

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

Revision 1

Revision Date 07/22/2020

MRA Systems, LLC., herein referenced as MRAS. Notwithstanding any other provisions, all articles furnished hereunder are subject to the Inspection Clause of the General Provisions of Purchase Order (Contract) and the following Special Provisions Clause(s) when indicated by clause number(s) in the schedule of Purchase Order (Contract).

Articles defined in the schedule of the Contract will not be accepted by MRAS if the Contractor fails to submit certification, documentation, test data and reports specified herein.

Revisions to this document are shown in **green**.

A1 MRAS ACCEPTANCE AT DESTINATION Articles ordered under this Contract are subject to final acceptance at the MRAS facility as set forth on the face of the Contract.

A2 GOVERNMENT INSPECTION Government inspection is required prior to shipment of this material. Upon receipt of this Contract, promptly notify the Government's Representative who normally services your plant so that appropriate planning for Government Inspection can be accomplished in accordance with applicable specifications. A copy of this Contract shall be furnished to the Government Representative upon receipt.

The Contractor's Quality System shall conform to the requirements of MIL-Q-9858A and is subject to review and approval at all times by MRAS.

A4b INSPECTION SYSTEM REQUIREMENTS FOR MIL-I-45208a The Contractor's Inspection System shall conform to the requirements of MIL-I-45208A and is subject to review and approval at all times by MRAS.

A4c BASIC QUALITY ASSURANCE PROGRAM REQUIREMENTS The Contractor's Quality System shall conform to the intent of AS9100 or M1000. (Note: If P73d is specified, M1000 is required). MRAS "Basic Quality Assurance Program Requirements" are detailed in document MRAS9000 "Supplier Quality System Requirements." The Contractor's Inspection System is subject to review by MRAS at all times.

A4d DIGITAL PRODUCT DEFINITION QUALITY ASSURANCE Contractors utilizing digital product definition, i.e., CATIA data, as the authority dataset or as a derivative dataset in manufacture or product acceptance of Boeing program articles, shall submit for approval by MRAS Quality a Digital Product Definition Quality Assurance (DPD QA) Plan. This includes design collaboration when design responsibility is shared with sub-tier suppliers.

Middle River Aerostructure Systems

103 Chesapeake Park Plaza
Baltimore, MD 21220
(410) 682-1500
United States

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

The Contractor's DPD QA Plan shall conform to the requirements of D6-51991, Boeing Quality Assurance Standard for Digital Product Definition, and is subject to review and approval at all times by MRAS. Boeing reserves the right to survey and/or review the DPD QA Plan and configuration management systems of sub-tier suppliers.

MRAS Quality shall approve the Plan and any changes to the plan.

<http://www.boeing.com/companyoffices/doingbiz/supplier/D6-51991.pdf>

A4e CAD SYSTEM / 3D MODELING CAPABILITY REQUIREMENTS Design/ Built to print contractor utilizing digital product definition, i.e., CATIA data, as the authority database or as derivative dataset in manufacturing or product acceptance of customer program article, shall have a robust procedure for digital product description and modelling. Process is subject to review and approval by MRAS Engineering and Quality organizations.

Contractor may refer to industry standard ASME Y14.41.

A4f SOFTWARE QUALITY PROGRAM REQUIREMENTS FOR MIL-S-52779 The Contractor's Software Quality System shall conform to the requirements of MIL-S-52779 and is subject to review and approval at all times by MRAS.

A4g QUALITY PROGRAM REQUIREMENTS FOR MIL-STD-1535 The Contractor's Supplier Quality Assurance Program shall conform to the requirements of MIL-STD-1535 and is subject to review and approval at all times by MRAS.

A4h HYDROGEN EMBRITTLEMENT SENSITIVE HARDWARE The Subcontract MUST only be placed with MRAS approved Manufacturers/Distributors. The Contractor and its Subcontractor shall submit with each shipment, certification of the origin of manufacture and procurement, applicable traceability information for articles delivered (e.g., date code/lot number), and part number. The certification shall be signed and dated by an authorized Representative of the Manufacturer/Distributor supplying the articles. Hydrogen Embrittlement Sensitive hardware supplied by distributors shall be obtained only from MRAS approved manufacturers and shall not be modified or reworked in any fashion by the distributor or his subcontractors unless specifically authorized by a MRAS drawing or specification. Articles defined in this Contract are subject to MRAS inspection at destination and will not be accepted by MRAS if the Manufacturer/Distributor fails to ship completed certification with the articles.

A4k CALIBRATION SYSTEM REQUIREMENTS FOR ANSI/NCSL Z5401 The Contractor's Calibration System shall conform to the requirements of ANSI/NCSL Z5401 and is subject to review and approval at all times by MRAS. The Contractor's signed certification must state (1) traceability to the National Institute of Standards and Technology, (2) tool or gage number, and (3) Contract number.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

A4I CORRECTIVE ACTION REQUIREMENTS FOR MIL-STD-1520 The Contractor's corrective action and disposition system for nonconforming material shall comply with the requirements of MIL-STD-1520 and is subject to review and approval at all times by MRAS. Delegation of Material Review Board activities on MRAS Technical Data Package requirements is not authorized by this Clause and must be separately authorized in writing by MRAS.

A4m SOFTWARE SYSTEM The Contractor's Software System shall conform to the requirements of DOD-STD-2167A/DOD-STD2168 and is subject to review and approval at all times by MRAS.

A5 ACCEPTANCE TEST PROCEDURES: IN-PROCESS AND FINAL The Contractor shall prepare separate detailed test procedures, encompassing tests required for in-process and final acceptance. Each item of hardware, or part thereof, which requires acceptance testing, shall be covered by an Acceptance Test Procedure. Final and In-Process Acceptance Test Procedures require MRAS approval prior to the delivery of the first unit of hardware. Subsequent changes are subject to MRAS approval prior to incorporation. Where these tests are performed utilizing equipment controlled by computer software or firmware, the software or firmware associated with, or affecting, those tests require MRAS approval at the same time(s) as the remainder of the Acceptance Test Procedure.

A5b ACCEPTANCE TEST PROCEDURES The Contractor shall prepare separate detailed test procedures, encompassing tests required for acceptance. Each item of hardware, or part thereof, which, requires acceptance testing, shall be covered by an Acceptance Test Procedure. Final Acceptance Test Procedures require MRAS approval prior to the delivery of the first unit of hardware. Subsequent changes are subject to MRAS approval prior to incorporation. Where these tests are performed utilizing equipment controlled by computer software or firmware, the software or firmware associated with, or affecting, those tests require MRAS approval at the same time(s) as the remainder of the Acceptance Test Procedure.

A5c REGISTERED COMPONENTS Articles to be delivered under this Contract have been designated "Registered Components" as defined in MIL-STD-1535A. Prior to acceptance of articles delivered, the Contractor shall submit to MRAS for approval the following critical processing information: (1) The methods and type of critical processing to be used, (2) the location within the processing cycle where inspection/tests will take place, (3) the attributes that will be inspected/tested at each location, (4) the materials and methods of preservation packaging, and (5) the handling and transportation precautions for protection of product integrity. Revisions or variation to the approved process control plan shall not be implemented without prior written approval from MRAS.

A6 MRAS SOURCE SURVEILLANCE Source surveillance shall be conducted by MRAS at the Contractor's facilities or where designated in this contract prior to shipment. Inspection/test and in-process inspection/test of the articles defined in this contract shall be performed by the Contractor and shall be subject to witness by a

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

MRAS Quality Representative. The Contractor shall contact the MRAS Quality Representative prior to the start of fabrication so that mandatory in-process inspection/test points can be agreed upon. The Contractor shall have available and present upon request, documented evidence of his inspection/test performance, including in-process and/or final test. This may be used for the acceptance of hardware or material. Required documentation for shipment must be completed and signed by the Contractor's authorized Quality personnel, and available for the MRAS Quality Representative's review.

