

ENJET AERO TERRE HAUTE

# Supplier Quality Assurance Manual

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## **Revision 02**

**Effective:**  
**2/23/2021**

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## **Purpose**

This document establishes general and special product assurance requirements for exclusive use on Enjet contracts and is part of the Terms and Conditions. It is intended to clearly define all requirements for the supplier to assure that all products delivered by the supplier on the contract conform to Enjet specified requirements for quality, reliability, and integrity.

## **Applicability**

Unless expressly excluded on the contract, the requirements herein shall apply to all orders. The supplier's compliance to these requirements is subject to verification by the Enjet.

To assure conformance to all contract requirements, the supplier shall flow down applicable requirements to all the supplier's sub-tier procurement of products and/or services at all levels of the supply chain scheduled for delivery to Enjet.

All documents including drawings and specifications, whether Enjet, Industry, or Government, are considered part of the contract requirements when specified directly on the contract or in documents referenced by the contract.

Unless otherwise specified on the contract or referenced documents, the revision status of all applicable documents, in effect on the date of issue of the contract, apply to the order.

Copies of proprietary documents and any special documents not generally available from commercial sources, required by the supplier to comply with contract requirements, will be furnished to the supplier by Enjet. Copies of Industry or Government documents and standards are available from several commercial sources, and the supplier is responsible for obtaining such documents. Any problem experienced by the supplier in obtaining required documents should be brought to the attention of Enjet.

## **Right of Entry**

Enjet reserves the right of entry for verification of the quality of work, records and material at any place including sub tier facilities.

## **Prohibited Practices**

The following acts and practices are prohibited, and any violation not approved by Enjet in writing may result in disqualification of the supplier.

## Unauthorized Facility Changes

During performance on the contract, the supplier shall give Enjet written notice before relocating any production, inspection, or processing facilities, or making any other changes that may affect product quality.

## Unauthorized Product Changes or Substitutions

The supplier shall not make any changes or substitutions to any products or services required by the applicable drawing, specification, or document without prior written authorization from Enjet. Authorization may be contingent on Enjet or their representative's review of proposed changes at the facilities of the supplier or the supplier's sub tier sources.

## Unauthorized Repairs

The supplier shall not perform any repairs by welding, brazing, soldering, plugging, bushing, or use of paints, peening, adhesives or plating, or any other repair method, on products damaged or found to be discrepant during fabrication or processing, or on defects in castings or forgings, unless such repairs are specifically authorized by Enjet in writing.

## Use of Newspaper for Packaging

Due to the acid nature of ink, the use of newspapers for packaging products is prohibited.

## Unauthorized use of Nonconventional Manufacturing Methods

Unless specified on the drawing, specification or contract, the supplier shall not use any non-conventional manufacturing or processing methods, such as electrical discharge machining (EDM), electro chemical machining (ECM), laser or abrasive water jet cutting or drilling, flame spray coatings, etc., on products scheduled for delivery to Enjet without prior written authorization by Enjet. Authorization may be contingent on Enjet or Enjet's representative's review and approval of the method, facilities, equipment, and qualified personnel.

## Quality System Requirements

The supplier shall establish and maintain an inspection system in compliance with the requirements of ISO 9001.

**Note:** Supplier must be compliant, but certification is not required.

## **Responsibilities**

The supplier shall provide and maintain an inspection system that ensures that all products and services submitted to Enjet for acceptance conform to contract requirements. The supplier and their sub tiers at all levels shall perform the inspections and tests required to substantiate products conformance. The supplier's inspection system shall be documented and shall be available for review by the Enjet representative prior to the initiation of production and throughout the life of the contract. Enjet may furnish a written notice of the acceptability or non-acceptability of the inspection system. The supplier shall notify Enjet in writing of any change to the supplier's inspection system. The inspection system shall be subject to disapproval if any changes would result in nonconforming products.

