CAD ENTERPRISES
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Document Title:	**CAD-SQR 1000 Rev 2**
Approved By:	**Quality Manager (05/28/20)**
Owner:	**Quality Department**

SUPPLIER QUALITY REQUIREMENTS

The requirements of these clauses become an integral part of the Purchase Order (P.O.) to the extent specified therein. Changes, additions, or deletions to the invoked quality clauses must be made by purchase order revision. ***The Standard Requirements clause 01 (below) and the requirements apply in their entirety to ALL purchase orders*** (see end of this document to locate a copy) unless excluded, modified or superseded by an applicable drawing/specification requirement or another designated quality clause specified in the purchase order. Contact your CAD Buyer if a clause appears in a purchase order that no longer appears in this document or is identified as not currently in use.

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The following code numbers are not currently in use: 05, 06, 14, 15, 18, 19, 24, 25, 27, 28, 44, 53, 55, 68-69.

01. STANDARD REQUIREMENTS

a) Applicability. Unless otherwise contractually specified, any documents that are applicable (including those referenced herein) shall be the latest revision released by CAD Enterprises. Suppliers are responsible for ensuring they have the correct revisions. CAD shall flow down all applicable quality requirements to their approved sub-tier sources. The inclusion of a product/process on a Qualified Products List, Approved Supplier List or compliance with the requirements of these clauses does not relieve CAD of the responsibility for furnishing materials and services which fully comply with applicable drawing and specification requirements.

b) Quality Management System (AS9100). The Supplier shall maintain a Quality Management System (QMS) certified to AS9100 by an accredited Certification Body (CB) found on the https://www.sae.org/oasis website. For stockists/distributors, calibration suppliers, laboratories, special process suppliers, software suppliers, and Commercial-Off-The-Shelf (COTS) suppliers, alternative QMS requirements to AS9100 and is available from your CAD Enterprises Buyer. These preceding QMS requirements are in effect for such supplier types, unless ISO 9001 or other alternative (i.e., clause 02 or 03) is specified in the P.O. or approved in writing by the Buyer.

c) Buyer/Seller Communications. All written communications between the Seller and the Buyer shall be in the English language. In cases where the Seller maintains copies in their native language as well as in English and there is a conflict, the English language document shall take precedence.

d) Inspection/Audit Right Reserved. All work performed shall be subject to inspection, surveillance, and test by the Buyer, the customer of the Buyer, the U.S. Government, the FAA, and any other applicable regulatory agency at all reasonable times; including the period of performance, and at all places, including the plant or plants of the Seller or that of any sub-tier supplier engaged in the performance of work to fulfill this purchase order. The same parties reserve the right to audit the Seller's and sub-tier supplier records and systems.

e) Approved Abrasives. The recommended abrasive materials are silicon carbides, tungsten carbides, boron carbides, and diamond. Abrasives which are NOT permitted include but are not limited to silicon dioxide (SiO2), glass bead or other quartz/silica oxide materials, aluminum oxide, aluminum zirconia, garnet, almandite, and nitrides. Non-permitted abrasives listed herein may be used if specifically allowed per the drawing or when either a minimum of 0.005" of material is subsequently removed by non-abrasive machining methods, or when supplier is given written approval by the CAD. Contact CAD for additional information.

f) Measurement and Test Equipment (M&TE). Measurement management systems shall meet the requirements of ISO 10012 for measurement processes and measuring equipment. The scope is to include all such M&TE, including employee-owned gages, as well as gages on loan. Guidelines for the determination of calibration intervals of measuring instruments may be found in document OIML D10 / ILAC-G24 (available at www.ILAC.org) which is referenced in ISO 10012. Calibration shall be in compliance to ANSI/NCSL Z540-3. The M&TE accuracy ratio for single purpose measurement equipment is minimally 10:1. The M&TE accuracy ratio for standard measurement equipment is minimally 4:1 (i.e., the collective uncertainty shall not exceed 25% of the acceptable tolerance). If these requirements are unattainable under certain situations, the CAD Buyer must be notified. Any exceptions must be supported by data and/or studies to assure effective control of product integrity.

Any use of tooling, checking aids, or error-proofing devices as an inspection method requires calibration/validation and an independent method of verification of accuracy and effectiveness prior to use. Any non-commercial test software requires an independent method of verification of accuracy prior to use.

Unless otherwise specified or approved, single element gaging shall be used to verify thread pitch diameters and minimum material for Class 3 threads.

g) Supplier Deviation Request. The Supplier may not make any changes or substitutions to any products or services required by the contract, drawing, specification, standard, or other applicable document without prior written authorization by CAD. The Supplier should request approval of a proposed deviation to a product, process, specification, or quality requirement related to a purchase order. The Supplier Deviation is to be approved prior to purchase order acceptance and product being produced. For the evaluation of nonconforming material already produced, see section (h) below titled, Non-Conforming Material.

h) Non-Conforming Material. In addition to the requirements specified, if the Supplier chooses to request a review of nonconforming product, the Supplier shall contact CAD in writing for disposition. Non-conforming material reported to CAD and submitted for disposition shall be tagged and segregated and held at the supplier's facility pending disposition. The Supplier is not authorized to disposition nonconforming product as "Use-As-Is" or perform any "repair" of parts unless approved by CAD via a signed written statement. Any Minor Nonconformances CAD shall determine the dispositions. Any Major Nonconformances the customer shall be notified, and the customer shall determine the disposition. When shipping parts after having received a signed statement from CAD Enterprises, the statement shall be referenced on supplier shipping documents and accompany the parts. The supplier shall adequately identify and correlate each part to the applicable item on the Non-Conforming Material document.

i) Preservation and Protection of Products. Unless otherwise specified, cleaning methods for formed or machined parts shall include a rinsing practice that uses soft water, de-ionized water or distilled water to avoid calcium/magnesium water spot residuals that may have a negative effect on braze alloy wetting and flow. The use of municipal water, city water or tap water is not permitted as rinse water for CAD products unless specifically approved. Specific parts may require preservation in either VCI paper or dipped in oil to prevent parts from rusting.

Individual part numbers shall be packaged in separate containers, unless they are being delivered as a kit. Packaging shall take into consideration the possible need for parts to be unpacked and re-packed with the same packaging material/container. When individual parts are packaged in trays, the packaging shall preclude parts from falling out of the tray. The use of newsprint and glassine paper bags is prohibited. Clean plugs or caps made of plastic (not rubber) and of sufficient flexibility so that cracking will not occur should be used to prevent the ingress of foreign objects and contamination into parts with small inlet holes and orifices. Unless authorized by the Buyer, the following materials shall not be used in direct contact with any part: adhesive tape, PVC film (especially prohibited in contact with titanium alloys), corrugated paper/board, or any other type of fibrous material. Molded foam polystyrene in the form of loose fill material (i.e., 'popcorn') and shredded paper are not acceptable dunnage. The use of staples should be avoided entirely. Staples would be acceptable for the bottoms of external shipping containers in which one or more boxes or bags of parts are shipped. Whenever possible, staples should not seal the top of a box; instead, fiberglass reinforced sealing tape (or equivalent) is preferred. Additionally, staples are not acceptable for any container that is in direct contact with parts. For final containers weighing more than five (5) pounds, double or triple-walled corrugated boxes, board-framed containers, rigid cartons (card or plastic), or wood cases are required.

j) Certificate of Conformance. With each delivery of products against a purchase order, the Supplier shall include on the packing list/shipper or on a separate attached document, a written statement titled "Certificate of Conformance" which is worded substantially as follows: "This is to certify that all products or services delivered on this Contract (number) and packing list/shipper (number) are in compliance with all requirements of the Contract. Objective evidence to support this certification will be made available to the Buyer for review upon request." Include: Company Name; Address; Title of Authorized Individual; Signature/Stamp; and Date.