A6a PRE-CAP INSPECTION BY MRAS Units to be delivered under this Contract require "precap" inspection by MRAS at the Contractor's facility. The Contractor shall notify the MRAS Quality Representative assigned to his facility when units will be ready for this inspection. The Contractor shall have available copies of his actual inspection results.

A7 SPECIAL PROCESSES CONFORMANCE Contractor and any sub-tier contractor engaged in special processes (example: soldering, cleaning, x-ray, welding, magnetic particle and penetrant inspection, heat treating, plating) shall have special process approval by MRAS. Approval of special process sub-tier contractors does not relieve the contractor of the responsibility for exercising those control measures necessary to ensure that work performed by sub-tier contractors is in accordance with specification requirements. Contractor shall have records of his approval on file, available for review by the MRAS Quality Representative. The Contractor shall identify the sub-tier contractor(s) that perform special processes, by process specification, and supply this information to MRAS with each shipment. Seller shall maintain activity data on each Buyer-approved process source utilized by Seller. New requests require accreditation through the National Aerospace and Defense Contractors Accreditation Program (NADCAP) as a pre-requisite for MRAS approval.

A7a SPECIAL PROCESS CONFORMANCE (BOEING) In addition to the requirements of provision A7, contractor and any sub-tier contractor shall use Boeing approved special processors, manufacturers and their authorized distributors (designated fasteners and bearings), and Boeing-approved sources of non-domestic raw materials, as required and listed in D14426, Boeing Approved Process Sources.

A7b SPECIAL PROCESS CONFORMANCE (BELL HELICOPTER TEXTRON) In addition to the requirements of provision A7, contractor and any sub-tier contractor shall use BHT approved special processors, when Bell Process Specifications (BPSs) are specified on the drawing. BPSs that require facility approval are identified on the BPS cover sheet under the subtitle "Facility Approval". BHT publishes a listing of such approved sources in QPS-101.

A7c SPECIAL PROCESS CONFORMANCE (LOCKHEED MARTIN) In addition to the requirements of provision A7, "Work to be accomplished in performance of this Purchase Order is directly related to a Lockheed Martin Aeronautics Company Purchase Order and must be accomplished in accordance with process specification(s) on purchase order of Lockheed Martin Aeronautics Company Appendix QJ." "Processing to be accomplished in performance of this purchase order is directly related to a Lockheed Martin Aeronautics

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

Company purchase order and must be accomplished in accordance with process specification(s) on this purchase order and the revision in effect as of the date of this PO of Lockheed Martin Aeronautics Company Appendix QJ. All requirements of Appendix QJ, paragraph 12, a-f, shall be accomplished. Appendix QJ is located at: <http://www.lockheedmartin.com/us/aeronautics/materialmanagement/>. All requirements of such Appendix QJ paragraph 12.a-f shall be accomplished. Appendix QJ can be found on the LM Supplier Page: LM Appendices. Note: LM Aero Identification number for Middle River Aircraft Systems is 00509500.

Software Quality Program Supplier shall implement and maintain a software Quality program or methodology acceptable to Buyer for engineering design, development, testing and delivery of standalone or embedded software products associated with this Purchase order. A part of this quality system shall provide for evaluation of each non deliverable software item useful in the automated manufacturing of deliverable hardware or in the qualification or acceptance of deliverable software or hardware. Prior to use the non-deliverable software, required functions are defined, objective evidence exists, and it is placed under internal configuration control which is maintained throughout. Supplier shall include in its Software Quality Program or methodology the review and audit of software development processes, products and activities, as required by its standards and, shall provide internal and Buyer visibility into software quality program trends in its program. Buyer may accept Supplier's adaptation of standards SAE AS9115, as revised, for contracted deliverable software and SAE ARP 9005, as revised, for management of non-deliverable software if artifacts or compliance are readily verifiable and has the right to conduct in-process inspection of Supplier's software development process and evaluate Supplier's compliance with Supplier's internal procedures and other applicable documents.

Foreign Object Damage (FOD) Supplier shall maintain a FOD prevention program to meet Lockheed Martin Quality clause Q4R - Foreign Object Damage / Damage Prevention requirements. Quality clause Q4R is located on <http://www.lockheedmartin.com/us/aeronautics/materialmanagement/> and navigating through the "Supply Chain Management"/ "Quality Requirements"/ "Clauses" links.

Engineering Materials & Approved Products (EMAP) All MRAS Suppliers of Lockheed Martin-designed products shall comply with EMAP, a database of engineering requirements for the purchasing of all standard component parts used for Lockheed Martin Aeronautics Marietta Core Programs. EMAP requirements and directions for access can be found on <http://www.lockheedmartin.com/us/aeronautics/materialmanagement/> and navigating to the "Supply Chain Management"/ "Engineering"/ "Engineering Materials & Approved Products (EMAP) / Design Support Database (DSD)" links. Supplier shall ensure that EMAP requirements are flowed down to Supplier's subcontractors at every tier. MRAS will provide applicable EMAP flow- down to suppliers, unapproved by Lockheed Martin, of Lockheed Martin designed products.

A7d SPECIAL PROCESS CONFORMANCE In addition to the requirements of provision A7, Contractor and any sub-tier contractor engaged in special processes shall have special process approval by MRAS and MRAS' Customer. Contact Subcontract Administrator for list of Customer approved processing sources.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

A7e SPECIAL PROCESS CONFORMANCE (SIKORSKY) In addition to the requirements of provision A7, Contractor and any sub-tier contractor shall use Sikorsky approved special processors. Requirements and Listing are available at the following web address - Sikorsky Approved Special Processors. All provisions of the "Approved Source List" apply.

A7g Special Process Conformance (GE Aviation, General Electric Engines) Contractor and any sub-tier contractor may use GE Engines approved special processors in place of MRAS approved processors when GE Aircraft Engines Process Specifications are specified on the drawing and subject specification is listed in the GE Yellow Pages. Seller shall request a current copy of processors GT 193 as objective evidence of GE Special process approval.

A8 (See P37, P47 or P52 provisions) B1 radiograph Radiographs shall be supplied with the material to MRAS.

A9 Quality Planning Supplier is to submit a First Article Inspection Record per P6 and Supplier Quality Planning Declaration (form SQ-1810) to MRAS for review and approval. Supplier is to make available upon request (24 hours) a Process Flow Diagram; PFMEA; Control Plan; MSA; and Process Capability. Recommend suppliers to use AS9145 and the IAQG SCM for guidance.

B2a RAW CASTINGS AND FORGINGS Two samples of all raw castings and forgings are required from new or reworked dies or molds and must be approved by MRAS prior to run of production parts. Unless MRAS source surveillance is a requirement of the Contract, the samples shall be forwarded to MRAS Receiving Inspection with the actual results of layout inspection, radiographs and actual chemical and physical test results. When MRAS source surveillance is a requirement of the Contract, the layout and test data shall be evaluated at the Contractor's facility. In either case, first article approval by MRAS is required prior to the start of production. The Contractor is responsible for obtaining MRAS approval of any change in processes or tooling using the same approval instructions stated above. **B2b SUPPLEMENTAL DATA REQUIREMENTS (Castings/Forgings)** In addition to chemical/physical test reports stating the actual chemical and mechanical properties for each lot submitted, inspection/test data listed below shall be submitted for each lot of castings or forgings as required by specification or Contract. Certification for Magnetic Particle, Fluorescent Penetrant Inspection, Ultrasonic Inspection, Pressure Test, and Grain Flow shall be submitted with the order. Radiographic Inspection results including film for each casting shall be supplied. These reports shall be validated by an authorized representative of the Contractor's Quality Department, by either an inspection stamp or signature.

B3a HEAT TREAT SAMPLES Two test bars shall be heat treated with parts and submitted with shipment (for each heat treat lot).

