ATTACHMENT Q-1
SOURCE INSPECTION AND/OR TEST IS REQUIRED BY NASA QUALITY REPRESENTATIVE

1. Articles and materials ordered by this contract are subject to NASA Quality inspection or test at the Contractor facility prior to delivery. Contact your NASA Buyer for the name and phone number of your NASA Quality Assurance Representative (QAR). The NASA QAR will provide a list of the mandatory inspection points (MIP) or test requirements for this contract. Do not start work on this order until the mandatory inspection points are established and understood. Verification of material or properties may be the first MIP.

   The Contractor shall notify NASA QAR at least 2 days prior to completion of work requiring NASA inspection or test. A seven work day notification is required prior to the completion on the work requiring NASA QA inspection when the facility is out of the commuting area of NASA DFRC. The NASA mandatory inspection points were established at contract award. The advance notice is to permit the NASA QAR adequate scheduling of required contractual inspection and/or testing at the Contractor facility or other site as applicable.

   At the time of such source inspection and/or test by NASA QAR, the Contractor shall provide the NASA representative with verifiable quality evidence to assure that the items meet the requirements of the contract.

2. The source inspection and/or test provided herein shall not constitute final acceptance of the items unless it is specifically stated in contract documents that final acceptance by NASA QAR will be performed at the Contractor facility.

3. Each shipment against this contract shall include objective evidence that NASA QAR has completed source inspection or test prior to shipment from the contractor's facility or site as applicable.

4. Please contact one of these individuals to schedule a visit of a NASA Quality Assurance Representative.

   Steve Wildes
   SQ Quality Assurance Branch Chief
   At 1 661 276 3620
   E Mail Steven.L.Wildes@nasa.gov

   Gary May
   SQ Procurement Quality Assurance
   At 1 661 276 7498 Mobile 1 661 816 7752
   E Mail Gary.R.May@nasa.gov

END OF Q-1

Approved

Gary May

Q-1 (6-07)

ATTACHMENT Q-2
GOVERNMENT SOURCE INSPECTION

All work on this order is subject to inspection and test by the Government at any time or place. Notify the Government quality representative on receipt of this order. The government representative will provide the mandatory inspection and actions required. If unable to determine the name and phone number of the Government representative assigned, contact your procurement representative (Buyer) immediately for assistance. Do not start work on the order until the Government representative has provided the Mandatory Inspection Points (MIP's). The first MIP may be a verification of material.

The Government representative shall have a minimum of 48 hours notification prior to any mandatory inspection. This 48-hour notification is required prior to the beginning of any test where a MIP has been imposed. The Government representative is encouraged to perform concurrent testing, when practicable.

END OF Q-2

Approved

Gary May

ATTACHMENT Q-3
CHEMICAL/PHYSICAL ANALYSIS REPORTS

Each shipment of materials shall be accomplished by reports of chemical and/or physical analyses or tests conducted to verify conformance to the specifications required by this contract.

Such reports shall be supplied in duplicate and shall be verified by a duly authorized officer or quality representative of the contractor. The reports shall be identified to the materials shipped. The material must be traceable to lot, batch, or heat number and have hardness indicated. All of the above information must be traceable to this contract.

END OF Q-3

Approved

Gary May

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

ATTACHMENT Q-4
CERTIFICATE OF CONFORMANCE (PRODUCER)

Two (2) copies of the certificate of conformance shall be completed by the contractor and returned to NASA DFRC. Copies of certificates shall be signed by an authorized officer or quality representative of the contractor. Nothing in this certificate shall be deemed to modify or limit any representation, warranties, or commitments made elsewhere or in any way affect the obligation of the Contractor to perform strictly in accordance with the provisions of this procurement.

CERTIFICATE OF CONFORMANCE

Date_____

To: NASA DFRC
PO Box 273, Edwards, Ca. 93523-5000
Reference: NASA DFRC Procurement No._____
Item No(s)_____

Contractor hereby certifies as follows:

1. All articles, materials and services furnished against the above referenced procurement were produced and processed in conformance with all applicable specifications, standards, drawings, and other controlling documents. All required inspections, demonstrations and tests have been successfully completed and serviceability is verified.

2. All processes required in the production of articles and materials furnished against this procurement are performed by personnel specifically qualified or certified.

3. The items in this shipment have not been previously submitted to NASA DFRC . Previously item returned to the contractor as "defective" or "not acceptable", are not acceptable to NASA DFRC.