k) Certification and Test Report Signatures. All certifications and test reports shall include the title and acceptable signature of the authorizing company official. The following methods are the approved and acceptable methods for applying signatures:

- actual signatures rendered in black/blue ink by the signing official
- controlled facsimiles of actual signatures, i.e., rubber stamps
- controlled machine or computer graphics generated facsimile signatures
- controlled quality or inspection stamps
- controlled electronic signatures per P9112 1.5.5

When stamps are used in lieu of signatures, such stamps shall clearly identify the issuing organization and the authorized individual to whom the stamp is assigned. The issue, use and control of such stamps shall be governed by documented procedures in the Supplier's Quality Management System.

l) Record Retention and Documentation. Unless otherwise required by the Purchase Order and in addition to the requirements specified here, the supplier shall deliver records requested by CAD Enterprises within 24 hours and have a documented procedure that defines the method for controlling records that are created by and/or retained by the supplier. As a minimum, a Quality Record Bundle shall be maintained consisting of, as applicable: packing list, certificate of conformance, certification of materials and processes, inspection reports, first article, test reports, raw material test certifications, special process certification, routers/travelers/work instructions, shipping memos, and any related non-conformance documents. Records and data entry on records shall be in ink or permanent marking. No erasure or "white-out" permitted. Corrections shall be recorded, dated, and signed by authorized persons with the method used permitting the original entry to be legible (i.e., with a single line struck through). Where used, electronic data storage must be capable of maintaining the data integrity for the total required retention period and have adequate back-up methods. Records shall be retained for 15 years minimum.

m) Material Safety Data Sheets. Material Safety Data Sheets (MSDS) shall be included with each shipment of materials or chemicals, where applicable.

n) Delivery of Suspect Discrepant Product. In addition to the requirements specified here, should the Supplier discover there is sufficient reason to suspect defective product has been delivered to CAD, notification of the known facts shall be made to the Buyer within twenty-four (24) hours of discovery. A formal disclosure letter to the CAD shall follow within (5) days.

o) Prevention, Detection & Removal of Foreign Objects (FOD). The supplier shall develop and maintain a Foreign Object Debris/Damage (FOD) Prevention Program and shall provide initial and periodic FOD prevention awareness training to prevent introduction of foreign objects into any item delivered under this purchase order. Debris is defined as residual materials left by the manufacturing, storage/handling and shipping processes (i.e., metal chips, shavings, tooling remnants, dirt, oils, films, etc.) as well as contamination introduced from another source, including personal items such as food and beverage. Certain parts by nature of their design have blind areas or internal passageways where foreign particles could be trapped. Parts are to be free of burrs, sharp edges (unless specified by drawing) and foreign debris. Parts shall not be stacked on top of each other and shall prevent metal to metal contact.

p) Vision Requirements. Supplier personnel performing the functions described below shall receive eye examinations by trained personnel designated by the organizations Responsible NDT Level 3 (as applicable) or by qualified medical personnel, who can provide an optometric examination in accordance with relevant testing standards.

Visual acuity testing shall be administered annually. All levels are for at least one eye, natural or corrected, near vision:

- For operators, inspection/test personnel, engineers and others conducting product evaluation and acceptance activities, including in-process checks where such data is used for final product acceptance, Snellen 14/18 or better (20/25 or better, Jaeger No. 2 at 14 inches; Ortho-Rater 8, or equivalent).
- For visual weld inspection, 20/30 or better and shall be able to read the Jaeger No. 2 eye chart at 16 in., or latest per AWS D17.1.
- For Non-Destructive Test (NDT) inspection personnel, the ability to read 20/25 Snellen Test Chart at 16 +/- 1 inch distance or latest per NAS 410.

Color perception testing shall be administered at least one time:

- All types of inspection/NDT personnel shall be able to differentiate among colors used in the methods for which the individual is being qualified.
- For NDT personnel, testing of color perception shall be administered prior to certification and every five (5) years.

q) Software Requirements. In addition to the requirements specified here, non-deliverable software used in the manufacturing, inspection and testing of delivered product, or in the qualification or acceptance of product, shall be controlled by the Supplier. Such change control shall include: (1) Revision History; (a) Initial Release; (b) Revision Date; (c) What actually changed (is/was condition); (2) Validation of the change (citing objective evidence); and (3) Periodic verification of continued adequate software control. All coding guidelines and approvals required to release or revise the software shall be identified and documented. Objective evidence of software performance (validation and verification) is required prior to implementation of the software for production use. Software modification shall not be made without authorized supplier designee re-approval prior to production use. Software used to verify part-specific quantitative values requires an independent method of validation and correlation of the two sets of results (i.e., layout of CMM automated inspection programs). Proprietary software shall be cataloged and stored in a location that is controlled and restricted to appropriate personnel. Backup and recovery systems shall be established.

r) Part Marking. Parts shall be marked in accordance with the engineering drawing or applicable specification. In the event no part marking is specified, the Supplier shall record the part number, part name, date of manufacture (or date code), and control number (i.e., serial number, lot/batch number, heat lot number, work order number) for all delivered articles, and either attach a tag to the parts or mark the individual bags and/or container, as applicable. Such information must be traceable to supplier's build documents.

s) PRI / Nadcap Accreditation. Nadcap is a global aerospace and defense contractor's cooperative to coordinate industry-wide standards for special processes and products. Through the Performance Review Institute (PRI), Nadcap provides independent certification of special manufacturing processes. All aerospace/military suppliers and their sub-tier sources performing chemical processing, coatings, heat treating, brazing, materials testing, nondestructive testing, welding, nonconventional machining (e.g., EDM) and surface enhancement shall be Nadcap accredited by PRI, unless specifically waived in writing by the Buyer. Special process suppliers are listed in the CAD Enterprises Approved Supplier List (ASL). CAD Enterprises ASL Suppliers are required to flow down this requirement and use only Nadcap accredited sub-tier suppliers when contracting for special processes.

t) Counterfeit Parts Prevention. To prevent the inadvertent use of counterfeit parts and materials all fasteners and/or electrical, electronic and electro-mechanical parts delivered and/or used in the manufacture of deliverable products shall be from the Original Component Manufacturer (OCM)/ Original Equipment Manufacturer (OEM) or their franchised dealer or an authorized distributor chain. Parts shall not be used or reclaimed and misrepresented as new. Parts shall not be acquired from independent distributors or brokers unless specifically authorized in writing by the buyer. The supplier shall flow down this requirement to sub-tier suppliers.

u) Ethnics and Safety. Supplier employees to be aware of their contribution to product conformity, product safety, and the importance of ethical behavior.

In addition, the following requirements apply whenever these numerical codes are specified in the purchase order:

QUALITY SYSTEM REQUIREMENT

Note: Certification to AS9100 (or designated alternative according to supplier type) is the requirement per clause 01(b) unless one of the following is specified:

02. Quality Management System (ISO 9001). As a minimum, the supplier's quality system shall be certified by an accredited Certification Body (CB) to the requirements of the ISO 9001 standard. Refer to the International Accreditation Forum (www.iaf.nu) for IAF Members; then, see the Certification Bodies found under each respective Accreditation Bodies' website. For suppliers of aerospace/military products, the remaining supplemental aerospace requirements contained in this document are still in effect.

03. Quality / Inspection System (Basic). Supplier shall implement and maintain a sufficiently documented Basic Quality/Inspection System which addresses at minimum, to a level of detail appropriate for the organization, the elements of: management responsibility for quality, contract review, control of purchasing, material control, control of production and service, change management, control of nonconforming product, document control, control of measurement and test equipment, inspection, corrective and preventive action, preparation for delivery and record retention. Initial approval of the supplier's quality/inspection system is required and periodic surveillance may be performed by a CAD representative.