B3b TENSILE TEST SAMPLES Two separately cast test bars, coupons or appendages as defined by the applicable specification or drawing shall be submitted with each lot delivered.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

B4 TEST REPORTS-SUBMITTAL Actual functional test reports referencing Contract number, Contractor's name and address and/or independent laboratories' name and address, part number, part name, serial number if applicable, date and run time if applicable, must accompany each shipment to be delivered. These reports shall be validated by an authorized Contractor's Representative, by either an inspection stamp or signature and title.

B4a GROUP A ACCEPTANCE TEST Lot acceptance data shall reflect actual readings taken during test, or check-off sheets when go/no-go type test equipment is used. These data sheets shall list the actual parameters tested in each case and shall accompany each shipment. Data (reports) shall be validated by an authorized Contractor's Representative, by either an inspection stamp or signature and title.

B4b GROUP B ACCEPTANCE TEST Environmental Test or Qualification Test results shall list all parameters tested and actual readings taken during these tests. The Group B test requirement may be satisfied with test data, which is an established part of the Contractor's system so long as the data demonstrates satisfactory performance of the inspection lot from which all the parts are shipped. This data shall accompany each shipment. Data (reports) shall be validated by an authorized Contractor's Representative, by either an inspection stamp or signature and title.

B4c GROUP C ACCEPTANCE TEST Production sampling tests, as required by specification, may be selected parts used in Group (A) and (B) tests. This data shall accompany each shipment. Data (reports) shall be validated by an authorized Contractor's Representative, by either an inspection stamp or signature and title.

B4d GROUP D ACCEPTANCE TEST Group D inspection shall consist of tests as specified in the applicable specification. This data shall accompany each shipment. Data (reports) shall be validated by an authorized contractor's representative, by either an inspection stamp or signature and title.

B4e TEST REPORTS Functional Test Reports of items to be delivered under this Contract shall be presented to the MRAS Quality Representative for review and approval. The reports shall contain the Contract number, Contractor's name and address, part number, part name, serial number, any run time, tests conducted, actual results of tests, approval signature and title of the Contractor's Quality Representative. After approval by the MRAS Quality Representative, the test report shall be maintained on file by the Contractor and shall be available for review for a minimum period of three (3) years from date of final payment, unless otherwise specified by the Contract.

B4f FAILURE ANALYSIS REPORT The Contractor shall perform a failure analysis on item(s) returned under this Contract and shall provide to MRAS, as a minimum, the following information with the shipment or as directed by contract: (1) Date of report. (2) Contract number. (3) Contractor's name and address. (4) Part name, number, revision level, serial/number. (5) MARS, DR, or RITT number (if specified by Contract). (6) Specific and contributory causes of failure. (7) List of parts required to repair item(s). (8) Corrective action taken to

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

preclude recurrence and effectivity by date or serial number of corrective actions. (9) Signature and title of Contractor's Quality Representative approving the failure analysis report.

B5 MATERIAL PROCESS CONFORMANCE The Contractor shall submit with each shipment, a Certificate of Conformance, dated and bearing the signature and title of an authorized Contractor's Representative, stating that the materials furnished to MRAS are in conformance with applicable requirements of the Contract, drawings and specifications and that supporting documentation is on file and will be made available to MRAS or Government Representatives upon request. Certification shall include name of Contractor for materials being supplied, quantity shipped and Contract number. An example of an acceptable statement of certification of conformance is as follows: "This is to certify that all items noted are in conformance with the Contract, drawings, specifications and other applicable documentation, that all process certifications, chemical and physical test reports, are on file at this facility and are available for review by MRAS."

B5a MRAS FURNISHED MATERIAL CERTIFICATION The Contractor shall submit with each shipment a Certificate of Conformance, dated and bearing the signature and title of an authorized Contractor's Representative, stating that the hardware furnished to MRAS is in conformance with applicable requirements of the Contract, drawings, and specifications, and that MRAS furnished material was used in the manufacture of the hardware. An example of an acceptable statement of Certificate of Conformance is as follows: "This is to certify that all items noted are in conformance with the Contract, drawings, specifications, and other applicable documentation. Material was furnished by MRAS and no substitutions have been made without MRAS authorization." When Substitutions have been authorized, the certification will be modified to indicate the source, nature, and date of the authorization.

B5b MATERIAL PROCESS CONFORMANCE - PRATT & WHITNEY MATERIAL PROCESS

CONFORMANCE: "For all products supplied in accordance with this purchase order, the following statement shall be applied to the Certificate of Conformity: "This product is for Pratt & Whitney End Use Only and shall be controlled in accordance with applicable Purchase Order requirements". ASQR-01: [URL Link To ASQR-01](#)

Section II – All quality records shall be documented in ink or other permanent methods. Additionally, any corrections made must be recorded, dated and signed in ink or other permanent method and the original data must be legible after the change has been made. Section II – Record retention shall be maintained for a minimum of 10 years. This includes all quality records including hard copy records, electronic media and radiographs as applicable.

Storage media for electronic files must be capable of maintaining the data for the full retention period. Section II - Eye examination is required for all individuals performing visual inspection on an annual basis to the following requirements: Near Vision: Snellen14/18 or better (20/25 or better), Jaegar Type 2 at 14 inches or greater, Ortho– Rater 8 or equivalent Color Vision: Must be able to distinguish and differentiate between the colors used in the method for which certification is required, process being performed or inspection activity. Testing for color

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

vision is required one time only. Section II – Verbal agreements and or instructions are not permissible. Section II - As applicable, Test Reports of items to be delivered under this Contract shall be provided to the MRAS Quality for review and approval. The reports shall contain the Contract number, Contractor's name and address, part number, part name, serial number, any run time, tests conducted, actual results of tests, and the approval signature and title of the Contractor's Quality Representative. Section II – As applicable, Suppliers Software System shall conform to the requirements of ASQR- 01 Par 7.5 and is subject to review and approval at all times by MRAS. Section II – Handling, Storage, Packaging, and Preservation shall meet the requirements of ASQR-15.1 unless otherwise specified on the engineering drawing. Section II – Suppliers calibration system shall meet the requirements of ANSI/NC SL Z540-1 or ISO 10012, ISO 17025 as applicable. All M&TE used for final acceptance shall meet a minimum level of accuracy of 4 to 1 greater than the tolerance measured and meet a reliability target of 95% in- tolerance at time of recalibration. Additionally, MRAS Supplier Quality shall be notified of significantly out of tolerance conditions (25% of product tolerance) within 24 hrs. of discovery. Section II – If Applicable, Suppliers Sampling Inspection Plan shall conform to ASQR-20.1 requirements.

B5C MATERIAL PROCESS CONFORMATION – COMAC In addition to the requirements listed in the Purchase Order: Process Flowcharts requirements: Contractor's manufacturing planning to include a detailed Process Flowchart identifying, at minimum; significant manufacturing steps, critical operations for Key Characteristic generation, test operations and special processes

Design for Six Sigma (DFSS)/ Define for Reliability (DFR): Design contractors to have a robust system for DFSS / DFR. DFSS / DFR system is subject to audit and approval by MRAS. The use of Design Failure Modes and Effects Analysis (DFMEA), or equivalent is a necessary element of DFSS/ DFR system Monitoring Key Characteristic Acceptance: Contractors to have a robust system for identifying / monitoring Design and Manufacturing Key Characteristics