## **Inspection and Testing Documentation**

Inspection and testing documentation shall be prescribed by clear, complete and, current. Criteria for approval and rejection of products shall be included.

## **Records**

The supplier shall maintain adequate records of all inspections and tests. The records shall indicate the nature and number of observations made, the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken as appropriate.

## **Drawings and Changes**

The supplier's inspection system shall provide for procedures which will assure that the latest applicable drawings, specifications, and instructions required by the contract as well as authorized changes, are used for manufacturing, processes, inspection, and testing.

## **Inspecting, Measuring, and Test Equipment**

The supplier shall provide and maintain inspecting, testing and measuring equipment necessary to ensure that products conform to the requirements. To ensure continued accuracy, they shall be calibrated at established intervals against certified standards. If production tooling, such as jigs, fixtures, templates, and patterns are used as a media of inspection, such devices shall also be inspected for accuracy at established intervals. Calibration shall be in accordance with a nationally or internationally recognized standard (i.e., ANSI NCSL Z540.3 or ISO 10012) using standards traceable to the National Institute of Standards and Technology (NIST). When required, the supplier's inspecting, measuring and test equipment shall be made available for use by the Enjet representative to determine conformance of products with contract requirements. In addition, supplier's personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

## **NDT MATERIALS AND EQUIPMENT CALIBRATION**

### **NDT MATERIALS**

All NDT related materials purchased by Enjet Aero Terre Haute shall conform to the requirements of AMS2644 and be as listed on QPL-AMS2644.

### **GENERAL CALIBRATION REQUIREMENTS**

All calibrations shall be performed in accordance with ANSI/NCSL Z540 with standards traceable to NIST. Calibration frequencies for NDT equipment shall not be extended under any circumstances.

### **RE-CALIBRATION**

Equipment is re-qualified and/or re-calibrated after relocation or maintenance/repair before the equipment is returned to production.

Records shall identify that adequate tests/verifications have been carried out to demonstrate the correct functionality of equipment before re-qualification.

### **QUARTERLY**

#### **Drying Oven Control:**

The controls are required to be capable of maintaining the oven within +/-15°F of the set temperatures as demonstrated by the documenting of the maximum and minimum temperatures reached during the monitoring of at least one dryer cycle. Dryer cycle are defined as the period of time in which the thermostatic control completes one full thermostatic cycle, but under no circumstance is less than 30 minutes. In addition, the actual variation of each measurement point is required to be recorded. Set Point temperature for the purpose of this calibration is 140°F.

#### **Drying Oven Temperature Indicator:**

The temperature control indicator shall be accurate within +/- 5°F of the actual oven temperatures. Set Point temperature for the purpose of this calibration shall be 140°F.

*Note: This calibration shall be performed by temperature measurements with the oven at operating temperature. i.e. Voltage input type calibrations alone shall not be accepted for this calibration.*

## **SEMI-ANNUALLY**

### **Radiometer (U/V 320-400nm)/Photometer (White-light):**

The digital radiometer/photometer is required to be calibrated to the following criteria.

- a. Calibrate at a minimum of 3 points within the range of use to establish linearity
- b. Accurate to within +/-5% of standard reading
- c. Range of use for U/V light is 1200 - 10,000 microwatts/cm sq.
- d. Range of use for white light is 0 - 100 foot-candles

### **Water Temperature Gauges:**

The gauge is required to be calibrated to the following criteria.

- a. Calibrate at a minimum of 3 points within the range of use
- b. Accurate to within +/-2°F
- c. Range of use is 50°–100°

### **Water Pressure Gauges:**

The gauge is required to be calibrated to the following criteria.

- a. Calibrate at a minimum of 3 points within the range of use
- b. Accurate to within +/-2 PSI
- c. Range of use is 0-40 PSI

### **Air Pressure Gauge (Water Removal):**

The gauge is required to be calibrated to the following criteria.

