



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 1 of 35

Document Title: Supplier Quality Manual



Northstar Aerospace (Chicago)

6006 West 73rd Street
Bedford Park, IL 60638

Phone: (708) 728-2000

Northstar Aerospace (Phoenix)

401 South 36th Street
Phoenix, AZ 85034

Phone: (602) 275-4406

Northstar Aerospace (Windsor)

204 East Pike Creek Road
Tecumseh, Ontario, Canada N8N 2L9

Phone: (519) 979-9400

Web site: www.nsaero.com



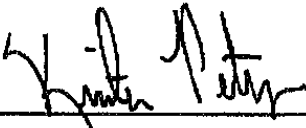
Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 2 of 35


Document Title: Supplier Quality Manual

Approved: 

Kristen Petyo
Director of Supplier Quality

Approved: 

Scott Carroll
Director of Quality Systems

Reviewed: 

Jason Young
Vice President of Supply Chain



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 3 of 35

Document Title: Supplier Quality Manual

Section 1: Scope

1.1 General

Northstar Aerospace (Northstar) recognizes the imperative role our Suppliers play in the value we offer our customers. As an extension of our own operations, we rely on our Suppliers to provide material, products and services which meet all the quality requirements of our contracts, specifications and our quality management system.

This manual applies to all Suppliers providing Northstar with materials, products and related services, and when applicable, to Supplier sub-tier sources. The general requirements outlined herein do not supersede conflicting requirements in the contract, or drawing, including applicable engineering specifications and process specifications, or applicable long-term agreement(s). This document is referenced on all Northstar purchase orders.

1.2 Application

This manual outlines the core expectations regarding Supplier quality management systems (QMS), design requirements and manufacturing process controls required for supplying to Northstar. It also provides the guidelines Suppliers are required to follow to ensure that all requirements and expectations are met.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 4 of 35

Document Title: Supplier Quality Manual

Section 2: Associated Documents

2.1 Specifications

Documents referenced in this manual may be applicable to the extent specified by Northstar in the contract. It is the Supplier's responsibility to obtain these documents and to ensure that current revisions are used.

2.2 Forms

Electronic versions of referenced or required forms may be obtained from Northstar by request.

Section 3: Terms and Definitions

3.1 Definitions

Shall – Indicates a requirement

Must – Indicates a requirement

Should – Indicates a recommendation

May – Indicates a permission

Can – Indicates a possibility or a capability

Sub-Tier Suppliers - Also known as sub-suppliers or subcontract suppliers

First Article Inspection (FAI) - Provides objective evidence that engineering, design and specification requirements are understood, fulfilled, verified and recorded.

Rework - Additional operations that are not part of the basic production process flow. These additional operations will achieve full compliance to the product with applicable drawings and specifications.

Repair - Alternative manufacturing techniques, methods, materials, or processes which may bring product into full compliance with applicable drawings and specifications.

3.2 Acronyms

ASL: Approved Supplier List

CAR: Corrective Action Request

CBSA: Canadian Border Service Agency

C of C: Certificate of Conformance

CDR: Critical Design Review

CGP: Controlled Goods Program

COTS: Commercial off the Shelf Supplier

DDTC: Directorate of Defense Trade Controls

ECR: Engineering Change Request

EEI: Electronic Export Information

FAI: First Article of Inspection

FAIR: First Article Inspection Report

FAR: Failure Analysis Report

FIFO: First-In, First-Out

FMEA: Failure Modes and Effects Analysis

FOD: Foreign Object Debris/Damage

ITAR: International Traffic in Arms Regulation

MRB: Material Review Board

NCR: Non-Conformance Report

OSV: Operator Self Verification

PDR: Preliminary Design Review

PO: Purchase Order

QMS: Quality Management System

RCCA: Root Cause and Corrective Action



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 6 of 35

Document Title: Supplier Quality Manual

SDR: System Design Review



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 7 of 35

Document Title: Supplier Quality Manual

Section 4: Quality Management System

4.1 General Requirements

Supplier shall maintain a QMS suitable to the products and services provided to Northstar that is certified by an accredited third-party certification body to one or more of the following, as applicable:

- ISO 9001 - Quality Management System Requirements
- AS9100 - Quality Management System Requirements (Aerospace)
- AS9120 - Quality Management System Requirements (Distributors/Stockists)
- AC7004 - Quality Management System Requirements (Nadcap Accreditations)

Suppliers shall comply with the following requirements:

- **Distributors/Stockists** – Shall establish and maintain a QMS that is in compliance with AS/EN 9120, AS/EN/SJAC 9100 or ISO 9001.
- **Calibration Laboratories** – Shall establish and maintain a QMS and measurement management system that is in compliance with ISO 9001 and ISO/IEC 17025 general requirements for the competence of testing and calibration laboratories.
- **Commercial-Off-The-Shelf Suppliers (COTS)** – Suppliers that provide commercial products shall establish a QMS in compliance with ISO 9001, or equivalent.
- **Manufacturers Of Build-To-Print And Supplier-Controlled Designs** – Shall establish and maintain QMS that is in compliance with AS/EN/SJAC 9100.