B5D MATERIAL PROCESS CONFORMATION – Airbus In addition to the requirements listed in the Purchase Order: Process Flowcharts requirements: Contractor's manufacturing planning to include a detailed Process Flowchart identifying, at minimum; significant manufacturing steps, critical operations for Key Characteristic generation, test operations and special processes Design for Six Sigma (DFSS)/ Define for Reliability (DFR): Design contractors to have a robust system for DFSS / DFR. DFSS / DFR system is subject to audit and approval by MRAS. The use of Design Failure Modes and Effects Analysis (DFMEA), or equivalent is a necessary element of DFSS / DFR system Monitoring Key Characteristic Acceptance: Contractors to have a robust system for identifying / monitoring Design and Manufacturing Key Characteristics Record Retention: For a minimum period of Six (6) years beyond the Life of the Product, the Contractor shall keep on file all the inspection and test records relative to material, processes, services and parts shown on this purchase agreement/order. The Contractor must flow-down this requirement to lower-tier suppliers if the inspection or test records are not forwarded to the Contractor. These records shall be available for release upon demand by MRAS and/or customer/regulatory agency.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

B5E MATERIAL PROCESS CONFORMATION - BOMBARDIER In addition to the requirements listed in the Purchase Order: Process Flowcharts requirements: Contractor's manufacturing planning to include a detailed Process Flowchart identifying, at minimum; significant manufacturing steps, critical operations for Key Characteristic generation, test operations and special processes

Design for Six Sigma (DFSS)/ Define for Reliability (DFR): Design contractors to have a robust system for DFSS / DFR. DFSS / DFR system is subject to audit and approval by MRAS. The use of Design Failure Modes and Effects Analysis (DFMEA), or equivalent is a necessary element of DFSS / DFR system Monitoring Key Characteristic Acceptance: Contractors to have a robust system for identifying / monitoring Design and Manufacturing Key Characteristics

B6 CHEMICAL AND PHYSICAL TEST REPORTS One copy of test reports indicating chemical composition and/or actual physical properties identifiable to each lot, batch or heat treat lot shall accompany each shipment, or shall be validated by a Designated MRAS Quality Representative.

B7 DRAWING REQUIREMENTS Drawings, sketches and specifications sufficient to inspect and/or test this material shall accompany each shipment under this Contract.

B8 GEAR TEST TAPES (MACHINE GEARS) With each shipment of gears, the Contractor shall submit gear test tapes for each year, identified to the gear to which they belong, and which verify compliance to specification requirements.

B9 TEST SAMPLES Concurrent with the shipment of production articles, Contractor shall furnish test sample(s) of each batch sufficient to conduct tests in accordance with specification or Contract requirements. Each test sample must be clearly and permanently marked with (1) batch or lot number; (2) date manufactured; (3) specification or material control information number; (4) Contractor's designation; (5) Contract number.

C1 AGE CONTROL OF RUBBER GOODS Rubber goods delivered under this Contract shall conform to the requirements set forth in MIL-STD- 1523, incorporated herein by reference, with additional requirements if applicable, as follows: "Noninstalled 'O' rings shall be individually packaged in a 'cure date' marked preservative wrapping in accordance with Method IC1 (latest revision) of MIL-P-116, and shall be delivered to MRAS within six months from cure date."

C2 TIME AND TEMPERATURE SENSITIVE MATERIAL Time and temperature storage conditions must be attached to the packing sheet and accompany each shipment to be delivered hereunder. The outermost shipping box must be marked to indicate "Time and Temperature Sensitive Material," and "Temperature Storage Range in Degrees."

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

C2A TEMPERATURE CONTROL The Contractor shall include a "Data Recorder" capable of monitoring and recording temperature as required by the applicable specifications, from time of shipment.

C3 PRINTED CIRCUIT BOARD (RAW MATERIAL) Copper clad laminate sheets shall be separated per each layer within a package/bag (not required for prepreg material). Each container (bag, package, box) shall be labelled with the following information: Specification Number, Revision Level, Type Designation, Manufacturers Name, Contract Number, Date of Manufacture, and Lot Number.

C4 ORDNANCE REQUIREMENTS Fifteen (15) days prior to shipment of the first article, a drawing or sketch and specification sufficient to inspect, assemble, checkout, test and store this material must be forwarded to MRAS, Attention: Safety Department together with the following information:

- A. The identity and weight of explosive(s).
- B. Maximum sensitivity of the explosive(s) (mechanical, electrical, and/or thermal).
- C. Contractor's drawing or part number, lot number, year of manufacture and serial number of each component if applicable.

Contractor's acceptance test procedure shall include:

- (1) Minimum current for "All Fire."
- (2) Maximum current for "No Fire."
- (3) Recommended check out procedure.
- (4) Environmental limitations.

C5 CONTAMINATION CONTROL Articles ordered under this Contract shall be cleaned by the Contractor as required by the MRAS contamination control specifications prior to acceptance at MRAS. Cleaning and/or testing of the articles shall be performed in facilities, with procedures, and equipment approved by MRAS. Each article shall be identified with a "Cleaning Status Certification and Identification Tag." The tag shall be attached in a prominent position not in contact with significant surfaces.

C6 SHIPMENT TO MRAS CONTRACTORS Material ordered hereunder is to be drop shipped to a destination other than MRAS. The quality data required by this Contract shall accompany the shipment and copies of such data shall be mailed to MRAS. "Attention: Quality Receiving Inspection," on the same date that the material is shipped.

C7 PART CERTIFICATION-DISTRIBUTORS Contractor shall certify that the articles delivered under this Contract conform to the requirements set forth in the Procurement Specification and applicable Detail Specification for the article ordered. The Contractor shall submit with each shipment, a certification as to the origin of manufacture and procurement, applicable traceability information for articles delivered, (e.g., date code/lot number), and part number. The certification shall be dated and bear the signature and title of an authorized representative of the Contractor supplying the article(s). Articles defined in this Contract are subject

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

to MRAS inspection at destination and will not be acceptable by MRAS if the Contractor fails to ship completed certification with the article(s).

C8 ELECTROSTATIC SENSITIVE DEVICES Devices delivered under this Contract are Electrostatic Sensitive. The Contractor shall assure that devices delivered are identified and packaged to provide electrostatic protection in accordance with applicable Procurement Specification.

P1 CONTAINER MARKING Each individual container (can, bottle, drum, etc.) containing the articles to be delivered hereunder must be clearly and permanently marked in accordance with the applicable specification. In addition, the following information must be forwarded with each shipment: (1) Date of manufacture or ship date, whichever controls shelf life limitation, (2) Specifications or material control information number, and (3) Purchase Agreement number.

P2 SPECIAL INSPECTION CLAUSE FOR CASTINGS AND FORGINGS The following quality requirements, in addition to regular quality clauses, shall be applied to purchase agreement/orders for castings and forgings when applicable. 1. Prior MRAS approval is required for any change in process which could alter material structure or any mechanical, chemical or electrical properties. 2. A Quality Acceptance Plan shall be submitted for approval by MRAS not later than 30 days prior to the beginning of acceptance inspection. 3. The inspection of the first piece of each kind of part or assembly shall be documented by a First Piece Inspection report. 4. Radiographic film to be forwarded to MRAS for review, after review and acceptance by the supplier.

P4 SHOT PEEN The items of this purchase order require shot peening and shall have almen test strips, identified to the applicable part number, accompany each shipment.

P5 FAA QUALITY CONTROL As provided in the Federal Aviation Regulation (FAR 21), supplier is a subsidiary manufacturer subject to said regulation. Without limiting the applicability of said regulation, the following requirements shall apply to this purchase agreement/order: Supplier's quality control system is subject to surveillance by representatives of MRAS and the Federal Aviation Administration.

P6 FIRST ARTICLE INSPECTION AND PRODUCTION INSPECTION The Contractor shall submit a First Article and First Article Inspection Report in accordance with AS9102 or M1002 (Note: If P74a is specified, M1002 is required). All assemblies and components shall have been produced by the Contractor or furnished by a sub-tier and shall have been manufactured using the same production processes, procedures and equipment which will be used in fulfilling the contract. Prior to submission, the Contractor shall inspect the component or assembly to the degree necessary to ensure that it conforms to the requirements of the contract and submit a record of this inspection with the item, including statements of findings for materials, processes and tests. A First Article sample and First Article Inspection Report per AS9102, or portion thereof, as directed by MRAS, shall also be submitted whenever there is a lapse in production as required by AS9102. Examples

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

include but are not limited to the following: any change that can potentially affect product form, fit, or function, including, changes in manufacturing processes, material used, and drawing or specification.