- a. Calibrate at a minimum of 3 points within the range of use
- b. Accurate to within +/-2 PSI
- c. Range of use is 0-25 PSI

**Air Pressure Gauge (Developer Removal):**

The gauge is required to be calibrated to the following criteria.

- a. Calibrate at a minimum of 3 points within the range of use
- b. Accurate to within +/-1 PSI
- c. Range of use is 0-5 PSI

**Process Timers:**

The timer is required to be calibrated to the following criteria.

- a. Calibrate across the range of use
- b. Accurate to within +/-5% of the standard reading
- c. Range of use is 1 minute to 1 hour

**Indication of Inspection Status**

The supplier shall maintain a positive system for identifying the inspection status of products. Identification may be accomplished by means of stamp, tags, or other means of control.

**Sampling Inspection**

Sampling inspection procedures used by the supplier to determine quality conformance of products shall have an acceptance criteria of C=0 per ANSI/ASQ Z1.4.

**Enjet Inspection at Suppliers Facilities**

The right of entry requirement must be flowed down as part of the contract requirements to all sub-tier suppliers at all levels of the supply chain. Enjet inspection shall not constitute acceptance; nor shall it in any way replace supplier's inspection or otherwise relieve the supplier of the responsibility to furnish an acceptable end item. When inspection at supplier's facility is performed by Enjet, such inspection shall not be used by supplier as evidence of effective inspection by such supplier or sub tier sources.

**Contribution to Product or Service Conformity, Product Safety, Importance of Ethical Behavior**

Suppliers must ensure that employees are aware of their contribution to Product or Service Conformity, Product Safety, and the Importance of Ethical Behavior.

The supplier shall:

- Be committed to the highest standards of ethics and business conduct



- Comply with the law, honor commitments, act in good faith, and be accountable
- Strive to maintain full compliance with all laws and regulations applicable to the operation of the business and customer relationships
- Not offer, promise, authorize, or provide, directly or indirectly, anything of value (including business gifts or courtesies) with the intent or effect of inducing anyone to engage in unfair business practices
- Avoid involvement in activities that may be perceived as a conflict-of-interest
- Respect the legitimate proprietary rights and intellectual property rights of customers and Suppliers and take proper care to protect sensitive information, including confidential, proprietary, and personal information
- Support product safety by ensuring robust management of special requirements, critical items, and key characteristics.
- Communicate any concerns with respect to product safety to Enjet
- Notify its own employees whenever possible of any concern to product safety and mitigate the concern

The supplier will ensure that employees and people working on its behalf are aware of:

- Their contribution to product or service conformity
- Their contribution to product safety
- The importance of ethical behavior

### **Stock Control and Traceability**

The supplier's system shall provide for handling and storage of products in a manner to protect product quality by preventing damage, loss, deterioration, contamination, corrosion, degradation, or substitution. Stock control shall be such that it precludes unauthorized withdrawal of products. Products from different manufacturing sources shall be stored in a manner so that products do not become intermixed and that the manufacturing source and the identity and traceability of the individual lot, batch, heat number, etc. are maintained from time of receipt by the supplier from the supplier's sub tier source, to delivery to Enjet.

### **Referenced Data**

All referenced data for purchases applying to a Enjet contract shall be available for review. All referenced data required for Enjet inspection purposes shall be included with each shipment.

### **Receiving Inspection**

Subcontracted products and services shall be subjected to inspection after receipt.

## **Preparation for Shipment**

The supplier shall assure that products are complete to contract requirements and that all manufacturing and product inspection and acceptance requirements have been satisfied prior to shipment. A Certificate of Conformance shall be completed and submitted with each shipment. The supplier shall assure that products are packaged in accordance with applicable requirements and are accompanied by the required inspection and technical documents.

## **Alterations by the Supplier**

The supplier shall not modify or repair products unless authorized by Enjet. When the supplier is authorized to perform alterations, the supplier shall maintain all records pertinent to the work being performed. Such records shall be available for Enjet's review upon request.