Sub-tier Requirements for Boeing Components:

- Suppliers of Boeing components are required to review on a monthly basis and conform to the latest revision of Boeing D1-4426 Appendix D “Purchase Order Flow Down Requirements” as applicable.
- Suppliers of Boeing components are required to review and conform to the latest revision of BDS Seller Special Tooling Requirements (Document number D950-11059-1) and Requirements for Tests and Records of Process Sensitive Parts (Document number D210-11000-1) as applicable.
- Suppliers manufacturing product under fixed product planning are required to comply with the latest revision of EPB17-119 for flight safety components, 145-PJ-002 (Critical Safety Item Program) and EPB6-128 for non-flight safety components.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 8 of 35

Document Title: Supplier Quality Manual

Sub-tier Requirements for GE Components:

- GE – S1000 (Quality System)
- GE – S1001 (Source Substantiation, VSE)
- GE – S1002 (Characters Accountability, FAI)
- GE – S400 Lab (Material Testing)
- GE – REMARK C64

Sub-tier Requirements for Honeywell Components:

- Suppliers of Honeywell components are required to review and comply with requirements of the Honeywell SPOC manual.

Sub-tier Requirements for Rolls-Royce Components:

- Suppliers of Rolls-Royce components are required to review and comply with requirements of Rolls-Royce SABRe management system requirements.

The Supplier shall promptly notify Northstar of any significant changes to the Supplier's QMS or key personnel.

Section 5: Supplier Approval Process

5.1 Supplier Status

All suppliers must be listed on the Northstar ASL prior to the issuance of contract or PO, regardless of approvals by customers or other entities.

Supplier status levels:

- Approved: Compliant with all Northstar requirements.
- Probation: May continue on existing contracts, only. Not eligible to receive new contracts.
- Not Approved: Shall be removed from the Northstar ASL.

Export Control and Government Regulations:

Certain Purchase Contracts issued to Suppliers may relate to the production or procurement of defense articles (export controlled goods) as identified in the International Traffic In Arms Regulation (“ITAR”) U.S. Munitions List, or the Canadian Controlled Goods Program (“CGP”) Export Control List. The Supplier in possession of export controlled goods is responsible for their compliance with all applicable export controls and government regulations. Suppliers must maintain current registration with either the Canadian Controlled Goods Program (CGP), if a Canadian supplier, or the Directorate of Defense Trade Controls (DDTC), if a US supplier. Suppliers must notify Northstar immediately of any change in their registration status.

5.2 Initial Assessment

The Supplier shall provide a copy of their valid, third party QMS certificate and complete a self-assessment which may include the following business capabilities:

- Quality
- Delivery
- Technology
- Cost
- Continual improvement objectives and measurements

5.3 Documentation Assessment

Northstar may request a copy of the Supplier’s procedures and relevant supporting documents to determine if the Supplier’s QMS meets Northstar requirements.

5.4 On-Site Assessment

Northstar and/or its customers, due to product/process complexity or criticality, may elect to conduct a Supplier on-site assessment. This assessment may include:

- **Product and process capability** – Effectively functioning QMS to one or more applicable standards.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 10 of 35

Document Title: Supplier Quality Manual

- **Business and Manufacturing Operations** – Financial resources, production capacity, and other business resources needed to fulfill volume production needs and continuity of supply.
- **Continual Improvement Initiative** – Culture, methods and skills present to actively pursue continual improvement.
- **Technology Assessment** - Including production and inspection equipment, facilities, engineering resources, etc.
- **Sub-Tier Supplier Control** – Management processes to ensure that products or services procured from sub-tier sources conform to all applicable requirements.

5.5 Probation

Any rated supplier not meeting the performance requirements for six (6) consecutive calendar months with no improvement trend, may result in the supplier being removed from the ASL.

Other Northstar facilities and customer specified sources are exempt from removal from the ASL.