Contractor_____

By_____

Title_____

END OF Q-4

Approved

Gary May

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

Q-4 (11/97)

ATTACHMENT Q-5
CERTIFICATE OF CONFORMANCE (DISTRIBUTOR)

Two (2) copies of the certificate of conformance set forth below shall be completed by the contractor and returned to NASA DFRC with each shipment made against this procurement, each copy of the certificate shall be manually signed by an authorized officer or quality representative of the contractor. Nothing in this certificate shall be deemed to modify or limit any representation, warranties, or commitments made elsewhere or in any way affect the obligation of the Contractor to perform strictly in accordance with the provisions of this procurement.

When the Contractor requires additional copies of this Certificate, reproduction is authorized.

CERTIFICATE OF CONFORMANCE

Date_____

To: NASA DFRF
PO Box 273, Edwards, Ca. 93523-5000
Reference: NASA DFRC Procurement No._____
Item No(s)_____
NOTE: For multiple items, list item numbers and respective Manufacturers' names as required, on reverse side.

Distributor hereby certifies:

1. That the items furnished against the above referenced procurement number were manufactured who is specified on the procurement documents. When no Manufacturer is specified, that the Manufacturer is_____

2. That all items identified on the procurement documents by a "part number" or similar specific identification are in conformance with all applicable specifications, standards, drawings and other controlling documents, including requirements for processing, testing, and inspection.

3. Unless provided otherwise in this contract, that all records pertinent to the items shipped against the above-referenced procurement number will be maintained on file for a minimum of three (3) years after final payment of this procurement, and that copies of such records shall be supplied to NASA DFRC upon request.

4. That the items in this shipment have not been previously submitted to NASA DFRC, or to any other buyer, and subsequently returned to the Distributor as "defective", "not acceptable", or similarly rejected.

Distributor_____

By_____

Title_____

End Q-5

Approved

Gary May

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

(2/98)

ATTACHMENT Q-6
DELIVERY REQUIREMENTS

The following requirements shall be complied with for articles and materials delivered to NASA DFRC.

Articles and materials shall be packaged and preserved in a manner to assure protection from damage during normal handling, transport, and storage after receipt.

Articles or materials which have shelf life limitations or storage control requirements imposed by the manufacturer, Government, NASA or the contractor shall be accompanied by positive indication of such limits. Examples include manufacturing date, cure date, assembly date or temperature storage limitation.

Marking shall include, as a minimum, nomenclature, part number, quantity, supplier, expiration date, temperature handling requirements and lot/batch information.

Items containing hazardous materials shall have the manufacturer's Material Safety Data Sheet (MSDS) included.

Articles and materials delivered shall have adequate shelf life remaining, fifty to seventy-five percent of the recommended manufacturer's shelf life must be remaining at the time of purchase.

Articles and materials delivered under the provisions of this contract shall be accompanied by a serviceable tag, certificate of conformance, completed build record or other suitable objective evidence of completion and serviceability.

END OF Q-6

Approved

Gary May

ATTACHMENT Q-7

PROCUREMENT of ELECTRICAL WIRE for Aircraft and Flight Test Electrical Wire / Cable

1. Procurement of wire shall be in one continuous length as specified in the purchase order. Roll "xxx" feet long in one continuous length. No splices or split lengths allowed.

2. Type - Unless otherwise specified or required for particular applications (i.e. space applications, specific chemical resistance, etc.), all electrical wire shall be in accordance with the following specifications and requirements:
   a. MIL-W-16878/4 (type E) or MIL-W-22759/11 (preferred), silver-coated stranded copper conductor with an extruded polytetrafluorethylene (PTFE) insulation, or equivalent, not to include polyvinylchloride (PVC).
   b. Wire stranding shall be the maximum number available by specification for the particular wire size concerned
   c. Where required, shielding shall be of silver-coated braided copper construction with a minimum of 90% coverage.
   d. Where required, cable jacketing shall be of polytetrafluorethylene (PTFE) material, not ETFE (Tefzel).
   e. Cables and other multi-conductor assemblies shall be fabricated from the basic components listed above under Military Specification MIL-W-16878D (uses MIL-W-16878 conductors) or MIL-C-27500 (uses MIL-22759), as required.
   f. Cables and other multi-conductor assemblies shall be fabricated from the basic components listed above under Military Specification MIL-W-16878D (uses MIL-W-16878 conductors) or MIL-C-27500 (uses MIL-22759), as required.
      i.e. M27500 V 22 RC 4 S 06
      M27500 - Cable specification identification number
      V - Color code of inner conductors; specified by the procuring activity.
      22 - Gauge of the conductors within the cable assembly.
      RC - Designates manufacture to construct cable using MIL-W-22759/11 conductors; silver coated copper wire with PTFE insulation.
      4 - Number of individual conductors in the cables construction.
      S - Specifies single silver coated copper shielded cable with 90% coverage.
      06 - Cable with PTFE tape wrapped, 200°C, jacket material.

   g On USAF loaned A/C, aircraft systems wiring (i.e. wire not installed as part of flight research modifications) shall conform to the particular aircraft's wire repair Technical Order or per T.O. 1-1A-14 when wire type is not specified in the aircraft's wire repair manual(s).