## **Product Conformance**

Neither audit, surveillance, inspection and/or tests made by Enjet or their representative at either the supplier's or Enjet's facility, nor the supplier's compliance with all applicable product quality assurance requirements herein, shall relieve the supplier of the responsibility to furnish products that conform to all the requirements of the contract.

## **First Article Inspection Report**

The supplier shall perform a First Article Inspection (FAI) in accordance with the requirements of the current revision of SAE Aerospace Standard AS 9102. Excess products, remaining from a previous production lot, may not be used to fulfill the 1st Article requirements. The supplier shall furnish a copy of the completed 1st Article Inspection forms, per AS 9102, section 6, with the initial delivery of products on the Contract.

## **Enjet Initiated Changes**

The supplier shall incorporate on products, all changes to drawings, specifications, tests, inspection and fabrication methods or any other changes initiated by Enjet through a formal contract change and/or amendment. The supplier's system shall include appropriate controls and records, including records at the supplier's sub tier sources, showing the date, lot, serial number, revision letter or other positive identification that provides objective evidence of incorporation of all changes in products. Such records shall be subject to verification by Enjet.

## **Certificate of Conformance**

The supplier shall provide a legible packing slip/shipper and a Certificate of Conformance, which shall

contain at a minimum:

- a) A written statement that all products and/or services comply with all requirements of the contract and:
  - 1) Part number
  - 2) Revision
  - 3) Purchase order number
  - 4) Line-item number
  - 5) Manufacturer's lot or traceability number
  - 6) Name and address of the issuing organization
  - 7) Signature and title by an official of the issuing organization
- b) Evidence that all products and/or services were purchased directly from authorized distributors as applicable
- c) Evidence that the material certification/test report is a true and correct copy of the original certification/test report issued by the supplier and covers products delivered on the contract as applicable

If more than one lot or heat of raw material is used by the supplier, each fabricated lot of products shall be identified and/or packaged in separate lots to maintain traceability and integrity to the applicable material certifications and/ or process certifications. Quantity must be clearly stated for each lot.

### **Material and Process Certifications**

For each lot or heat of material supplied on this contract, the supplier shall furnish a copy of the original mill test report meeting the requirements of the specification and listing the material description. Including as applicable, the material name or designation, alloy, type, class, grade or condition, producer's (mill) name, the lot or heat number and the material specification and revision to which the material complies. In addition, for:

- a) Process Certifications – For all special processes required by the contract for reference documents and performed by the supplier or the supplier's sub tier source, the supplier shall furnish the certification/test report. The certification/test report shall include as a minimum, a complete description of the special process performed, process name, applicable specification and revision, type, class, grade, etc. quantity, description, part number and revision level.
- b) Heat Treat Certifications - With each shipment of products, the supplier shall furnish a time/temperature certification that contains as a minimum duration and temperature range.

- c) **Nondestructive Test (NDT) Reports** – With each shipment of products, the supplier shall furnish the certified test report for all nondestructive testing (NDT) performed. The report shall be issued by the organization that performed the NDT and shall include a complete description of the test, specification, revision, type, method, and class. When products are serialized or identified with a lot or batch number, such identification shall appear on the NDT reports and exposed radio-graphic film.

## **Supplier's Records**

Unless otherwise specified, the supplier shall retain all required records as objective evidence of conformance to contract requirements indefinitely. This includes the supplier's records and certifications of the inspection and test performed during procurement, manufacturing, testing, processing, inspecting, preserving, packaging, and shipping products. Such records shall be made available to Enjet for review upon request.

## **Corrective and Preventive Action**

When a quality system or product nonconformance is identified, Enjet may request a corrective and preventive action from the supplier. Such requests require a documented response by the supplier within thirty (30) days. If the root cause cannot be determined within the required time a request for extension can be made through the buyer.