One (1) copy of this data with the MRAS part number and purchase agreement/order number referenced thereon must accompany the delivery of each First Article item to be delivered hereunder.

SOURCE OR SPECIFICATION CONTROL The Contractor shall perform a detailed review of the MRAS Source Control or Specification Control Drawing to ensure hardware supplied meets all drawing requirements. FAI compliance for Source or Specification Controlled Drawings shall include the following: (1) AS 9102 to Supplier Part Number (2) AS 9102 for characteristics imposed by MRAS Engineering (3) Compliance Matrix for specifications imposed by the MRAS Engineering

VSE

When Vendor Substantiation is a requirement of the Engineering or Purchase Order, a signed GT7350 shall be submitted with FAIR.

PRODUCTION INSPECTION

“All characteristics on drawing, parts lists, specifications, and PO must be accepted via 100%

inspection or approved statistical methods. If statistical methods are to be used, a specific plan shall be presented to MRAS including parameters, acceptance criteria, and applicable training required for personnel conducting sampling. Minimum level of inspection shall be: 100% for critical characteristics. 1.0 AQL Level II, ANSI/ASQC Z1.4-1993 & MIL-STD-414 for majors, and 2.5 AQL Level II, ANSI/ASQC Z1.4-1993 & MIL-STD-414 for minors (all other than critical or major). Sampling cannot occur until MRAS buyer provides written approval of statistical methods plan.”

P16 CUSTOMER WITNESS A representative of MRAS' customer may witness any inspection or test required by Quality Assurance Provision A6, without affecting MRAS' exclusive right to give direction to the Contractor or to accept or reject any procedure, test data, or article.

P16A RIGHT OF ENTRY A representative of Middle River Aircraft Systems (MRAS) or MRAS's Customer and/or relative regulatory agencies has "Right of Entry" into supplier's facility and/or their sub-tier suppliers for the purpose of verifying contract compliance and product conformity. Arrangements for such visits will be coordinated through the Buyer.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P17 IDENTIFICATION OF BUTT END Contractor shall provide identification on butt end (last end out of die) or extruded bar / shape which; will enable MRAS to differentiate butt end from cut pieces for macro examination.

P17 A MACRO EXANINATION OF BUTT END Contractor shall provide that Butt Ends of extrusion materials shall have Macro Examination performed by manufacturer and provide certification (B6) to MRAS

P18 ULTRASONIC INSPECTION Contractor shall perform 100% ultrasonic inspection as required by MIL-STD-2154. Material shall be identified by "U" stamp. Dash (-) in code shall designate specification class.

P19 GOVERNEMENT/MRAS INSPECTION AT DESTINATION Articles ordered in this purchase agreement/order are subject to Government and MRAS inspection at destination.

P20 CASTING AND FORGING IDENTIFICATION Contractor shall submit a sample of the part identification marking arrangement to MRAS for approval prior to first run production.

P21 MRAS TOOLING INSPECTION REQUIREMENTS Quality program control and surveillance will be conducted at the Contractor's facility by MRAS source representative. Upon receipt of the purchase order and prior to start of fabrication the Contractor shall notify the MRAS source representative so that the Contractor's Quality program, mandatory in process inspection and mandatory test review points can be reviewed and agreed upon. All suppliers shall comply with the following minimum Quality/inspection requirements: 1. Measuring/inspection tools and gages are calibrated and traceable to the NIST. 2. All dimensions are documented on approved variables data sheets and accompany each shipment. 3. Provide written certification that materials and/or processes comply with the tool design requirements. Special processes such as heat treat, stress relief, plating, etc., verified by supplier certification of compliance. 4. Major dimensions, probe tapes and leakage checks shall be witnessed by MRAS source representative.

P22 VENDOR SUBSTANTIATION EVALUATION Vendor Substantiation Engineering (VSE), the same as Source Substantiation (SSE), is required per General Electric Specifications P1TF17 and the latest version of S1001. The contractor is to supply, at a minimum, a copy of the drawing (for vendor designed product), test reports, technical plans, NDT/NDI technique sheets and process sheets with significant operations identified. Prior MRAS approval is required for a change to a significant process or significant process sequence. Vendor Substantiation Documentation must be submitted and approved by MRAS whenever there is a lapse in production for a period of 18 months or more.

P26 INSPECTION REPORT Dimensional Inspection data for all critical/major characteristics and indication of acceptance for minor characteristics shall be included in an inspection report on items delivered under this Purchase Agreement/Order. This report shall reference part number, revision level, serial numbers, and Purchase Agreement/Order number. This report shall be available at time of delivery and shall be shipped with the material. Minimum level of inspection shall be: 100% for critical characteristics. 1.0 AQL Level II,

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

ANSI/ASQC Z1.4-1993 & MIL-STD-414 for majors, and 2.5 AQL Level II, ANSI/ASQC Z1.4-1993 & MIL-STD-414 for minors (all other than critical or major).

P27 PROCESS CHANGES Parts supplied under this contract shall be homogenous and identical. The Contractor shall not implement any changes in the design, significant process steps, process sequence, consumable materials used, suppliers of components, suppliers of processes and/or tooling used in the manufacturing of items supplied under this Contract, without the express written authorization of MRAS. A design change shall be defined as all changes in materials, material characteristics, and all dimensional changes. A processing/method of manufacture change shall be defined as a change in processing methods, e.g., plating, wire routing, heat treat, subtier supplier, etc. Tooling in the context of this note includes shop-aids, molds, holding fixtures, acceptance tooling and any other tools used to assist in manufacturing the first or any subsequent production article. The Contractor shall submit a formal request for change to the appropriate buyer/subcontract administrator. The proposal shall provide a full and adequate description of the proposed change including an anticipated affectivity date. The buyer/subcontract administrator shall forward the technical disposition to the Contractor. If the change is approved, the Contractor shall provide the buyer/Subcontract Administrator with a firm affectivity date. Failure to notify MRAS may result in rejection of items produced subsequent to changes. If a first article is a requirement of this contract, cost incurred, as a result of performance of a new first article, will be the sole responsibility of the Contractor.

P29 FINAL ACCEPTANCE WITNESSING BY MRAS Source Inspection for final acceptance inspection/test shall be conducted by MRAS prior to shipment at the Contractor's facilities or where designated in this contract. The Contractor shall contact the MRAS Quality Source Representative upon receipt of this contract. A purchase document review shall be completed by the MRAS Quality Source Representative when practical. Inspection and/or test performed, in accordance with an agreement between the Contractor and a MRAS Source Representative, will fulfil the acceptance/test requirements of MRAS. The MRAS Quality Source Representative will elect to do 100% or a sampling of the units as selected by him. Contractor shall have available and present upon request, verifiable objective evidence of the article fabrication inspections. Required documentation for shipment must be completed, and signed by the Contractor's authorized Quality personnel, and available for the MRAS Quality Representative's review.

P35 MARKING OF ACIDS Each individual container of acid to be delivered hereunder must be color coded in compliance with ATL Bulletin B-766.

P36 HAZARD WARNING LABELS Each individual container of toxic substances or hazardous chemicals to be delivered hereunder shall bear a label from the manufacturer, importer, distributor, or supplier with the chemical name and hazard warning as defined by O.S.H.A. Hazard Communication Standard 29 CFR 1910, 1200 and state employee "Right to Know" laws. In addition, manufacturers, importers, distributors, and/or suppliers shall provide Material Safety Data Sheets (MSDS) for these substances with each shipment.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P37 OVERHEAD - NOT DELIVERABLE Material ordered under this provision is for overhead, services, capital, maintenance, construction and other uses not charged directly to Customer contracts. Material will be evaluated and accepted by the user to his requirements and will not be inspected by incoming Quality. This material is not intended for delivery to MRAS' Customers.