3. Selection – Select wire so that the rated maximum conductor temperature is not exceeded for any Combination of electrical loading, ambient temperature, and heating effects of bundles, conduit, and other enclosures. Factors to be considered in the selection are operating voltage, circuit current, temperature, mechanical strength, voltage drop, abrasion, flexure, pressure altitude, and chemical resistive requirements. Wires will be of sufficient size to ensure that they will provide adequate current – carrying capability and that voltage drops will be within limits required to provide satisfactory operation of equipment. Voltage drop effects must be carefully considered during wire gauge selection, especially when low impedance devices (such as multiple strain gauges, meter movements) or long wire runs are used. To avoid unnecessary weight, use the smallest size wire compatible with operational and performance requirements. Wire selection guidance is contained in section 6 of SAE AS50881, including wire ampacity derating factors such as altitude, wire bundling effects, etc.

4 Minimum wire size – The following limitations are applicable to all general wiring installations. Exceptions and deviations may be required for particular DFRC applications and are approved when properly specified

on drawings or other technical references. Where possible, the use of the defined wire and cable per this document will be used. If alternative types must be used for unique DFRC installations, a waiver and justification must be created for the application per DOP-O-401 Section 8.0

a. Wires smaller than 24 gauge shall not be used, except for multi-conductor cables, and when specifically authorized.
b. Wire smaller than size 22 gauge shall not be used, where it will be subject to excessive vibration, repeated bending,
excessive handling or frequent connection/disconnection at terminals.
c. Single conductor wire smaller than size 22-gage will not be routed in bundles with fewer than three other wires, and they will be adequately supported at the terminations

.

End Q-7

Gary May
//Signed//

06/09

ATTACHMENT Q-8
INSPECTIONS AND TEST DATA REQUIREMENTS

1. The contractor shall perform all required inspections and tests to ensure that all articles and materials conform to contract requirements and applicable drawings and specifications. Such inspections and tests shall encompass the receiving, processing, fabrication, assembly, end-item and shipping phases.

2. The Contractor is responsible for all inspections and test data. This responsibility shall not affect any rights of NASA, DFRC, or a designated Government agency for any surveillance, source or other inspection. The Contractor shall be responsible for providing adequate personnel, methods and equipment to perform all inspections and tests to assure that articles and materials meet the requirements of the contract.

3. Inspection and test data requirements are the responsibility of the Contractor. The Contractor shall prepare and maintain records and data of all inspections and tests performed. Such records and data shall be appropriate for the type, scope and significance of the inspection or test performed and in sufficient detail and extent to provide for complete verification and evaluation of the operation.

When specified in contract documents, each article or material shipped against this contract shall be accompanied by copies of required inspection and test data to provide evidence of compliance with contract requirements.

All inspection and test data shall be verified by the Contractor's inspection/quality organization by use of signature or quality stamp and dating. In those cases where a formal inspection/quality organization is not in existence at the Contractor facility, the verification of inspection and test data shall be provided by a signature of an authorized official of the Contractor, accompanied by the date of such verification.

END OF Q-8

Approved

Gary May

Q-8 (12-97)

ATTACHMENT Q-9
ELECTRICAL/ELECTRONIC ARTICLES AND MATERIALS

This attachment is in reference to custom manufactured procurements in which NASA handbooks or DOD documents are specified. If a NASA approved parts list is utilized or the part comes from a Defense Electronic Supply Center, this attachment may not be applicable.

A certification of conformance is required for all custom parts. These parts require a Non Standard Parts Approval Report (NSPAR) prior to use. These parts are made from source control drawings (SCD). This type part includes any Electrical, Electronic or Electromechanical (EEE) part that that has been modified or is not used as intended. Custom parts require build records, test data and destructive physical analysis (DPA) data accompany the parts.

All EEE parts affected by this attachment require trace ability from the manufacturing location by Cage Code to where the parts were made.