Corrective Action shall include the following information:

- a) **Immediate Correction/Short Term Solution:** The supplier has 24 hours to respond to the notification. This section should describe actions taken to correct symptoms in the short term. The response should include when, where, how and by whom correction will be or has been made. Potential ramifications of findings shall also be investigated and corrected.
- b) **Root Cause:** The source or origin of the nonconformance, as well as any contributing factors involved. This section records the supplier's analysis of the finding to determine the root cause of the problem.
- c) **Preventive Action:** The remedial corrective action implemented to address the source or root cause of the nonconformance that will preclude recurrence. The response shall include changes to procedures, processes and/or training.
- d) **Review for Effectiveness:** The plan to ensure that the committed corrective action has been implemented and effective. This section indicates that the supplier has verified or will verify the root cause corrections have been accomplished.

An audit may be required to ensure that the committed action plan has been found to be effective as implemented in precluding recurrence of the nonconformance.

### **Control of Nonconforming Material**

The supplier shall establish and maintain an effective and positive system for controlling nonconforming material, including procedures for the identification, segregation, presentation, and disposition of reworked or repaired products. Repair of nonconforming products shall be in accordance with documented procedures acceptable to Enjet. The acceptance of nonconforming products is the prerogative of and shall be as prescribed by Enjet. All nonconforming products, including suspected nonconforming products, shall be positively identified with a nonconforming tag, and segregated to prevent customer end use. Any products manufactured from the supplier's material found to be nonconforming to the drawings, specifications, contract, or other applicable requirements, shall be segregated and dispositioned. Any products manufactured from Enjet supplied material shall be identified, segregated, and returned to Enjet.

- a) Product dispositions of obvious rework, return-to-vendor, or obvious scrap may be dispositioned by the supplier.
- b) Enjet shall be notified in writing within 24 hours or one business day if nonconforming product has been inadvertently delivered. Notification shall include a description of the discrepancy, part numbers, serial/lot numbers affected, date of shipment and contract number.
- c) All rework shall be subject to re-inspection in accordance with documented instructions, procedures and/or original manufacturing plans.
- d) Non conformances found during a sampling inspection will require 100% screening of entire lot for the detected nonconformity. All nonconforming products shall be segregated from remaining acceptable lot production and clearly marked for their nonconformity.
- e) Obvious Scrap – In the event the nonconformity cannot be reworked, the nonconforming product will be rendered unusable by destruction.

### **Quality Surveillance**

All contractual Quality Systems and product requirements are subject to review by Enjet. The supplier shall provide reasonable facilities and assistance, including all quality records and related data for the contracted items upon request. Enjet will coordinate and identify mandatory inspection points at the earliest practical time convenient to both Enjet and the supplier.

## **Audits and Surveys**

Audits and surveys shall be conducted on an as needed basis as determined by Enjet for the purpose of verifying products, processes, or Quality Systems. Supplier shall provide reasonable facilities and assistance, including all quality records and related documents for the purpose of conducting such audits or surveys.

## **Use of Approved Process Suppliers**

Products which require special processing where the characteristics of the process cannot be fully verified by subsequent inspection and testing shall be processed by Enjet approved sources. The only exceptions are products such as industry standard hardware, commercial off the shelf components (COTS), and nondestructive testing or heat treatment of raw materials performed by the mill source or their suppliers. Use of processes and/or process sources that have not been approved by Enjet may result in return of all products to the supplier at the supplier's expense.

For approved source information, contact Enjet.

## **Suppliers Packaging Material**

The supplier shall preserve and protect product against environmental induced corrosion and deterioration, physical and mechanical damage, and other forms of degradation during storage, shipping, and handling of product. No part-to-part contact is acceptable during shipment.

## **Foreign Object Detection (FOD)**

Supplier shall have a Foreign Object Detection (FOD) program implemented.

## **REACH Compliance**

The supplier shall comply with the requirements within EC1907/2006 regarding "substances in articles". They shall declare whether certain chemicals are present at a level of greater than 0.1% (w/w) in our components. This can be done by completing a declaration that can be provided by Enjet. The declaration should be signed by an officer of the company with appropriate authority.