SOURCE VERIFICATION

04. Source Verification at the Supplier. Inspection by CAD Enterprises at the supplier prior to shipment is required. Each customer has specific requirements defining their Source Requirement, see customers below. If customer does not flow down Source Requirement than the terms of this shall apply.

07. Government Source Inspection. U.S. Government inspection is required prior to shipment from your plant. They have the right to do source at the sub-tiers. Upon receipt of this order, promptly notify and furnish a copy to the Government Representative who normally services your plant so that appropriate planning for Government inspection can be accomplished. Otherwise, contact your nearest Defense Contract Management Agency (DCMA) office. In the event a representative or office cannot be located, notify your Buyer immediately.

CERTIFICATION, INSPECTION & TEST REPORTS

08. Functional Test Report. Supplier shall furnish one copy of test results (data sheet) for each functional test performed on items in this order.

09. Dimensional Inspection Certification. Submit with each manufactured lot, a certification referencing purchase order no., part number, revision and worded as follows: "Detail Inspection reports covering all dimensions, diameters, contours, surfaces, inspection processes, etc., which due to assembly for finished operations performed by the Supplier, cannot be re-inspected by the Buyer, are on file, and copies of such reports will be furnished to the Buyer on demand."

10. Certificate of Conformance. The Supplier is responsible for the integrity of the certification document that is provided. The Supplier shall provide with each shipment a completed form titled 'Certification of Conformance.' All raw material specifications noted on the drawing(s) shall be certified individually, along with raw material sources, heat lots, etc., on a form titled 'Certificate of Materials and Processes.' Each special process specification used in the component manufacture and its corresponding approved metallurgical laboratory number (MCL) when applicable, shall also be listed, along with the company performing the special process. Distributors supplying MS, NAS, MIL, etc. type hardware, are required to assure compliance for the material, dimensional, and process specification requirements. In addition, distributors are required to adhere to specialty metals DFARS clause requirements, when specified.

11. First Article Inspection Report (FAIR) – AS9102. The Supplier shall prepare and maintain a FAIR in accordance with AS9102 requirements. Each full FAIR (or partial, when applicable) and accompanying documents are to be sent to the Buyer one (1) week prior to the first lot shipment. No product shall be shipped until either the FAIR has been approved by CAD or the P.O. is revised to authorize advanced shipment. The "bubbling/ballooning" and highlighting of the part drawing features and field notes is performed at the Supplier. The customer option noted in column 14 of Form 3, per AS9102, is to be amended as follows to include Inspection Plan information. Suppliers using their own form must:

- Add column 14, titled 'Production Method of Inspection'
- Add column 15, titled 'Capability Study or CPK Number'
- Add column 16, titled 'AQL'

The following documents, as a minimum, must be submitted for review and approval:

- FAIR (submitted in electronic format, .xls version preferred)
- Legible "bubble/balloon"/highlighted drawing (electronic format)
- Supporting process control documents
- Non-traditional gage drawing/documentation, if applicable.

The FAIR is frozen as approved by the Buyer. Any subsequent changes shall not be implemented until approved by the Buyer.

12. First Article Inspection Report (FAIR). The Supplier shall obtain Buyer approval of a first production article prior to the delivery of the first production shipment of each part number. The Supplier shall furnish a full FAIR and supporting documentation package. Any changes shall be made per the requirements of AS9102, titled 'Aerospace First Article Inspection Requirement.'

13. Tagged First Article. Identify and tag one (1) part with the writing FAIR on tag upon which the first article was performed and send to CAD Enterprises with a copy of the required First Article Inspection Report.

16. Material Test Sample for Heat Treated Parts. For hardened parts, submit a representative sample of the raw material/finished part, along with the sample test results, with the first shipment of each heat treat lot. All such submitted samples shall be supplied in the same heat treated condition as the parts. If required, Rockwell hardness shall be documented on the cert.

17. Supplier Inspection Report. A final inspection report, which includes all drawing and/or specification dimensions, as well as functional performance test results (i.e., flow, spray angle, etc.), shall be generated for each lot of hardware product provided against this order. Use of the supplier's own final inspection report is acceptable.

21. Production Part Approval Process (PPAP). Customer's PPAP Process is required on this contract/shipment and applies to the Supplier and their Sub-Tier Suppliers. The PPAP process will be used to help determine if engineering design record and specification requirements are properly understood and that the manufacturing process has the potential to produce product that consistently meets these requirements during an actual production run. Unless otherwise specified by contract, a Level 3 PPAP submittal is required. Refer to the IAQG Supply Chain Management Handbook for APQP/PPAP guidance: http://www.sae.org/iaqg/.

22. Process Records. Supplier shall furnish the following records applicable to products on this order: Process Control Charts, Furnace Charts and Inspection Results.

23. Preference for Domestic Specialty Metals. Compliance to DFAR Supplement 252.225-7014 or subsequent DFARS 252.225-7008 Restriction on Acquisition of Specialty Metals or 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals is required for items in this purchase order. Examine your purchase order literal text for which specific clause applies (-7014, -7008, or -7009). Please contact your CAD Buyer if doubts about which one applies. Suppliers must flow this requirement down to all sub-tier suppliers. The country of melt must be identified on the certification.

AGE-CONTROL PRODUCT

26. Age-Controlled and Limited Shelf-Life Material. With each delivery of material, parts, or assemblies that have a specified limited shelf-life, the Supplier shall furnish data that shows: (a) the cure or manufacture date (e.g., "1Q99"), (b) expiration date or shelf-life, (c) lot or batch number, and when applicable any special handling or storage requirements. For all shelf-life limited materials or products delivered to CAD, the remaining shelf-life shall be a minimum of 75% of the total shelf-life for the material. In addition, for elastomeric material, suppliers must meet the requirements of ARP5316, titled 'Storage of Elastomeric Seals and Seal Assemblies Which Include an Elastomeric Element Prior to Hardware Assembly.'

29. Verification of Viton Elastomeric Material. Supplier shall certify 100% verification of Viton material.

SPECIAL REQUIREMENTS

30. Supplier-Furnished Material. Suppliers furnishing raw material shall control their raw material inventory so as to meet the intent of QES Q08-00-4050, titled 'Supplier Material Control and Traceability Requirements.' Supplier purchase orders for raw material shall require a mill certification and other documents as necessary to identify the following: material heat number, type, grade, and class; material specification and current revision; material size and quantity; and all other requirements as may be specified by the CAD purchase documents.

Upon receipt of any raw material, Supplier shall compare the chemical, physical and mechanical properties data stated on the mill certification against the material specification requirements and document such comparison. Additionally, the Supplier shall perform an over-check measurement of the chemical composition to verify specification compliance by either using a hand-held material analyzer* (e.g., Niton Analyzer) or having such measurement performed by a laboratory meeting one of the following conditions:-those listed on the Cad Enterprises Approved Supplier List (ASL); a laboratory accredited by PRI-Nadcap, A2LA or other accreditation body recognized by the International Laboratory Accreditation Cooperation (ILAC) and listed in the Signatories to the ILAC Mutual Recognition Arrangements (MRAs); or an applicable approved Parker customer source, e.g., GE (S-400), PW (PWA 300 and PWC MCL Manual), Rolls Royce (SABRe), etc.

*Note: When SQR Code 39 is invoked, the option to use a hand-held material analyzer for overcheck inspection in lieu of a GE-A S-400/S-450 approved lab is prohibited.

For woven wire cloth, where such analyses are not as readily feasible, the supplier shall have an audit method to verify the accuracy of the certifications provided by the mill or distributor. The manufacturer must have evidence on file that the wire used has been tested for compliance in accordance with applicable chemical/physical/mechanical properties and requirements.