Parts require full trace ability to lot, date code, and batch code type data.

End of Q-9

Approved

Gary May

Q-9 (11-97)

ATTACHMENT Q-10
VERIFICATION OF SERVICEABILITY

Articles and materials delivered under the provisions of this contract shall be accompanied by a tag, label, certificate or similar instrument stating that the specific concerned articles and materials are serviceable.

Such tag, label, certificate or instrument shall be verified by the contractor inspection/quality organization by means of a signature and/or quality stamp, and shall be dated. In those cases where a formal inspection/quality organization does not exist at the contractor facility, the required verification of serviceability shall be provided by the signature, date signed and title of an authorized official of the contractor.

Definition: "Serviceable" is defined as that condition wherein articles and materials have been produced and processed in conformance with all applicable design, fabrication, operational and quality requirements, and all required inspections and tests have been successfully completed.

Articles stored for more than three (3) years shall require a visual inspection for damage or evidence of leakage and a functional and operational check.

END OF Q-10

Gary May

Signed

Approved
Q-10 (11-97)

Q-11
IDENTIFICATION AND DATA RETRIEVAL

1. General. The Contractor shall maintain an identification and data retrieval system for articles and materials. Identification of articles is traceable to the procurement document, fabrication process, inspection, test and operating records.

2. Part and Type Numbers. Unique part or type numbers batch, lot, heat number or other unique identification shall identify articles and materials.

3. Detailed Identification. Articles or materials, which require group or individual control because of critical application or age limitations. The following are examples of acceptable methods of identification.

a. Date Codes - applicable when manufactured in a continuous and controlled process or for age-limited items.

b. Lot numbers - applicable when produced in homogeneous groups and there is no requirement to identify an individual item.

c. Serial Numbers - applicable to individual items for which unique data is to be maintained.

Serial numbers shall be issued and controlled in a manner to prevent duplication. Serial numbers shall consist of a minimum of three (3) digits (including zeros).
Where the selection and application of detailed identification numbers is arbitrary; all such numbers shall be assigned in a consecutive manner.

Serial or lot numbers of articles previously scrapped shall not be used again.

4. Standard hardware requires no tractability or identification. Examples of standard hardware include items marked as (MS, NAS, etc.). Procurement documents may require Items of standard hardware be uniquely identified for special applications.

End of Q-11

Gary May
Signed

Approved

ATTACHMENT Q-12
AGE CONTROLS OF SYTHENTIC ELASTOMERS

1. Age-sensitive elastomer articles and materials conforming to the following specifications shall be in conformance with the applicable age controls defined in paragraph 3 at the time of delivery to NASA ARC/DFRF.

Part	Hose/Hose assemblies	
AMS-7260	MIL-P-5315	MIL-H-5593
AMS-7270	MIL-P-5510	MIL-H-6000
AMS-7271	MIL-P-5516	MIL-H-7061
AMS-7272	MIL-R-6855,(Class 1 only)	MIL-H-7398
AMS 7274	MIL-R-7362	MIL-H-8788
		MIL-P-25732
		MIL-H-8790(see 3.a & 3.b.)
		MIL-H-8794
		MIL-H-8795(see 3.a. & 3.c.)

2. 2. These requirements do not apply to silicone rubber, fluorocarbon rubber, fuel cell synthetic materials, and static seals used with fasteners.

   A "component" is an accessory, combination of parts, or assembly.

   NASA ARC/DFRF includes legally responsible organizations or individuals acting for NASA DFRC, a prime contractor to NASA DFRC, or a subcontractor.

Max. Accumulation.

3. Age Limitations Age in Quarters

   a. For articles and materials not assembled in a component, including bulk hose:

From CURE DATE to delivery to NASA DFRC:...from the manufacturer or his agent 4
... from other sources 6

b. For articles and materials assembled in components, provided that elastomer items installed in the component shall exceed 8 quarters from cure date to installation in such component:

From ASSEMBLY DATE to delivery to NASA DFRC:... of an installed component 4
of an uninstalled component as a spare by the flight vehicle or 8
engine contractors, or of a complete engine by engine contractors 8
of a component installed in a flight vehicle 12

Max Accum

Age in Quarters

3. 4.Elastomer articles and materials manufactured or installed during any given quarter will not be considered one quarter old until the end of the succeeding quarter. Packages, which include mixed categories of cured elastomer articles and materials shall be marked with the assembly date of the oldest assembly in the package.