P40 QUALITY INSPECTION SYSTEM The Contractor shall provide and maintain a Quality Inspection System. The Inspection System shall be approved by MRAS prior to contract award. Only items that have been inspected in accordance with the MRAS Approved Inspection System and are found by the Contractor to be in conformance with the requirements of the contract shall be presented to MRAS for acceptance. Written Inspection Reports shall be prepared and maintained to provide objective evidence of conformance of the items to the requirements of the contract. These records shall be available for review by MRAS. As a minimum the Inspection Report shall include:

Part number, drawing level to which the items were manufactured, Part name, Contract number, Lot number/Serial numbers (when applicable), Quantity inspected, Parameters to be inspected/tested, Results of inspection/test, Stamp/signature of inspector, Date of inspection, and Sampling plan (when applicable). Test/inspection equipment shall be calibrated in accordance with MRAS approved procedures. Level of accuracy shall be a minimum of 4 to 1 greater than the tolerance measured. The Contractor shall submit in writing to MRAS an inspection plan for the items he will manufacture under this purchase agreement. The Contractor shall notify MRAS of any change made to the Approved Inspection System.

P41 IDENTIFICATION OF WELD SUPPLIES All weld rod, wire, and electrodes must be identified by the Contractor. Each package, box and/or spool must be identified with the following information: MRAS Purchase Agreement/Order number Specification number, class and/or type Size Heat Lot Number Weight A) Electrodes to be stamped with identification per specification B) Wire or rod to be flag tagged and/or impression stamped as applicable C) Spooled wire must have information listed above on an identification label affixed to each spool.

P42 FIRST ARTICLE VALIDATED The First Article sample, any required test samples and the first article report shall be delivered for evaluation to verify form, fit and function (as required). Written notification of acceptability must be received by the contractor prior to shipment of additional items. Fabrication of additional items beyond the First Article Sample requires prior agreement with MRAS Buyer/SCA. This clause is in addition to, and in no way limiting, superseding or nullify any contractual obligation as required by the Purchase Order.

P43 HEAT TREAT VERIFICATION Heat Treat shall be verified on a lot basis in accordance with the requirements set forth in the applicable heat treat specification. Quantitative test results shall be recorded. Test

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

reports shall include batch or lot number, date of processing, heat treat specification, material specification or material code, test performed, test results and acceptable range, contractor's designation and Purchase Agreement number. Test results will be reviewed and verified by MRAS prior to acceptance.

P44 ELECTROSTATIC DISCHARGE (HIGH RELIABILITY) Devices delivered under this Purchase Agreement/Order may be sensitive to electrostatic discharge (ESD). The contractor shall ensure that ESD protection criteria, as a minimum, are in accordance with DOD-STD1686 and DOD Handbook 263. Class 3 static sensitive devices as defined in DOD Handbook 263 shall be protected from damage due to electrostatic discharge, in addition to Class 1 and 2.

P45 MIL-STD-2000 PRINTED WIRING BOARDS, FLEXIBLE RIGID AND RIGID-FLEX (see attached)

P46 SOLDERABILITY Parts/Components procured under this Quality Provision will be tested upon receipt to verify compliance to the solderability requirements of MIL-STD-202, Method 208 for components and MIL- P- 55110/MIL-P-50884 (whichever is applicable) for Printed Wiring Boards. Failure of the parts/components to meet the acceptance criteria of the above applicable specification will be cause for rejection.

P47 ACCEPTANCE BY USER (direct charge) * Contract direct charge material ordered under this provision is "direct charge" to the Customer contract but is NOT to be installed in or delivered as an end item to the Customer. Material will be evaluated and accepted by the user to his requirements and will not be inspected by incoming Quality.

P48 SOURCE OR SPECIFICATION CONTROL The Contractor shall perform a detailed review of the MRAS Source Control or Specification Control Drawing to ensure hardware supplied meets all drawing requirements. The Contractor shall not implement any changes in the design without the approval of MRAS Engineering.

P49 SUPPLIER ACCEPTANCE TOOLS AND/OR DESIGNER EQUIPMENT TEST REVIEW When a Contractor desires to use his own acceptance tools and/or test equipment for acceptance of hardware to be supplied to MRAS, the Contractor shall provide to MRAS two (2) copies of the tool design and/or test equipment documentation package.

This package shall include drawings, operating instructions, periodic calibration requirements, and inspection and/or test plans for each acceptance tool and/or piece of test equipment.

MRAS will conduct a review of the documentation package and advise the supplier of its acceptability in writing.

P50 MRAS SPECIAL APPROVAL PROCESS See A7.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P51 RAW MATERIAL CERTIFICATION - DISTRIBUTORS The distributor shall certify that the material delivered under this Contract conforms to the requirements set forth in this Contract, Procurement Specification and applicable Detail Specification for the material ordered and that supporting documentation is on file and will be made available to MRAS or Government Representatives upon request. The Certificate shall be dated and shall include the signature and title of an authorized representative of the distributor. The certification should also include the origin of manufacture and procurement.

P52 ACCEPTANCE BY USER - BEST COMMERCIAL PRACTICE Material ordered under this provision is direct charged to the Customer contact, but it is to be manufactured, assembled and tested to "Best Commercial Practice" as directed by Customer- imposed contractual requirements. Material will be evaluated and accepted by the user to his requirements and will not be inspected by incoming Quality.

P54 PREFERRED SUPPLIER PROGRAM This Quality note modifies the A6 quality note from a Source Surveillance program to a Source Audit program. Source Audit shall be conducted by MRAS at the Contractor's facilities or where designated in this Contract at any time during the performance of this Contract. The Contractor must have a MRAS approved quality system, have completed an acceptable first article under a previous contract, and have an acceptable Supplier Quality Rating. The Contractor shall contact the MRAS Quality Representative prior to the start of fabrication so that a Purchase Document Review can be completed (and audit schedule established). The Contractor shall have available and present upon request, documented evidence of his inspection/test performance, including in process and/or final test, and subtier documentation when applicable. Required documentation for shipment must be completed and signed by the Contractor's authorized Quality personnel.

P55 BAR CODE LABELS Bar Code Labels provided with this purchase agreement must be attached per instructions provided by MRAS Subcontract Administrator/ buyer. Application of labels is subject to inspection upon receipt. Failure to properly label part(s)/package(s) may be cause for rejection.

P56 STATISTICAL PROCESS CONTROL Statistical Process Control (SPC) techniques shall be used to the extent practical. The contractor shall identify during the development/planning phase(s) processes, which, would benefit from the implementation of SPC methodologies. Upon request by MRAS, the Contractor shall make available objective evidence that such analysis has taken place and the results of the analysis. Points within the production flow where processes shall be subjected to SPC shall be documented. SPC control charts/performance data shall be validated by an authorized Contractor representative, by either an inspection stamp or signature. (REF. ANSI Z1.1, Z1.2, and Z1.3).

P57 MERCURY CONTROL Supplies furnished under this contract shall not contain functional mercury. Functional mercury is that mercury or mercury compound required for proper operation of the items delivered under this contract. In addition, external contamination by metallic mercury or mercury compounds will be cause for rejection. Prior to shipment, contractor agrees to notify MRAS if mercury contamination is suspected.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P58 FACTORY INSPECTION AND TEST PLAN The Contractor shall prepare and maintain an inspection and test plan including product flow chart of operational sequence, inspection and test points, and process control points for the items to be fabricated under this contract. Two (2) legible and reproducible copies of the plan shall be submitted to MRAS within four (4) weeks after receipt of the contract. The Contractor may assume the plan is acceptable if no formal rejection is made after two (2) weeks. Subsequent changes are subject to MRAS approval prior to incorporation.