Any Supplier who procures forgings or castings for products scheduled for delivery to CAD Enterprises for Parker GTFSD shall comply with QSI Q06-00-3100, titled 'Procurement of Forgings/Castings by Machining Suppliers.'

31. Extended Record Retention – 30 years. Quality records related to products on this order shall be retained for thirty (30) years.

32. Pratt & Whitney Special Requirements. UTC Aerospace Supplier Quality Requirements (document ASQR-01), including Control of Software requirements (document ASQR-07.5) apply to this order.

The Supplier shall implement Process Certification per the requirements contained in Pratt and Whitney document UTCQR-09.1.

As applicable, GTFSD document QES Q10-00-4007, titled 'Radiographic Inspection – Pratt & Whitney Aircraft Only' shall apply to any Supplier or the Supplier's sub-tier product requiring radiography per the Buyer's purchase order requirements.

33. Extended Record Retention – Indefinite. Quality records related to products on this order shall be retained indefinitely (i.e., for the life of the program).

34. Frozen Process Control. Before parts are shipped, the Supplier process used to manufacture this product or features indicated "FP" on the drawing shall be approved by the Buyer. Once approved, any changes made to the process used to manufacture the product shall be approved prior to implementation.

35. Procurement of Raw Material per RPS 905. The requirements of Rolls Royce RPS 905, titled 'Procurement & Control of Raw Material for the Manufacture of Components,' apply to this Order.

36. Assignment of Body Numbers to Product. The requirements of QSI Q05-00-3200, titled 'Assignment of Body Numbers to Parker GTFSD Product,' apply to this order.

37. Thread Inspection (Go/No-Go Gages). The product applicable to this order is for non-flight application and is not for sale to the US Government; therefore, Class 3 threads may be inspected using go/no-go thread gages.

38. Material Furnished by Buyer. Shipping memos shall identify product made from Buyer furnished material by referencing heat number and Buyer's shipping memo number along with all pertinent data listed thereon (such as lot identification). The Supplier shall supply with the first shipment of each material lot a copy of the Buyer's shipper for material supplied.

39. GE-Aviation End Use, Components/Specifications. Suppliers of this product must conform to the latest revision of General Electric-Aviation (GE-A) Specification S-1000. If needed, contact your CAD Buyer to obtain this document (Note: S-1000 can be obtained from you CAD Buyer). Supplier shall ensure all materials used to manufacture product are certified by the material source using a GE-A S-400/S-450 approved laboratory. If the material test report received from the material source has not been generated by such lab, independent testing by a GE-A S-400/S-450 approved lab shall be performed on each raw material lot as defined by the applicable material specification.

In addition, these following codes apply: **04, 10, 30*, 52, 56, 58, 59**.

*Note: Except, as it relates to code 30, the option to use a hand-held material analyzer for overcheck inspection in lieu of a GE-A S-400/S-450 approved lab is prohibited. A hand-held material analyzer for overcheck inspection is used in addition to a material certification identifying the lab as S-400 or S-450 certified, as applicable.

40. Material Certification. With each lot of raw material delivered or used to fabricate products on this purchase order/contract, the Supplier shall furnish a 'Certification/Material Test Report.' When more than one heat/lot of raw material is delivered at the same time, each heat/lot of material shall be identified and provide traceability to its Certification/Material Test Report. In the event that more than one heat/lot of raw material was used to fabricate products, the products produced from each heat/lot shall be identified and/or packaged separately to maintain integrity and to provide traceability to the applicable material Certification/Material Test Report.

Unless otherwise specified, material certifications shall include: material description, name or designation, including, as applicable, size or weight, alloy, type, class, grade or condition; lot, batch or heat number (or if not applicable, date of manufacture); material specification and revision to which the material complies; country of melt; and a certification statement with supplier company name, address, title of authorized individual, and signature/stamp that reads substantially as follows, "This is to certify that all (material) (products) delivered on this Contract (number) and packing list/shipper (number), (complies with) (were fabricated from material represented by) the attached Certifications/Material Test Reports. Objective evidence to support this certification is available for review upon request."

INSPECTION REQUIREMENTS

41. Manufacturing Methods Substantiation. The Supplier shall provide to the Buyer the necessary documentation to satisfy Source Substantiation requirements of CAD's customer. The supplier is to provide, at a minimum, a copy of the drawing (if vendor designed product) plus, inspection and test reports, technical plans, NDT/NDI technique sheets and process sheets/routers with significant operations identified. Prior CAD approval is required for a change to a significant process or significant process sequence. Vendor substantiation documentation must be submitted and approved by CAD whenever there is a lapse in production for a period of 18 months or more.

42. Inspection Plan. The Supplier shall submit an Inspection Plan, and accompanying documents to the Buyer one (1) week prior to the first lot shipment. No product shall be shipped until the Inspection Plan has been approved or the P.O. is revised to authorize advanced shipment. The "bubble" and highlighting of part drawing features and field notes is performed at the supplier. The following documents, as a minimum, must be submitted for review and approval:

- Inspection Plan -- submitted in electronic format, if possible
- Legible "bubble" / highlighted drawing
- Supporting process control documents
- Non-traditional gage drawing/documentation, if applicable.

The inspection plan is frozen as approved by the Buyer. Any changes to the approved inspection plan shall not be implemented until Buyer approval of an updated inspection plan.

45. Pratt & Whitney Laboratory Control Requirement. Certification to PWA 300 and PWC MCL Manual, section F17, 'Materials, Parts and Assemblies Subject to Laboratory Control at Source (LCS),' and section F22, 'Chemical & Metallurgical Processing, is required for such services performed.

46. Sampling Inspection of Photo-Chemically Machined Parts. The requirements of Q20-00-4003 apply to this order.

47. Inspection Frequency. The requirements of QES Q20-00-4001, and the associated column for SQR code 47 under Table 1, depict the inspection plan frequency applicable for products on this order. The inspection plan is frozen as approved by the Buyer via the FAIR approval. Any subsequent changes to the approved inspection plan shall not be implemented until Buyer approval of an updated FAIR.

48. Inspection Frequency. The requirements of QES Q20-00-4001, and the associated column for SQR code 48 under Table 1, depict the inspection plan frequency applicable for products on this order. The inspection plan is frozen as approved by the Buyer via the FAIR approval. Any subsequent changes to the approved inspection plan shall not be implemented until Buyer approval of an updated FAIR.

49. Independent Hardness Verification. Suppliers performing heat treating shall report on their certification both the required and the actual hardness values as obtained from a representative (homogeneous) sample for each lot. Additionally, the heat treat supplier shall obtain and report a second hardness verification as performed and documented by an independent (third-party) qualified agent.

50. FAA Certification. The supplier shall submit a completed FAA Form 8130-3, executed in accordance with the requirements of FAA Order 8130.21, for all work performed.

51. FAA-PMA Certification. Replacement or modification parts shall be manufactured and certified in accordance with U.S. 14 CFR, Part 21.303. The parts shall be marked in accordance with U.S. 14 CFR, Part 45.15 and submitted to CAD with FAA Form 8130-3 executed in accordance with FAA Order 8130.21.

52. Radiographic Inspection. QES Q10-00-4001, titled 'Radiographic Inspection' or QES Q10-00-4006, titled 'Computed Radiography' shall apply to any Supplier or the Supplier's sub-tier product requiring radiography per the Buyer's requirements. The Supplier and/or any Supplier's sub-tier radiographic system and each technique shall be approved by the Buyer prior to the acceptance of Supplier's product. All approved radiographic Suppliers can be found listed in the Parker Aerospace Approved Process Supplier List. Engineering specification ES6-794, titled 'Standard Practice for Radiographic Inspection' shall be used as the default replacement specification for MIL-STD-453, titled 'Radiographic Inspection.' Use of ASTM specification E1742, titled 'Standard Practice for Radiographic Examination' as an independent replacement for MIL-STD-453 is not acceptable.