END Q12

Gary May

Q-12 (2/98)

ATTACHMENT Q-13
PROCESSING OF BREATHING OXYGEN EQUIPMENT

NOTE: *The terms "**processing and process**" includes cleaning, conditioning, treating, preservation, inspection, testing, packaging and any other operation used to maintain and assure serviceability.*

1. All applicable Inspection, Test, Serviceability and Marking requirements of breathing oxygen containers have been met.

2. Polyethylene plastic closures, cleaned to be compatible with Breathing Oxygen shall be used for contamination protection of all cylinder openings.

3. Articles and materials associated with the use of Breathing Oxygen shall be cleaned to oxygen clean specification and then packaged in heat sealed polyethylene bags per packaging specifications. An oxygen cleaned and serviceability tag shall be attached to the cylinder.

4. The Material Safety Data Sheet (MSDS) requirement for the Breathing Oxygen containers are clearly identified .

5. Pressure Vessels serviced with Breathing Oxygen shall include verification of the pressure serviced and certification that Breathing Oxygen was serviced

6. A Certificate of Conformance is required assuring the processes used for cleaning, servicing, conditioning, treating, preservation, inspection, testing, packaging and any other processes used were performed to specification requirements and to assure serviceability.

END OF Q-13

Approved

Gary May

ATTACHMENT Q-14
ARTICLE AND MATERIAL MARKING REQUIREMENTS

General marking requirements shall apply to articles and materials delivered to the NASA DRYDEN FLIGHT RESEARCH CENTER (NASA DFRC). Additional marking requirements may also be specified elsewhere in the contract, specifications, drawings or technical references.

1. Articles and materials delivered under the provisions of NASA contracts shall be identified by a unique part number. These part numbers are traceable to a drawing, specification or other technical reference.

2. The method of identification/marking depends upon the nature, type and use of the part or material. Marking may be done by tags, plates, labels, metal stamping, vibro marking, etching, embossing, forging, casting, molding, decalcomania transfer, stencil or any other suitable method. The method of marking must conform with permanency and legibility requirements.

3. Marking shall be as permanent as the normal life expectancy of the articles or material to which it is applied. The marking must be readable.

4. Marking of articles or material shall be accomplished in a manner that will not adversely affect the life and utility of the item.

5. Materials that by their nature cannot be physically marked, such as powders, compounds and liquids, shall be identified by appropriate container markings.

END OF Q-14

Approved

Gary May

ATTACHMENT Q-15
TRICHLOROTRIFLOUROETHANE

WARNING: BREATHING VAPOR CAN BE FATAL

The following statement is an excerpt taken from MIL-C-81302:
"Vapor concentration immediately dangerous to life is almost odorless, colorless and tasteless. May cause impairment of manual dexterity and vigilance. Breathing high concentrations may cause death or serious physical harm".

ANY CONTRACTOR BEING ASSIGNED THE Q-15 ATTACHMENT MUST BE THOROUGHLY FAMILIAR WITH THE MATERIAL SAFETY DATA SHEETS FOR TRICHLOROTRIFLOUROETHANE

Solvent, Trichlorotriflouroethane.
MIL-D-16791, Detergent, General Purpose (Liquid, Nonionic).
MIL-P-27401, Propellant Pressurizing Agent, Nitrogen.
MIL-F-22191 (or equivalent), Heat-sealable, polyethylene.
End Q-15

Approved

Gary May

Q-15 (2-98)

ATTACHEMENT Q-16
METROLOGY ... Inspection, Measurement and Test Equipment (IM&TE).

Metrology equipment includes equipment used for measurement, inspection tools or devices, and test equipment utilized to record results or data as a record of fact.

Purchase

The instruments, tools or test equipment must provide accurate data therefore mandate correct calibration. Equipment purchaser must require any test data from a national standards laboratory accompany the equipment when purchased. If this test data in not available on receipt, then the equipment needs to be sent to the metrology lab for calibration. If the test data is available the
Equipment must be sent to the metrology lab for entry into the calibration recall system. The procuring organization is responsible for insuring that all newly acquired metrology equipment used for the testing, or acceptance of a product, article, or system where substantiated data accuracy is required, has been calibrated prior to being placed into service.

Receiving Inspection

Newly purchased equipment meeting the criteria identified in the paragraphs above or identified as "calibration required" by the purchaser or Quality Assurance upon receipt shall be routed to the appropriate calibration activity for entrance into the metrology recall database. Upon completion of the calibration and entrance into the calibration database the equipment can be sent to the user / purchaser of the equipment.