P59 TEST AND INSPECTION INSTRUCTIONS The Contractor shall prepare and maintain written instructions for tests and inspections performed on this contract. The instructions shall include identification of the item to be tested or inspected, all test and inspection characteristics and conformance criteria, test equipment and gauging to be used, including a schematic, if applicable, level of tests or inspections, and method of recording results. Where these tests or inspections are performed utilizing equipment controlled by computer software or firmware, the software or firmware associated with, or affecting, those tests or inspections shall be included in the instructions. Two (2) legible and reproducible copies of the instructions shall be submitted to MRAS within four (4) weeks after receipt of the contract, the Contractor may assume the instructions are approved if no formal rejection is made after two (2) weeks. Subsequent changes are subject to MRAS approval prior to incorporation.

P60 NON-DESTRUCTIVE TESTING REQUIREMENTS When x-ray, dye penetrant, magnetic particle or similar requirements are imposed by the engineering drawing or specification, results shall be reported on a form which identifies the results of the evaluation, the name of the evaluator, the date, the signature and title of a responsible laboratory representative, and an adequate method of identifying and cross referencing each evaluation document to the specific parts being examined. When parts are serialized, serial numbers must appear on the report. Unless otherwise directed, films and reports shall accompany each shipment.

P61 AGE CONTROL OF 'O' RINGS Rubber goods delivered under this Contract shall conform to the requirements set forth in MIL-STD- 1523, incorporated herein by reference. Noninstalled 'O' rings shall be individually packaged in 'cure date' marked, preservation wrapping in accordance with Method IC1 (latest revision) of MIL-P-116 and shall be delivered to MRAS with a minimum of fifty percent of useful shelf life remaining.

P62 FLOWDOWN OF REQUIREMENTS The Contractor shall invoke the Appropriate Assurance Provisions herein against any Subtier Supplier performing work involving this Contract. If the Subtier supplier is a distributor, he shall provide the name of the Manufacturer and the Manufacturer's part number for each lot shipped. As a minimum, the Contractor's and the Subtier Supplier's measuring and test equipment used for product acceptance or control of special processes shall be calibrated at periodic intervals. Calibration shall be performed per written instructions and all standards shall be traceable to the NIST.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P63 PRESERVATION, PACKAGING, SHIPPING When a drawing, specification or purchase order lacks preservation, packaging, and shipping instructions, it shall be the Contractor's responsibility to maintain adequate control of the packaging to ensure the quality of the fabricated article is maintained and that damage, deterioration, substitution, and Shipments consisting of multiple containers shall have each container identified, e.g., 1 of 3, 2 of 3, 3 of 3, etc. All shipping documents, certifications, test records, inspection records, etc. shall be placed within Box No. 1 or in attached envelope. The box shall be clearly marked: packing slip, certifications, test reports, etc. enclosed. Material consisting of different configurations shall not be commingled within the same container. Each configuration must be packaged in separate containers with a packing slip for that particular configuration. Packing sheets for resubmitted material shall show a part name and revision plus the following information, which is shown on the Shipping Authority, part number, and serial numbers (if applicable). Resubmitted material must be returned in its own container with a copy of the Shipping Authority enclosed. Shipments of electronic parts consisting of multiple date codes shall be annotated on the shipper. Each date code lot shall be segregated and identified as to date code and quantity. Electronic components shall be packaged in resealable containers in such a manner as to protect the parts integrity and solderability for extended storage periods in an environment of 24 +/- 5 degrees Centigrade and 30 +/- 65 percent relative humidity. Containers and packaging materials shall be of material that does not introduce gases or chemicals that could be detrimental to the solderability of the components. Bags of containers made of silicones, sulfur compounds, or polysulphides, or processed with these compounds, shall not be used. Static shielding bags used for packaging printed wiring assemblies or components shall be clean, static free, and free from ionic contaminants. The Buyer reserves the right to require confirmation that plastic bags, if heat-sealed, do not introduce contaminants to enclosed components. Protection shall be provided to prevent physical damage to maintain leads and terminals in the as-manufactured condition under normal handling and transportation environments. Materials used for this protection shall be noncorrosive and provide protection against triboelectric generation of static electricity. Conductive shunting foam, bars, and clips shall be applied on electrical connectors to short all connector pins and the connector shell together.

P63a Advanced Release Shipping Approval (New supplier quality requirements) In case that Engineering has not been released and parts are in preliminary release/ Green Engineering, Parts shall not be shipped without written authorization from MRAS Quality. Parts planned and produced to preliminary engineering shall be re-verified to the released engineering and documented on AS9102 forms. Once engineering released, parts may be shipped providing all QUALITY CLAUSE NOTES have been satisfied

P64a RETENTION OF TEST INSPECTION DATA For a minimum period of four (4) years after the completion of the contract, the Contractor shall keep on file all the inspection and test records relative to material, processes, services and parts shown on this purchase agreement/order. The Contractor must flow down this requirement to lower-tier suppliers if the inspection or test records are not forwarded to the Contractor. These records shall be available for release upon demand by MRAS and/or the Government.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P64b For a minimum period of ten (10) years after the completion of the contract, the Contractor shall keep on file all the inspection and test records relative to material, processes, services and parts shown on this purchase agreement/order. The Contractor must flow down this requirement to lower-tier suppliers if the inspection or test records are not forwarded to the Contractor. These records shall be available for release upon demand by MRAS and/or the Government.

P65 TRACEABILITY Material and processes used must be traceable by record to the contractually imposed drawings and functional test configurations used during manufacture. Each unit of product delivered must be uniquely identifiable to the Contractor's traceability records. Such records shall be retained by the Contractor for a period of four (4) years after the completion of this purchase agreement/order or as otherwise specified by MRAS.

P66 "AS BUILT" CONFIGURATION LIST Each shipment shall be accompanied by one (1) reproducible copy of the "as built" configuration status of the assemblies controlled by MRAS. The listing shall be identified by assembly serial number.

P67 ELECTRICAL SOLDERING (MIL-STD-000) The Contractor shall establish and maintain a system to comply with MIL-STD-2000. This system shall be subject to audit by MRAS prior to start of production. Inspection of soldered connections shall be performed by certified Category D inspectors. Soldering operations shall be performed by certified Category E operators. Certification shall be in accordance with MIL-STD-2000, paragraph 5.2.4.3. Certification of Category D and E personnel shall be accomplished by certified Category C instructor/examiner. If the Contractor elects to perform these certifications, the Category C instructor/examiner must be a full-time active employee of the Contractor's organization. Copies of all certifications shall be presented to MRAS' representative upon request. Training records and program evaluation shall be in accordance with MIL-STD-2000 paragraph 5.2.6 and is subject to audit by MRAS and/ or Category A Government personnel and may include demonstrations of proficiency.

P68 CERTIFICATION OF ACCURACY The Contractor shall provide a certification of accuracy for each end item supplied, traceable to the National Institute of Standards and Technology. The certification shall include make, model and serial number of the instruments provided, as well as the date of calibration and the NIST traceable standard(s) used. This certification must bear the signature and title of an authorized person and shall accompany each article delivered under this contract.

P69 HYBRID METAL CERTIFICATION (see attached) NOTE: THIS WILL BE A SEPARATE DOCUMENT THAT MUST BE ATTACHED TO THE CONTRACT WHENEVER P69 IS APPLIED.

P70 DEFECT REDUCTION REPORTING (see attached) NOTE: THIS WILL BE A SEPARATE DOCUMENT THAT MUST BE ATTACHED TO THE CONTRACT WHENEVER P70 IS APPLIED.

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P71 DATE CODES Each shipment must consist of no more than one (1) date code lot. Failure to comply with this requirement will result in the return of the shipment to the Contractor at the Contractor's expense.