54. FAA Anti-Drug and Alcohol Misuse Prevention. All Supplier employees (including Supplier's sub-tier employees) performing component maintenance (repair or overhaul) or inspection services of products scheduled for delivery to CAD shall be included and part of a FAA approved 'Anti-Drug and Alcohol Misuse Prevention Program.' The requirement applies both to pre-employment and random testing of current employees in accordance with the requirements of U.S. 14 CFR, Part 120. Evidence of compliance to this requirement shall be made available to CAD upon request. Except, this anti-drug and alcohol requirement does not apply to employees performing functions outside the United States territory and persons contracted to perform functions for an employer who is located outside the United States territory.

56. Fluorescent Penetrant Inspection. QES Q10-00-4014, titled 'Fluorescent Penetrant Inspection Requirements,' shall apply to any Supplier or Supplier's sub-tier product requiring fluorescent penetrant inspection (FPI) per the Buyer's requirements. The Supplier or any Supplier's sub-tier fluorescent penetrant system shall be approved by the Buyer prior to the acceptance of Supplier's product. All approved FPI Suppliers can be found in the CAD Enterprises ASL.

PRODUCT & PROCESS REQUIREMENTS

57. Prototype Hardware Quality Requirements. Document PD3000, Supplier Prototype Hardware Quality Requirements, is invoked on this purchase order. Refer to PD3000 for all quality requirements. PD1000, including SQR Code 1, does *not* apply.

58. Heat Treating and Brazing. QES Q09-00-4002, titled 'Heat Treating and Brazing – Processing and Controls' shall apply to any product or services where the Supplier or the Supplier's sub-tier performs brazing and/or heat treating per the Buyer's requirements.

59. Special Process Requirements. Special process control parameters and approval requirements are required as defined in the following Parker documents:

- ES6-26 – 'Special Process Requirements'
- Q09-00-4020 – 'Qualification of Welding Equipment due to Change'
- Q09-00-4021 – 'Qualification of Process Equipment due to Change'

Special Processes are defined in ES6-26 and may only be performed when those processes are specifically allowed by the drawing and/or Purchase Order. Where ES6-26 applies and requires approval, special processes and non-destructive testing may only be performed by a Supplier listed in the CAD Enterprises ASL

When submitting initial packages for "Prime Special Process" approval, all "Supporting Special Process" packages should be included with the submitted package.

"Change Request" submittals for "Supporting Special Process" which are already approved shall only include the special process that is being changed. Thus, the entire "Prime Special Process" package is not necessary. Identification is required on the submittal is for a Supporting Special Process.

For lot control, when special processes (such as heat treatments, hard coating, etc.) are performed on a portion of the original lot, each individual process application to that segment of the lot shall require a unique traceable lot identifier for the subdivided lot. Special process lots shall be controlled by batches and each batch shall have an individual batch/run number.

60. Date of Manufacture. The Supplier shall provide traceability to a manufacturing lot by identifying the date of manufacture, lot number or equivalent for each item in the order by stamped impression, attached tag, or other suitable equivalent or as specified on the drawing or applicable CAD specification.

61. Electro-Static Discharge (ESD) Control. For the protection of all electrical and electronic parts, assemblies and equipment which are Electro-Static Discharge (ESD) and/or Electro-Magnetic Force (EMF) sensitive, such products must be processed and packaged in accordance with MIL-STD-1686, 'Electrostatic Discharge Control Program' or ANSI/ESD S20.20, 'Electrostatic Discharge Control Program.'

62. Elastomeric Test Data. Suppliers of assemblies containing seals, gaskets and "O" rings shall retain, on file, objective evidence that all required batch/lot conformance testing per the applicable specification has been performed. Test data shall be made available to the Buyer upon request.

63. Inspection/Test Data Requirement. Test data and inspection plan measurements of the product shall be taken, documented, and copies submitted with each shipment against this order.

64. Product Performance/Test Equipment. If the Supplier owns or operates test equipment used in the acceptance of GTFSD product performance attributes (e.g. flow, spray angle, etc.), the requirements of QES Q11-00-4015, titled 'Accuracy, Calibration and Maintenance of Test Stand Equipment Requirements for Parker GTFSD Suppliers,' are applicable.

67. Counterfeit Electronic Parts Prevention – AS5553. The supplier shall have a program in accordance with the intent of SAE standard AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition. Supplier shall provide to the Buyer, upon request, all electronic parts certificates of conformance and acquisition traceability (CoC/CoT) to the original component manufacturer/original equipment manufacturer (OCM/OEM).

70. Packaging and Shipping of Sensitive Products. Packaging shall take into consideration the possible need for parts to be unpacked and re-packed. Only handle parts with latex gloves to prevent fingerprints or other contamination. Pack individual sheets in a new, clean plastic bag closed sufficiently to prevent contamination but shall be easily opened without risk of damage to parts. Thin lint-free paperboard interleaves shall be placed between each individually wrapped sheet. Paper, cardboard or any other type of fibrous material shall not come in direct contact with the parts. Stacks of individually wrapped sheets and interleaves shall be packaged in an appropriately-sized reusable 4-mil corrugated plastic shipping envelope or hard case container to prevent the parts from shifting or bending during transit. Lint-free foam may be used as filler, if necessary. Intermediate suppliers may reuse the original packaging only if it is sufficient to fully protect the parts shipment.

Section A

Parker Hannifin Customer SQR Requirements

Below are the SQR requirements defined in P9112 and PD 3000 and not stated above meeting the Parker Hannifin Group requirements.

1.1 PH-SQRM (Parker Hannifin – Supplier Quality Requirements Manual) – The requirements specified within will be used by the divisions of Parker Aerospace Group and will be included on the Purchase Order, Contract, or other formal agreement between the supplier and a division of Parker Hannifin.

1.2 Scope and Application - When electronic documents are used by Parker Aerospace to transmit requirements to the supplier, "Q" clauses may be flown down to the supplier electronically, in attachments that are part of the contract, such as Solumina, the Manufacturing Quality Instruction (MQI), or Manufacturing Work Instruction (MWI), or other designated method.

1.3 Supplier Responsibilities - The supplier shall invoke (flow-down) the requirements of this sections 1.3 (1-5) to all supplier's sub-tier sources performing work for the supplier that is scheduled for delivery to Parker Aerospace on the contract.

- **1. Unauthorized Facility Changes** - There shall be no unauthorized facility changes. Parker is to be notified before in facility change.
- **2. Unauthorized Product Repairs & Salvage** - The supplier may not perform any repairs (see also h.) without customer approval.
- **3. Unauthorized Product Changes or Substitutions** - The supplier may not make any changes or substitutions to any products or services required by the contract, drawing, specification, standard, or other applicable document without Parker Hannifin authorization (see also t.).
- **4. Use of Non-Conventional Manufacturing Methods** - EDM (Electrical Discharge Machining), ECM (Electro Chemical Machining), laser or abrasive water jet cutting, or drilling, flame spray coatings, or any other non-conventional manufacturing method or process on products scheduled for delivery to Parker Aerospace without prior written authorization by Parker Aerospace Group.
- **5. Altering Data on Documents** - Any method that causes the original data on documents to be obliterated and unreadable (examples – use of correction fluids, correction tape, write-over, or other methods) to correct or modify or otherwise alter either data or entries on any certifications, test reports or other documents required by the contract, is strictly prohibited.

1.4 Contract Change & their Effectivity - The supplier shall incorporate all changes initiated by Parker Aerospace and is communicated through the PO, contract, change and/ or amendment.