END OF Q-16

Approved

Gary May

ATTACHMENT Q 17
IDENTIFICATION, MARKING AND SHIPPING REQUIREMENTS
FOR PYROTECHNIC ARTICLE PROCUREMENT

SHIPPING AND MAILING ADDRESSES-All explosive materials shall be shipped to the AFFTC and must be addressed to Air Force Flight Test Center, FK2805, 412 MXS 605 Bomb Circle Road, Edwards AFB CA 93523-5000, and marked" For NASA Use Only Attn: Life Support Lead ". Assets shipped directly to FK2805 from a manufacturer shall be "Marked For" NASA DRYDEN and individual to contact (contract shall specify individual), example:

AIR FORCE FLIGHT TEST CENTER
FK2805, 412 MXS
605 Bomb Circle Road
EDWARDS AFB, CA. 93523-5000
ATTN: Life Support Lead
For NASA Use Only

The following identification and marking requirements shall be complied with and in the following format for pyrotechnic articles and materials delivered to the NASA Dryden Flight Research Center unless other marking requirements are specified elsewhere in the contract.

A material safety data sheet for each type of explosive is also required, as well as complete disposition instructions, to include a shipping address for left over explosives when the project/program is complete, and a fund site identifying who pays the cost.

One copy of the completed Q-17 shall accompany the shipment and one copy shall be provided thirty days in advance (fax) of the shipment unless waived by mutual agreement, this copy shall be sent to:

NASA DFRC
Attn: Life Support Lead/ OF
(661) 276-3669
PO Box 273, Code OF
Edwards, Ca 93523

1. Item identification

a. Nomenclature:
b. NSN:
c. Part No:

2. Technical order #(if applicable):

3. Required information:

a. Physical/functional description of item:
b. Detailed description of explosive content:
c. QD Hazard class/division/compatibility of item:
d. DOT Explosive class:
e. DOT Markings:
f. Inspection criteria:
(1) List defects, which determine unserviceability.
(2) Inspection checkpoints which determine serviceability.
(3) Inspection interval and sample size.
g. Packaging criteria:
(1) Quantity per container.

(2) Shipping configuration.
(3) Packaging instructions.
(4) Container requirements.
(5) Net explosive weight (N.E.W.).

h. Storage criteria:
(1) Shelf and service life.
(2) Temperature limits. High and low
(3) Stocking requirements.
(4) Special requirements (in/outside, humidification).

i. Handling criteria:
(1) Special handling procedures.
(2) Special handling equipment needed.
(3) Tie-down instructions.
(4) Drop distance.
(5) List of ARMED/HAZARDOUS condition indicator

j. Emergency procedures:
(1) Procedures as contained in T.O. 11A-1-46 or MSDS.
(2) Special precautions to be taken until arrival of EOD/Firefighting personnel.
(3) Disposal procedures.
(4) Render Safe procedures (for EOD use).
k. Explosives supply criteria:
(1) Demilitarization code.
(2) Controlled item/Security Code
(3) Unit cost.

SERVICEABILITY VERIFICATION-"Serviceable" is that condition wherein articles and materials have been produced and processed in conformance with all applicable design, fabrication, operational and quality requirements, and all required inspections and tests have been successfully completed.

Articles and materials delivered under the provisions of this contract shall be accompanied by a serviceable tag, certificate of conformance, or similar instrument verifying that such articles and materials are serviceable.

Such tag, certificate or instrument shall be verified by the contractor's inspection/quality organization by use of a signature or quality stamp, and dating. Only in those cases where a formal inspection/quality organization does not exist at the contractor facility, the verification of serviceability shall be provided by the signature of an authorized official of the contractor, accompanied by the date of such verification.

THIS ATTACHMENT WITH ITS TERMS AND CONDITIONS IS AN INTEGRAL PART OF THIS CONTRACT

APPROVED:

GARY MAY

CONCUR-EXPLOSIVE SAFETY OFFICER:

HOLLIS STIPE

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

ATTACHMENT Q18
REQUIRED DOCUMENTATION for AIRCRAFT FASTENERS

Certified Material Test Reports (CMTRS) from the material manufacturer shall be furnished with the fasteners. Parts received without the required reports will not be accepted. The CMTRS must address the following:

(1) **Lot Traceability:** The fasteners must be traceable to an individual manufacturer and production lot.

(2) **Manufacturer Acceptability:** The fasteners must be manufactured by an approved manufacturer in the United States. Over Seas manufacturers must be certified venders per the 1998 Fastener Control Act. Parts from the following manufacturers are NOT acceptable: A.O. Sammons, H.C. Pacific, Infasco, Invaco, Lawrence Engineering, Lee Aerospace, Longhorn Fasteners, and Universal Fasteners. The current acceptable supplier list for fasteners should also be checked.
Available in the Flight Quality Assurance Office.

