Material Code:
Contact:	Lot Number:
Phone: ()	Return Code:
Reason for Rejection:	
Approved By:	
Date:	

13.3.3.1*3 Sample 3

Corrective Action Request

JOB#:		ACAR#	
INITIATOR		RESPONDER	
Dept:		Dept:	
Name:		Name:	
Signature:		Signature:	
Date Opened: / /	Date Req'd: / /	Date Completed: / /	
Customer:		P/N	Rev.:
Source: ECR# <input type="checkbox"/> RMA# <input type="checkbox"/> DEVIATION <input type="checkbox"/> REMAKE <input type="checkbox"/> OTHER <input type="checkbox"/>			
Non-Conformance Description:			
Root Cause Analysis:			
Containment/Corrective Action:			
Preventive Action:			
Q/C Verification	Name:	Q/A Responsible	Name:
SIG:	Date:	Title:	
Customer Copy <input type="checkbox"/>	ACAR File <input type="checkbox"/>	JOB File <input type="checkbox"/>	