1.5 Certifications - All certifications shall be in English language and shall meet the requirements of 1.5.3 of P9112.

1.6 Special Processes - All special processes must be performed by sources approved by Parker Aerospace group. The following requirements are applied to A. Special Process, B. Proprietary Process, C. Process Certifications, and D. Rework. All these requirements are defined and are all listed in P9112.

1.7 Nonconforming Products & Material Review - The supplier is authorized to conduct material review and disposition of non-conforming products identified by the supplier using the following dispositions alternatives:

a) Rework to applicable requirements
b) Scrap
c) RTV (Return To Vendor)

Submittals to Parker Aerospace MRB for disposition by the supplier- The supplier shall document all nonconforming conditions in accordance with the requirements of 9131 and submit a request to the Parker Aerospace buyer.

1.8 Supplier Inspection & Quality System Requirements – The supplier shall establish and maintain a QMS in compliance with the current requirements defined in 9120 – "Quality Management Systems – Requirements for Aviation, Space, and Defense Distributors." Supplier's QMS is subject to audit, verification, and approval or disapproval by Parker Aerospace Group designated representatives.

Q036 Parker Aerospace Document BQMS-1000, FAA Part 21 Supplement – The division shall establish and maintain compliance to the current revision of Parker Aerospace Document BQMS-1000 and its 14 CFR Part 21 Supplement, "PAH Quality System Requirements".

Q037 Quality System – Production Certificate (FAA-PC) Holder – When the contract is for products for which the supplier holds a FAA Production certificate, the supplier shall establish and maintain a Quality System in compliance with the requirements of 14 CFR Part 21, Subpart G.

Q040 Variation Management Program per 9103 – The supplier shall establish and maintain a Variation Management Program in compliance with the current requirements of 9103 – "Variation Management of Key characteristics." 9103 requires the use of statistical methods to control manufacturing and processing operations.

Q041 Continuous Improvement Plan - Key Characteristics have been identified on the PO.

Q160 Full Material Review Authority – The supplier is authorized to conduct Material Review and disposition all minor nonconformances found on products that are under the Supplier's proprietary engineering design authority and control. Major nonconformances that cannot be completely eliminated by rework or reduced to a minor by repair. It is up to Parker Aerospace Material Review Board (MRB) to disposition all major nonconformance products.

Q175 Supplemental Purchase Order Conditions per PD1000 – The supplier shall comply to the requirements of the current rev of Parker Aerospace Gas Turbine Fuel Systems Division (GTFSD) document PD1000.

1.9 Source Inspection Requirements – Products to be delivered on this contract, require in-process source inspection, tests, or both by a Parker Aerospace Quality Assurance Representative. "For orders were Q195 is also applied, the In-process inspection may be performed by the Supplier's Parker delegated inspector."

Q190 Final Source Inspecting - Products to be delivered on this contract, require final source inspection, tests, or both by a Parker Aerospace Quality Assurance Representative. Parker is to be notified at least 48 hours in advance of the time the parts with be ready for final inspection.
Q195 Delegated Source Inspection - Products to be delivered on this contract, require inspection, tests, or both by a representative(s) in the supplier's quality organization delegated and authorized by Parker Aerospace to perform inspection and/or tests on behalf of Parker Aerospace.

Q196 Supplier Self Release Authority – The supplier has been authorized to perform final inspection on behalf of Parker Aerospace and release product(s) for delivery to Parker Aerospace.

Q200 Government Source Inspection (GSI) – US Government Source Inspection (GSI) will be required prior to delivery to Parker Aerospace.

Q220 Government Surveillance – During performance on this contract, the Supplier's Inspection/ Quality System, manufacturing operations and processes, including when those applicable those at supplier's sub-tier sources, are subject for review, verification and analysis by authorized representatives of applicable US Government agencies and personnel.

1.10 Supplier Statements of Quality (Certifications and Test Reports)

Q233 Maintenance Record and Release Certificate – See **Number 50** above which defines these requirements for Parker Aerospace.

Q240 Certificate of Conformance (C of C)– Every part delivered to Parker Aerospace are required to have a packing list/shipper or on a separate attached document, a written statement titled "Certificate of Conformance" which complies with the requirements listed in **Number 10** listed above. See below are required:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q245 Material and Process Summary Report – The supplier is to provide a Summary Report shall have as a minimum shall contain the following information:

a.) part number
b.) drawing revision
c.) contract number and if applicable the line & release number.
d.) packing list/shipper number
e.) material and/or process description
f.) material and/or process specification number and revision, including type, grade, class, etc.…
g.) material and/or process quantity
h.) name and location of Parker Aerospace approved special processor (ref. Q010 1.6 in P9112) and/or material supplier, including country of origin for all raw materials used.
i.) material heat lot and/or traceability number to the processes.
j.) statement of conformance attesting that the information of the summary report is accurate and true.
k.) the supplier company name and the name and signature or stamp (per 1.5.4 of P9112) and title of the authorized company official who issued the summary report.

Q260 Statement of Conformity (FAA Form 8130-9) – The supplier shall provide documentation to support the supplier's conformity inspection, including a completed FAA Form 8130-9 with each 1st article product furnished on the contract. See also **Number 50** above.

1.11 Control of Raw Material

Q300 Raw Material Verification Program – The supplier shall develop, document, and implement a raw material (sheet, plate, rod, etc.) verification program that will ensure that all material received from the supplier's sub-tier sources meet all applicable technical and quality requirements. See also **Number 10** and **Number 30** above.

Q310 Parker Aerospace Furnished Material – Parker Aerospace furnished raw material (bar stock, castings, forgings, etc.) machined or partially machined parts (not for in-process manufacturing) and/or components (fittings, connectors, etc.) to the supplier for use in or on products to be delivered on this contract. With each delivery of products on this contract to Parker Aerospace are required to have a packing list/shipper which complies with the requirements listed in **Number 10** listed above. See below are required:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q320 Supplier Furnished Material – With each lot of raw material delivered or used to fabricate products on this contract, the supplier shall furnish a "Certification/Material Test Report. See **Number 30** above. With each delivery of products on this contract to Parker Aerospace are required to have a packing list/shipper which complies with the requirements listed in **Number 10** listed above. See below are required:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q330 Traceability of Products to Raw Materials – For each lot of products delivered to Parker Aerospace, the supplier shall provide positive traceability of each individual product to the material certification / test reports that represents the raw material from which each of the products was manufactured.
Q335 Critical Parts – The supplier shall establish and maintain strict controls during all machining, processing, and inspection operations when products or parts are identified as "critical" on the contract, drawing, specification, or other applicable documentation.

1.12 Control of Special Processes

Q340 Qualified Processes and Certifications – Moved to Q010 paragraph 1.6.1 in P9112.
Q342 NADCAP Accreditation – See **Number 5** Above.
Q350 Heat Treat Certifications – With each delivery of products on this contract, the supplier shall furnish a time/temperature certification that includes the following data:

a) Part number and revision
b) Quantity heat treated
c) For each heat treatment cycle – the actual temperature range and duration (hrs.) of each heat treat cycle

Q360 Heat Treat Furnace Charts – With each delivery of products on this contract, the supplier shall furnish the original, or a legible copy, of the furnace temperature chart, which shows the part number, the date and the actual time the part was moved in/out of the furnace.

Q365 1st Article Destructive Metallurgic Test Report (DTMR) – With each delivery of 1st article products on the contract, the supplier shall furnish a DMTR meeting BPS 4127 "Control of Priority Processes" and certified by one of the following:

a) American Association for Laboratory Accreditation (A2LA)
b) NADCAP in accordance with SAE PRI AC7101 NADCAP Audit Criteria for Materials Test Laboratories.
c) Third party registrar issued certificate indicating the testing organization is in compliance with ISO17025 – "General Requirements of Testing and Calibration Laboratories"
d) A laboratory approved by Parker Aerospace.