(3) **Testing**: The report must show that the testing standards that were used to test the lot from which the fasteners are drawn. Unless the order requires military specification, industry standard specifications are acceptable.

(4) **Chemical Composition Certification:** The report must list and certify the chemical elements comprising the metal.

Approved

Gary May

Q18 (4/99)

ATTACHMENT Q-19
PERFORMANCE BASED SPECIFICATION

1. Quality assurance requirements delineated in performance based specifications shall be the responsibility of the contractor, unless other wise stated in the contract. The contractor shall certify to the government that the item or items offered for acceptance and delivery satisfy the requirements of the specifications through process controls and inspections. Process controls are the preferred method for contractor quality assurance. The government at its discretion, may witness such contractor process controls or inspections and provide notification of such intent to the contractor. Articles and materials delivered under the provisions of this contract shall be accompanied by a tag, label, or similar instrument stating that the specific concerned articles and materials are serviceable.

2. Such tag, label, or certificate or instrument shall be verified by the contractor inspection/quality organization by means of a signature and/or quality stamp, and shall be dated. Only in those cases where a formal inspection/quality organization does not exist at the contractor facility, the required verification of serviceability shall be provided by the signature and title of an authorized official of the contractor, accompanied by the date of such verification.

3. Definition: "***Serviceable***" is defined as that condition wherein articles and materials have been produced and processed in conformance with all of the contractors applicable design, fabrication, operational and quality requirements, and all required inspections and tests have been successfully completed.

END OF Q-19

Approved

Alfred R. White

Q-19 (Jul-07/95)

ATTACHMENT Q-20
ELECTROSTATIC DISCHARGE (ESD)

DELIVERY REQUIREMENTS

The following requirements shall be complied with for articles and materials delivered to NASA DFRC.

Personnel shall only handle containers displaying ESD markings or labels
trained to handle ESD sensitive materials.

ESD sensitive materials should only be opened in and area identified as ESD safe.

Articles containing ESD sensitive materials shall be properly identified packaged and preserved in an approved ESD protective materials recommended by the manufacturer.

Items containing ESD sensitive devices will be wrapped in ESD protective materials and have prominent markings and labels on the outside of the container.

Protective Packaging requires both the prevention of charge generation (e.g. triboelectric contact and separating) end protecting from strong electrostatic fields. The surface resistively of any material should not exceed 10 (to the 12^{th}) ohms/square. Protective packaging is considered
ESD protected.

RECEIVING INSPECTION REQUIREMENTS

ESD items shall be handled only in an ESD- protected area. Outside the ESD- protected area, ESD items shall be enclosed in ESD- protective packaging.

All items received with ESD markings or labels shall be handled in an ESD SAFE manor.

All items received shall be examined for proper ESD precautionary markings and for ESD- protective packaging

NOTE: When an item is received that has not been protected during shipment or internal transfer, it shall be rejected as defective and processed as non-conforming material.

END OF Q-20

Approved

Gary May

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

Q-20 (11-99)

Q-21 ISO 9001/2 Quality Management System

a. Implement a Quality Management System in accordance with the International Organization for Standardization's ISO 9000 Quality Management System Standards. The ISO 9000 Quality Management System Standards include the ISO 9001, ISO 9002, and ISO 9003 standards. The ISO 9001standard applies to design, development, production, installation, servicing, maintenance and repair.

b. Contractually require NASA suppliers to be third party certified in those cases where it is determined to be appropriate and beneficial to NASA.

c. Contractually require, where appropriate and beneficial to NASA, suppliers to comply with the appropriate standard contained in the current version of the ISO 9000 standard series or the American National Standards Institute/American Society for Quality Q9000 series.

d. For those supplier that are ISO 9000 compliant or have an acceptable Quality System that meet the intent of an ISO 9000 system are subject to a review of their Quality Manual and a pre award evaluation visit.

e. Those sellers that have an acceptable quality system in place that meet the intent of government requirement such as Federal Aviation Regulation (FAR) Part 145 Repair Station Inspection System are subject to a review of their Quality Manual and a pre award evaluation visit.

f. Participate in the Government-Industry Data Exchange Program (GIDEP) as a part of the
Implementation of the ISO 9000 nonconforming material reporting requirements is desirable.

f. Seller shall notify NASA, in writing in the event of a change in management or ownership or facility relocation.

i. Please contact the NASA DFRC QA should you have any questions regarding this code.