Section 6: General Requirements

6.1 Compliance to Contractual Agreements

All documents, drawings and specifications, regardless of origin, referenced in the contract are required to be used at all levels of the supply chain. Unless otherwise specified in the contract, the document revision in effect on the date of issue of the contract takes precedence.

The Supplier is responsible to provide acceptable products or services that conform to all contractual requirements. The Supplier is not relieved from such responsibility before, during or after delivery to Northstar or the customer. Audits, surveillance, inspection or tests of product performed by Northstar or representatives of Northstar do not relieve the supplier of said responsibility.

6.2 Control of Sub-Tier Suppliers

The Supplier is responsible for all work performed by the Supplier's sub-tier suppliers. The Supplier shall provide and flow down all the applicable technical and quality requirements contained in the Northstar contract to its sub-tier sources. This information shall include but is not limited to:

- QMS requirements
- Regulatory requirements
- Customer requirements
- Documenting and controlling key characteristics and special requirements;
- Providing certifications and test reports, as required

The Supplier is responsible for ensuring use of customer designated or approved external providers as applicable.

The Supplier is responsible for ensuring Special Processes (i.e. Heat Treating, Plating, NDT, Shotpeening, etc.) are performed at a prime Contractor's approved source as applicable.

Prime Customer Special Process Requirements:

- Boeing – D1-4426 and QPL (as applicable)
- Rolls-Royce – SASI (Process Guide)

6.3 Right of Access

The supplier shall provide access to Northstar personnel, government and civil aviation authorities, and customers to their facilities, personnel and records, when requested. This access will be required for inspection operations, QMS reviews, product/process validation evaluations or investigations, subject to proprietary considerations. This access is also a requirement to all the Supplier's sub-tier suppliers.

6.4 Risk Management

The Supplier shall establish a risk management program in accordance with AS9100, Rev D as applicable. A copy of the Supplier's risk management program shall be provided to Northstar upon request.

6.5 Material Substitutions

Material substitutions are *not* allowed unless authorized by engineering drawing, material specification, Northstar MRB disposition, or superseding of a material specification.

- **Counterfeit Parts** – Counterfeit or unapproved parts are not deliverable to Northstar or customers.

The Supplier shall establish a prevention of counterfeit parts program in accordance with AS9100, Rev D as applicable. A copy of the Supplier's prevention of counterfeit parts program shall be provided to Northstar upon request.

- **Standard Components** – Suppliers of standard hardware shall maintain traceability to actual manufacturer and manufacturing lot. Suppliers shall ensure the standard hardware conforms to the latest specification or configuration requirements.
- **Offload/Transfer of Work** – Suppliers shall ensure the capability of all offload sub-tiers and the quality of all product. If work is being offloaded or transferred, it is the supplier's responsibility to develop a work transfer plan and obtain written consent from Northstar before work is transferred.

6.6 Revision Control

Suppliers shall have a defined process to review and incorporate drawing revisions/changes. Suppliers shall update the revision levels and document when changes occur.

6.7 Control and Release of Northstar Documents

Documents provided by Northstar to the Supplier are solely for the purpose of conducting business with Northstar. The Supplier is responsible for controlling and maintaining such documents to prevent improper use, loss, damage, alteration and/or deterioration.

Unless authorized by Northstar in writing, the Supplier may not transmit or make available documents or copies to anyone outside the Supplier's organization, except a sub-tier source used to perform work on a Northstar contract.

The Supplier will return to Northstar or purge electronic copies of all proprietary documents with the last delivery of products or services on the contract. The Supplier

may be required to provide objective evidence or certification that proprietary documents have been purged including a purge of documents at all sub-tier sources.

6.8 Electronic Documents

The accuracy and authenticity of electronic documents and forms submitted to Northstar is of highest importance. The use of electronic forms and signatures must be described in and governed by the Supplier's documented procedures. The following rules apply and may be subject to review by Northstar at Suppliers' facilities:

- The issue of electronic documents and application of electronic signatures must be under the direct control of the individual whose name appears on the electronic document.
- Electronic signatures may only be applied by the said individual. The individual must have direct access and responsibility for the products or services described in the electronic document.
- The application of the electronic signature certifies that the signature (individual) represents an authorized company official.

6.9 Record Retention

Refer to PO flow down for specific program and customer record retention requirements.

Prior to discarding, transferring or destruction of records, the Supplier and sub-tier supplier shall notify Northstar in writing and provide the opportunity to obtain records.

In case of takeover, transfer of ownership or joint venture, Suppliers shall maintain responsibility of record archiving, including possible transfer to the owner.