Q370 Test Samples – With each delivery of products on the contract, the supplier shall furnish for verification testing by Parker Aerospace one (1) additional product or suitable test sample produced from the same lot material lot and processed simultaneously with the lot of products delivered.

Q375 Process Control Data – See **Number 22** above.

Q380 Nondestructive Test (NDT) Reports – Unless otherwise specified on the contract, drawing, specification, NDT shall be performed on 100% of the lot of products. With each delivery of products on the contract, the supplier shall furnish a certified test report that shows that the required NDT test was performed on all delivered products. The test report shall be issued by the organization that actually performed the NDT and include:

a) A complete description of the test, test name, specification, revision, type, method, etc.
b) The acceptance criteria document number and revision, that applied to that NDT method.
c) The number and revision level of the NDT procedure used, and
d) When applicable, identity of the qualified/certified personnel who performed the NDT.

When products are serialized the serial numbers shall be referenced on the NDT reports and certifications.

Q385 Radiographic (X-Ray) Inspection - With each delivery of products on the contract, the supplier shall furnish a certified test report that shows that shows Radiographic Inspection was performed on all delivered products. The certified test report shall include:

a) A test report showing the accept/reject quantities, and
b) A copy of the approved shooting sketch; the shooting sketch or test report shall include the number and revision of the approved radiographic technique. The supplier is to maintain the film or digital images in accordance with the record retention requirements of the Supplier's Quality Management System.

Q386 Radiographic (X-ray) Film – In addition to the test reports and shooting sketches required by **Q385**, the supplier shall furnish the exposed x-ray film with each delivery of products.

Q390 Parker Aerospace Approval of NDT Techniques – Prior to conducting any NDT required by drawing or specification on products scheduled for delivery on this contract, the Supplier shall prepare and submit to Parker Aerospace for review and approval a detailed procedure describing the NDT to be performed. The procedure shall be:

a) Identified with a control number.
b) Reference the applicable NDT specification and revision with which it complies, and
c) Include the name, signature, and date of the qualified and certified technician who prepare and/or approved the NDT technique. Changes to Parker Aerospace approved NDT techniques shall be submitted to Parker Aerospace for approval prior to their use in production.

Q400 Parker Aerospace Braze or Weld Schedule Approval – Prior to conducting any brazing and welding on products scheduled for delivery on this contract, the supplier shall prepare and submit to Parker Aerospace for review and approval a detailed written braze or weld schedule and a braze or weld sample or an actual part that was produced using the submitted braze or weld schedule. The braze or weld schedule shall have:

a) Part number and revision;
b) Applicable braze or weld specification and revision, and
c) Name and signature of the qualified/certified individual that approved the braze or weld schedule.

1.13 Control of Castings

Q410 Foundry Control – The supplier shall establish a foundry control procedure and submit to Parker Aerospace, for review and approval the following:

A. Sample Castings – Sample foundry control castings from the first production run representative of the controls, practices, and processes to be used on the production castings.
B. 1st Article Inspection Report (FAIR) – See **Number 12** above.
C. Mechanical Properties – The laboratory test report or certified statement of the test bar mechanical properties foundry control 1st article castings. See **Number 30** above.
D. Chemical Composition – The laboratory test report or certified statement of the chemical analysis of the material (melt) used in the foundry control 1st article castings. See **Number 30** above.

E. Radiographic Procedure – The laboratory test report showing the sketch, radiographic technique, and approval from a Parker Aerospace Approved (APSL) and NADCAP approved Level 3 NDT inspection service.
F. Macroscopic Examination – If a macroscopic evaluation is required by the drawing, a pre-production sample shall be macrosectioned for the purpose of verifying the quality of internal surfaces inspectable only by radiography.

Q430 Pre-Production Controls – Prior to making the first production run of forgings, extrusions, or pressings, or on any forging or pressing where dies or a technique has been changed, the supplier shall submit to Parker Aerospace for review and approval of the following:

a) 1st Article – Sample 1st article forging, extrusion, or pressing from first production run and representative of all manufacturing and processing operations scheduled to be used during production.
b) 1st Article Inspection Report (FAIR) – Showing the results (actual values) of the FAI.
c) Mechanical Properties – The laboratory test report or certified statement of the test bar mechanical properties taken from the 1st article.
d) Chemical Composition – The laboratory test report or certified statement of chemical analysis of the materials used in the 1st article, or a specimen taken from the 1st article, showing the actual percentage of each element contained in the 1st article or specimen.
e) Ultrasonic Technique – When required by the drawing or specifications, the written technique used to perform the ultrasonic inspection on the 1st article and to be used during production.
f) Nondestructive Test (NDT) Reports – The laboratory test report of NDT accomplished in accordance with the applicable specification and showing acceptance of the 1st Article.
g) Grain Flow Sample – When required by the applicable drawing or specification, the cross section and pictures of grain flow pattern taken from the 1st article.

Q440 Production Forgings, Extrusions, and Pressings – Production forgings, extrusions, or pressings shall be produced using the methods and controls established and approved by Parker Aerospace during pre-production controls defined in clause Q430. With each delivery of production forgings, extrusions, or pressings on the contract, the supplier shall furnish for each separate heat/lot, all of the certifications/test reports required by the following "Q" Clauses:

a) Q320 – The Supplier Furnished Raw Material
b) Q010 1.6 – Qualified Sources & Process Certifications
c) Q350 – Heat Treat Certifications
d) Q380 – Nondestructive Test (NDT) Reports

1.14 Control of Age Sensitive Items

Q460 Limited Shelf Life Materials – With each delivery of materials on this contract, that have a limited or specified shelf life, the supplier shall furnish the following data:

a) Cure or manufacture date
b) Expiration date or shelf life
c) Lot or batch number, and
d) When applicable, any special storage requirements/handling procedures to be followed.

The above information shall be marked on each container or certification and shall be in addition to normal identification requirements such as material name, part, or code number, drawing, specification number, and revision, type, size, and quantity and other markings as applicable. See **Number 26** above.

1.15 Control of Contamination & Foreign Object Damage (FOD)

Q520 FOD Control Program – See 01-O

Q530 FOD Certification – With each delivery on this contract, the supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "FOD Certification" which complies with the requirements of sections 1.5 of P9112. The below are required:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

1.16 Inspection & Test Reports & Documentation

Q540 1st Article Inspection at Source- See Number 12

Q550 1st Article Inspection at Parker Aerospace – See Number 12

Q560 1st Article Inspection Requirements (FAIR) – See Number 12

Q565 Controlled Planning – The products on this contract are considered critical for aerospace applications and require strict control of manufacturing and process operations. The supplier shall furnish a complete First Article Inspection Report (FAIR) in accordance with the requirements of the current revision of 9102, accompanied by copies of the supplier's manufacturing and processing routing sheets to be used during production. Upon Parker Aerospace review and approval of the first article and planning documentation, the supplier's manufacturing and process planning shall be considered as "frozen". Any changes proposed by the supplier to the approved frozen planning shall be submitted to Parker Aerospace for review prior to implementation. The supplier shall furnish a revised FAIR, reflecting the changes in product as a result of changes in planning approved by Parker Aerospace, with the next delivery of products on the contract. See below are required:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q570 100% Inspection Report – See **Number 17** above.

Q575 Dimensional Inspection Certification (DIC) – See **Number 09** above.

Q580 Supplier Inspection Report (SIR) – See **Number 17** above.

Q590 Final Inspection Report (FIR) – See **Number 17** above.

Q600 Product Serialization Requirements – Serial numbers for all products on this contract have been assigned by Parker Aerospace and are defined in the contract or referenced documents. The supplier shall apply the specified serial numbers on all products and record the serial numbers on all applicable documentation. If product already has a serial number already applied to the parts the supplier is to maintain serial number legibility, control to the specific contract and record serial numbers on all documentation. The assigned serial numbers may not be altered or replaced without written authorization from Parker Aerospace.