P72 FAR IDENTIFICATION MARKING The FAR (para. 45.15) requires the following identification marking be applied (ink stamped) to the parts as near as the engineering specified part marking as possible: MRAS "FAA - PMA" (see Note 1) NOTE 1: Add name and model designation for each type certificated product on which the part is eligible for installation. The supplier shall contact MRAS buyer for Model Designation. NOTE 2: A tag shall be marked as listed above for all parts too small to apply the identification markings. Parts shall be bagged and tagged or have the tag attached to the parts as appropriate.

P73a (S1000) The Contractor's Quality System shall meet the requirements of the latest version of GEAE Specification S1000 with the following exceptions (1) substitute MRAS for GEAE throughout; Substitute MARS for "Case Record".

P73b (S1000 – S-540) See Specification Number: S-540. (Supplier can request copy from MRAS SQE.)

P73d (M1000) The Contractor's Quality System shall meet the requirements of the latest version of MRAS Specification M1000 (MRAS-Supplier Quality System Requirements).

P74 CHARACTERISTIC ACCOUNTABILITY AND VERIFICATION The Contractor shall perform characteristic accountability and verification in accordance with the latest version of Specification S1002.

P74A (M1002) The Contractor shall perform characteristic accountability and verification in accordance with the latest version of MRAS Specification M1002 (MRAS- Supplier First Article/Characteristic accountability, verification and Quality Planning).

P75 SOFTWARE CONTROL The Contractor's software quality assurance program shall meet the requirements of the latest version of Specification S1000.

P76 FOREIGN OBJECT DAMAGE The Contractor shall have a system to prevent/minimize Foreign Object Damage (FOD).

P77 QUALIFIED SUPPLIER PROGRAM See P100.

P78 MATERIAL REVIEW BOARD The Contractor does not have MRB authority to disposition non-conformances. Non-conformances requiring MRB shall be submitted to MRAS' Material Automated Reporting System (MARS).

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

P79 INSPECTION PLAN The Contractor shall submit for approval by MRAS Quality a final inspection plan with First Article package for the items to be manufactured under this contract. Any changes to the plan shall be approved by MRAS Quality prior to implementation.

P80 QUALITY PLAN The Contractor has 45 days from the date the purchase order contract is executed to submit a Quality Plan that meets the requirements of this contract for the items to be manufactured. The Plan and any changes to this plan shall be approved by MRAS Quality prior to implementation.

P81 STATEMENT OF WORK A Quality Statement of Work (SOW) applies to this order.

P99 SPECIAL PROVISIONS Material ordered under this provision is NOT eligible for "FULL RELEASE" by Certified Supplier DQR's. "FULL RELEASE" stamps shall not be used.

P100 CERTIFIED SUPPLIER PROGRAM Certified Supplier Program (CSP) applies to this order. This provision applies to suppliers who meet the requirements of the MRAS Certified Supplier Program. Material shipped in support of this order must be accompanied by a packing slip. Full or partial acceptance status will be stamped on the packing slip in accordance with the requirements of the Certified Supplier Program Plan. Full or Partial acceptance status to packing slips will be applied by the supplier's DQR Quality Representative (who is qualified in accordance with the Certified Supplier Program Plan) or by a MRAS Quality representative. Documentation required by this purchase order will be included with the shipment.

P100a Supplier Release Program Parts are subject to the terms and conditions of the MRAS M1100 - Supplier Self Release Agreement (SSRA) prior to shipment. All materials shipped via this order must be accompanied by a Certificate of Conformance (C of C) and either a packing slip or bar-coded shipping label(s). Full or partial acceptance status will be in accordance with the requirements of the Supplier Release Plan and will be applied by the supplier's DQR (who is qualified in accordance with the SSRA), or by an MRAS Quality Representative. MRAS reserves the right to audit or evaluate the supplier's compliance to this plan through a supplier funded DQR Audit or other means.

P101 DIRECT SHIP AUTHORIZATION This part is eligible for Direct Ship subject to the following terms: 1. Supplier has been issued a Direct Ship authorization by MRAS as this authorization is reflected in the purchase order. 2. Supplier possesses a valid Direct Ship Authorization Certificate. 3. Supplier shall maintain a record of direct shipments made on the behalf of MRAS and this record shall be made available upon request by MRAS. 4. Supplier shall Include with each direct shipment a signed direct ship declaration that includes the following statement:

"This is to certify that item(s) delivered hereunder are at zero hours and cycles and have been manufactured under FAA production authorization PMA PQ0970NE, MRAS Quality Control standards and to MRAS

QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

specifications as specified in the purchase agreement. Inspections have been conducted by an MRAS Source Inspector or delegated inspection authority”

Supplier shall include with each shipment a completed Source Activity Card (Form Q1092) indicating full acceptance and signed by MRAS Source Inspection or delegated inspection authority (MRAS DQR)

P900 QUALITY REQUIREMENTS BY MATERIAL CATEGORY

*** Depending on specific program, B5b thru B5z apply to all categories***

STRUCTURAL BOLTS (NON-STANDARD) A1, B5, B6, P6, A7 (a-z), P60, A4C, P62, P64B, P16A

FIRE BLANKETS A1, B5, P6, A4C, P48, P16A

FORGING/CASTING A1, B5, B6, P6, A7 (a-z), P60, B2A, P18, A4C, B2B, P64B, P63, P2 (Supplier retains film), P16A

SPECIFICATION/SOURCE CONTROL DRAWINGS & FUNCTIONAL COMPONENTS A1, B5, P6, A4C, B4, B4F, P62, P64B, A5B, P48, P63, P16A

MACHINED PARTS A1, B5, B6, P6, A7 (a-z) P60, A4C, P26, P62, P63, P64B, P16A

ORGANIC MATERIALS A1, B5, B6, B9, C2, C2A, P18, P36, P51, P1, P48, P62, P63, P64B, P16A

OV PROCESSING A1, B5, A7 (a-z), P62, P64, P64b, P16A

RAW MATERIAL/EXTRUSIONS A1, B5, B6, P51, P62, P63, P64B, P16A SEALS A1, B5, B6, P6, A4C, P48, P16A

SHEET METAL DETAILS A1, A7(a-z), B5, A4C, P6, B6, P51, P62, P63, P64B, P16A

STANDARDS A1, B5, C7, P64, P64B, P16A TUBES A1, B5, B6, P6, A7(a-z), P60, A4C, P62, P63, P64B, P16A

WIRING HARNESS A1, B5, P6, A4C, P48, A5B, C7, P16A

FABRICATED PARTS (MECHANICAL ASSEMBLIES) A1, A4c, A7a-z, B5, B6, P6, P16A (COMMODITY CODES APPLY FOR LOWER LEVEL MATERIALS)

FABRICATED PARTS (BONDED ASSEMBLIES, CORE-BLANKETS) A1, A4c, B5, B6, P6, P27, P16A (COMMODITY CODES APPLY FOR LOWER LEVEL MATERIALS)

Middle River Aerostructure Systems



QUALITY ASSURANCE PROVISIONS OF PURCHASE ORDER

Document No. Q341

C919 Program: In addition to material category, A9 required to be added to program.

OTHER Contact Cognizant Buyer

S450 CERTIFIED MATERIALS TESTING LABORATORY Materials delivered under this contract shall be tested by a laboratory certified to MRAS450 and is always subject to review and approval by MRAS.

Z1 - Z5 ADMINISTRATIVE CODE Administrative codes for MRAS internal use only.

NOTICE: SPECIFICATION LEVEL Specifications referenced herein are the latest revision as of the date of the original Purchase Agreement unless otherwise specified.

NOTICE: PREPARATION AND PACKAGING OF QUALITY DOCUMENTS Whenever certifications, test reports, or other documents required by these Quality Assurance Provisions are included in shipments to MRAS, such documents shall be enclosed in suitable protective envelopes which are: 1. Identified as to contents 2. Marked with applicable purchase order number, and a) securely attached to the packing slip which accompanies the shipment or b) enclosed in the initial container of the shipment and referenced on the packing slip.