These chemicals have been deemed by the EC authorities to be substances of very high concern (SVHC) and are recorded in a "candidate list". A copy of the list can be accessed at <https://echa.europa.eu/candidate-list-table>

## Raw Material Verification

The supplier shall develop, document, and implement a raw material (sheet, plate, bar, rod etc.) verification program that will ensure that material(s) received from the supplier's sub tier sources meets all the applicable technical and quality requirements. The supplier's verification program shall include provisions for monitoring and periodic testing (no less than annually for each material type from each material supplier) of raw material(s) upon receipt to ensure such material(s) meets all applicable requirements and implement appropriate storage and controls to preclude commingling of different heat/lots or batches of material(s). Raw material testing shall be in accordance with specification requirements and shall be performed by the supplier at a NADCAP (National Aerospace and Defense Contractors Accreditation Program) approved testing laboratory. The supplier's verification program shall document the frequency of such tests and the test results. Records showing the results of the supplier's material verification program and its effectiveness shall be made available to Enjet for review upon request.

Material and components shall be reviewed at receipt for any potential counterfeit products. When appropriate, Counterfeit parts or suspect material are subject to:

- Quarantine
- Customer/supplier notification within 5 days
- Destruction

## NADCAP Approved Special Processor

All Special Processors used must be NADCAP approved.

## Enjet Furnished Equipment

When equipment is furnished by Enjet, the supplier's procedures shall include as a minimum the following:

- Examination upon receipt to detect damage in transit
- Inspection for completeness and proper type
- Periodic inspection and calibration to guard against damage from handling, and deterioration during storage
- Functional testing as required to determine satisfactory operation
- Identification and protection from improper use or disposition

The supplier shall report to Enjet any equipment found damaged, malfunctioning or otherwise unsuitable for use. In the event of damage, the supplier shall determine and record probable cause and reasoning for withholding from use.

## **Enjet Furnished Raw Material**

Strict accountability of material furnished by Enjet shall be maintained by the supplier. If more than one lot or heat of material is furnished to the supplier, the supplier shall maintain individual material lot integrity and provide positive traceability of material lot/heat numbers to the specific products delivered. The supplier shall provide on the packing list/shipper or on a separate document, a statement that all products delivered on this contract were manufactured from material furnished by Enjet and from the material heat or lot number(s) identified on the material and/or Enjet's shipper to the supplier.

## **Limited Shelf-Life Material(s)**

On each container of and on the certification for, material(s) having a limited or specified shelf life, the supplier shall show the cure or manufacture date, expiration date or shelf life, lot or batch number and when applicable, any special storage or handling conditions. The information shall be in addition to the normal identification requirements of the drawing, specification and/or contract. Time lapse between cure or manufacture date of such material(s) and date of scheduled receipt by Enjet under the contract shall not exceed 80% of the shelf life for the material without prior written waiver from Enjet for each shipment.

## **Functional Test Data**

The supplier shall furnish the actual product functional test results (data sheets) recording the actual readings for each test parameter specified by the engineering drawing, acceptance test procedure (ATP), specification or contract.

## **Defense Federal Acquisition Regulation Supplement**

Raw material and components produced from specialty metals, as determined in The Defense Federal Acquisition Regulation Supplement (DFARS) 252.225-7003, 252.225-7008 and 252.225-7009, shall be compliant as specified in Subsection 225.872-1. If the supplier does not have a copy of DFAR 252.225-7003, 252.225-7008, 252.225-7009 or DFAR 225.872- 1 for the list of specialty metals and qualifying (approved) countries, the supplier shall contact Enjet.



**Revision History**

<b>REV</b>	<b>Date</b>	<b>Incorporated</b>	<b>Approved</b>	<b>Revision Description</b>
01	2/15/2021	K. Hurley	M. Hillenburg	Initial Release
02	2/23/2021	K. Hurley	J. Tapy	Added NDT Materials And Equipment Calibration