Q605 Product Serialization by the Supplier – Products ordered on this contract shall be serialized by the supplier using serialization scheme selected by the supplier. The supplier's serialization scheme shall include provisions to ensure that serial numbers are not duplicated on products with the same part number.

Q610 Acceptance Test Procedure (ATP) Approval – Prior to initial delivery of products on this contract the supplier shall submit to Parker Aerospace, for review and approval, a copy of the ATP or other quality conformance procedure that describes the final tests to be performed from the supplier on products scheduled for delivery to Parker Aerospace. The ATP shall include a list of equipment used and any test diagrams or sketches necessary for technical interpretation of the ATP. All revisions need to be approved by Parker Aerospace prior to incorporation into production.

Q620 Functional Test Data Sheets – See **Number 08** above.

Q630 Functional Test Certificate (FTC) – See **Number 08** above for requirements. The certificate shall include:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q640 Registered Components – The products ordered on this contract designated as "Registered Components." Registered component designation is applied to all products whose failure in service or operation would most probably result in catastrophic failure and are critical to the safe operation of the system or vehicle in which installed. All registered components require strict controls and traceability throughout the manufacturing and inspection operations. Prior to start of production, the supplier shall submit to Parker Aerospace, for review and approval a written control plan describing the supplier's procedure which will be used to effectively control these components during the supplier's manufacturing, inspection and testing operations and processes. When applicable such controls shall include the controls exercised by the supplier's sub-tier sources. The supplier control plan shall describe the following in detail:

a) Detail sequence of manufacturing operations and the product characteristics generated at each;
b) The method, type, and points during manufacturing sequence where special processing (heat treatment, plating, etc.) will be performed and the sources to be used;
c) Points during (a) and (b) above, where inspections and/or tests will be accomplished and documented,
d) Product characteristics that will be inspected and verified during (c) above;
e) Methods of identification, preservation and packaging will be used.
f) Handling and transportation precautions that will be implemented, and
g) Any other controls required by the contract.

The certificate shall include:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q645 Controlled Components – The products ordered on this contract are designated as "Controlled Components." A controlled component designation is applied to all products where judgement and experience indicates that if defective, the product could result in hazardous or unsafe conditions for individuals using or maintaining the product or vehicle which it is installed; affect flight safety; prevent performance of a military vehicle's operational function as a weapon e.g.; mission abort; result in product failure (other than critical); materially reduce the usability of the vehicle on which the defective product is installed or, one which has been determined, or through coordination with the customer, as having an effect on installation interchangeability. Prior to start of production, the supplier shall submit to Parker Aerospace, for review and approval, a written Process Control Document (PCD) describing the supplier's methods, processes, key process parameters, process parameter settings and control methods relating to the product and its sub- components which will be used to effectively control the product during the supplier's manufacturing, inspection and testing operations and processes. When applicable, the supplier shall also submit to Parker Aerospace, for review and approval, the PCD(s) applicable to operations performed by the supplier's sub-tier sources. The supplier's PCD shall describe the following:

a) Detail sequence of manufacturing operations and the product characteristics generated at each step of the manufacturing process.
b) Method, type and points during manufacturing sequence where special processing (heat treating, plating, etc.) will be performed and sources to be used.
c) Points during (a) and (b) above, where inspections and/or tests will be accomplished and documented,
d) Product characteristics that will be inspected and verified during (c) above;
e) Methods of identification, preservation and packaging will be used.
f) Handling and transportation precautions that will be implemented.
g) Any other controls required by the contract.
h) The supplier's approved PCD shall be marked with the following legend that identifies the product is under a controlled component plan listed on next page:

Controlled Component – Frozen Process – This item is a controlled product and has been manufactured in accordance with process controls established and documented on the current Process Control Document (PCD) approved by Parker Aerospace. Subsequent to Parker Aerospace approval, any changes to PCD shall be submitted to Parker Aerospace for review prior to implementing them in production. The certificate shall include:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

Q650 Qualified Parts Certificate (QPC) – With each deliver of products on this contract, the supplier shall include on the packing list/shipper or on a separate attached document a written statement titled "Qualified Parts Certificate," and the certificate shall include:

- Company Name:
- Address:
- Title of Authorized Individual:
- Signature/Stamp:
- Date:

1.17 Miscellaneous Requirements

Q700 Manufacturing Quality Instruction (MQI) – The supplier shall comply with the special engineering, manufacturing and/or quality instructions and requirements that apply to the products ordered on this contract. Such requirements may be described in document(s) such as Engineering Work Instructions (EWI), Manufacturing Quality Instruction (MQI), Quality Work Instruction (QWI), Manufacturing Work Instruction (MWI), or other designation referenced on the contract.

Q710 Component Traceability Requirements – See **Numbers 59 and 60** above.

Q752 Process Flow Diagram Worksheet Required – A PFD (Process Flow Diagram) worksheet must be created to document the process and its information.

Q754 Measurement System Analysis Required – A MSA (Measurement System Analysis) is required on this contract for those characteristics identified as key or critical by either Parker Aerospace and/or supplier. The supplier's MSA shall be submitted to Parker Aerospace for review and approval prior to start of work on this contract.

Q755 Process FMEA Required – The supplier shall implement a PFMEA (Process Failure Mode & Effects Analysis) focusing on the manufacturing or assembly related deficiencies, their effects and causes, with emphasis on how the manufacturing process can be improved to ensure the risk due to manufacturing and assembly is low, that a product is built to design requirements in a safe manner, with minimal downtime, scrap, and rework of products delivered on this contract.

Q760 Advanced Quality Planning/Production Part Approval Process – Parker AQP (Advanced Quality Planning) PPAP (Production Part Approval Process) is required on this contract/shipment and applies to the supplier and their sub-tier suppliers. See also **Number 21** above.

Q765 Alternate Materials and/or Process Specifications – A alternate specification list applies to this order. The list defines the alternative material and/or process specifications that may be used when the material or process specifications that may be used when the material or specification shown on the engineering drawing or other documents has been cancelled by DoD or industry initiatives and the material or process to the original specification is no longer available.

Q770 Ship to Stock (STS) – Products on this contract have been approved and designated for STS processing. The supplier shall identify all containers, packages, and shipping documents with the word "STS" in bold format.

Q780 Pre-Production Review – Products on this contract have been designated as complex and require close control of manufacturing and processing operations and/or sequence. The supplier shall notify Parker Aerospace at least (7) days before start of production so that Parker Aerospace may schedule and conduct an on-site review and approve supplier's equipment, methods, processes, and controls to be used during production.

Q800 UID Marking – Products on this contract require Unique Identification (UID) marking in accordance with the requirements of current revision of MIL-STD- 130.

PD3000 – The supplier shall make a record of the work performed sufficient to permit exact duplication. This record shall be maintained minimally for 2 years after the date of the shipment.

a) The record of work shall include identification of the exact raw material type and the supplier shall provide raw material test certifications if specifically requested on the PO or drawing.
b) The record of work shall also include any other materials, solutions, or substances used in the processing or cleaning. The supplier shall identify on the shipping documents any residues or chemicals remaining on or in the product which may be harmful to downstream users and shall provide Material Safety Data Sheets (MSDS) for such residues.

Section B

Honeywell Customer SQR Requirements

All the SQR requirements that are not defined above can be found in SPOC 165.7 and shall be reviewed to the current revision and verified to meet the Honeywell requirements specified within.

Section C

Collins Aerospace Customer SQR Requirements

All the SQR requirements that are not defined above can be found in ASQR-01 and shall be reviewed to the current revision and verified to meet the Colins Aerospace requirements specified within.