END OF Q-21

NASA Dryden Flight Research Center
PROCUREMENT QUALITY REQUIREMENTS

GARY MAY

Signed

Approved Q-21 (4-02)

ATTACHMENT Q 22 NASA GIDEP

Procedures For Exchanging Parts, Materials, and Safety Problem Data Utilizing the Government-Industry Data Exchange Program and NASA Advisories w/Change 1

The following factors should be considered in this determination:

Type of Procurement - consider the commodity being purchased; generally, hardware/software procurements are more suitable for participation than service contracts.

Acquisition Phase - consider the phase of the program and the utility of the GIDEP and NASA Advisory data to support that phase, generally activities after the conceptual design phase can benefit most from participation.

Dollar Value of Contract - consider the amount of the contract and the benefit to be obtained from participation or the risks of not participating. There is no cost to contractors to participate in GIDEP - There is a cost to review and evaluate information.

Criticality of the Equipment - consider the potential for loss or damage to the equipment or personnel if GIDEP and NAP information is not utilized. While the primary focus of reviewing contracts for participation in GIDEP is to ensure that failure experience data is available and utilized, contractual requirements can be established for use of the other GIDEP data types. The following is a suggested GIDEP/NAP participation Statement of Work requirement for failure experience data. This text may be tailored at the facilities discretion.

"The contractor shall participate in the Government-Industry Data Exchange Program (GIDEP) in accordance with the requirements of the GIDEP Operations Manual (GIDEP S0300-BT-PRO-101) and the GIDEP Requirements Guide (S0300-BU-GYD-010), available from the GIDEP Operations Center, PO Box 8000, Corona, California 91718-8000. The contractor shall review all GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories to determine if they affect the contractors products produced for NASA. For GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories that are determined to affect the program, the contractor shall take action to

eliminate or mitigate any negative effect to an acceptable level. The contractor shall generate the appropriate failure experience data report(s) (GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory) in accordance with the requirements of GIDEP S0300-BT-PRO-010 and S0300-BU-GYD-010 whenever failed or nonconforming items, available to other buyers, are discovered during the course of the contract."

END OF Q-22

APPROVED:

GARY MAY

Approved Q-22 (6-08)

Q-23 AS9100/AS9103

1. NASA solicitations, contracts, and work-tasking documents shall invoke/specify the quality system requirements identified in AS9100 or AS9003 where considered appropriate.

a. Work that is both critical and complex shall be performed in accordance with the quality system requirements of AS9100.

(1). Critical work is any hardware task that, if performed incorrectly or in violation of prescribed requirements, could result in loss of human life, serious injury, loss of mission, or loss of a significant mission resource (e.g., Government test or launch facility).

(2). Complex work involves either: a) the design, manufacture, fabrication, assembly, testing, integration, maintenance, or repair of machinery, equipment, subsystems, systems, or platforms; or b) the manufacture/fabrication of parts or assemblies which have quality characteristics not wholly visible in the end item and for which conformance can only be established progressively through precise measurements, tests, and controls applied.

b. Critical, but not complex, work shall be performed in accordance with the quality system requirements of AS9100 or ISO 9001, or the inspection and test quality system requirements of AS9003. Noncomplex work includes manufacture of "build to print" piece parts or performance of a discrete manufacturing/test operation such as plating, heat treating, non-destructive testing, or laboratory testing for chemical composition or mechanical properties.

c. Complex, but not critical, work shall be performed in accordance with the quality system requirements of AS9100 or ISO 9001.

d. Work that is neither critical nor complex shall be performed in accordance with the quality system requirements of AS9100, ISO 9001, or AS9003, or in accordance with test and inspection requirements that are specified or approved by the contracting agent and that are supported by records evidencing their performance and outcome.

2. The AS9100 standard applies to design, development, production, installation, servicing, maintenance and repair.
a Contractually require NASA suppliers to be third party certified in those cases where it is determined to be appropriate and beneficial to NASA.

b. For those supplier that are AS0100 compliant or have an acceptable Quality System that meet the intent of an AS9100 or ISO 9000 system are subject to a review of their Quality Manual and a pre award evaluation visit.

c. Seller shall notify NASA, in writing in the event of a change in management or ownership or facility relocation.

d Please contact the NASA DFRC QA should you have any questions regarding this code.

END OF Q-23

GARY MAY

Signed

Approved Q-23 (10-07)