In case of bankruptcy, the Supplier shall ensure that archived records are made accessible for customers and Regulatory authorities.

6.10 Business Continuity

The Supplier's business continuity plan should allow for safeguarding, storage and recovery of engineering drawings, electronic media, and production tooling in the event of damage or loss.

Contingency plans should satisfy Northstar requirements in the event of significant utility interruptions, labor shortages, equipment failure and field returns.

6.11 Internal Quality Audits

The Supplier is responsible for monitoring compliance and effectiveness of their quality management system. The method and frequency of internal audits shall be defined in documented procedures. Audits shall be performed by trained personnel independent of



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 14 of 35

Document Title: Supplier Quality Manual

the function under evaluation. Findings are to be recorded, corrected and monitored to prevent recurrence.

Northstar shall be notified in writing of all third party (e.g. QMS Registrar, Nadcap) major non-conformances that have any impact on their programs, products or services.

6.12 Training

The Supplier shall establish a method for training, assessing and documenting the proficiency of personnel performing activities that affect quality. Personnel shall be aware of:

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

Recurrent training shall be conducted as needed for regulatory, technical skills and special process personnel qualification.

Training requirements shall be continually reviewed to ensure skills are upgraded to reflect changes in methods and technology advancements. Records related to training shall be retained.

Section 7: Product Qualifications

7.1 General

The Supplier must be able to comprehend design and specification requirements and manufacturing processes must have the capability to consistently meet requirements.

7.2 Design and Development Review

Where a product is manufactured to new design, system or application, the Supplier and Northstar shall allocate responsibility to ensure performance, reliability, maintenance and safety requirements are met.

The Supplier shall maintain a Design and Development program that includes systematic reviews at suitable stages to evaluate the results and meet requirements.

At a minimum, the program shall include:

- SDR to establish a functional baseline (system level)
- PDR to establish an allocated baseline (sub-system level and interfaces)
- CDR to establish a product baseline (full engineering release)

These reviews shall be conducted with Northstar representatives and functions concerned with the design and development stage(s) being reviewed to authorize progression to the next stage. Records of the results of the reviews shall be maintained by the Supplier.

The Supplier shall provide test specimens for design approval, inspection/verification, investigation, or auditing as applicable.

7.3 Production Process Verification (FAI)

To meet FAI requirements, Northstar will issue an initial FAI PO to the supplier to manufacture a First Article batch demonstrating a stable process capable of producing components to design requirements. The Supplier shall submit the completed FAI to Northstar for review and approval.

Upon successful qualification of the FAI batch Northstar will issue POs for production parts. This process shall be repeated when changes occur that invalidate the original results. FAI shall be documented in accordance with AS/EN/SJAC AS 9102.

7.4 Process Flow Diagram/Failure Mode Effects Analysis/Control Plan

Suppliers with build-to-print responsibility should implement the use of the following tools in their processes:



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 16 of 35

Document Title: Supplier Quality Manual

- **Process Flow Diagram:** A visual diagram of the proposed or current process. This diagram shall clearly describe the production process steps and sequence.
- **Process FMEA:** In accordance with AS13004. A single Process FMEA may be applied to a family of similar parts or materials.
- **Control Plan:** Uses output from FMEA and defines all methods used for process monitoring and control of special product/process characteristics. A single control plan may apply to a group or family of products that are produced by the same process at the same source.
- **Measurement Systems Analysis (MSA):** In accordance with AS13003.

Section 8: Process Control

8.1 General

The Supplier shall have documentation for processes that affect product quality and ensure they are executed in controlled conditions. This shall include:

- Suitable production and installation equipment
- Documented work instructions
- Suitable work environment
- Definition of workmanship criteria and standards
- Process equipment
- Qualified personnel
- Cleanliness and organization appropriate to the work being performed

8.2 Work Instructions

The Supplier shall prepare documented work instructions, as necessary, for employees responsible for the operations that impact product quality. These instructions shall be maintained current and accessible for use.

8.3 Manufacturing Records

The Supplier and sub-tier suppliers shall maintain manufacturing records for all manufacturing and inspection operations. These records shall clearly indicate material status and acceptability and include, as a minimum:

- Part and material number
- Document revision number
- Part serial numbers (if serialized) or quantity of parts
- The description and sequence of operations to achieve completed product. Must include receiving, in-process and final inspections
- Work instructions must be referenced on the Shop Traveler to denote the method used to complete an operation
- The number of parts accepted or rejected at each operation. Must include the date and operator stamp or initials
- If serialization is a requirement, rejected serial numbers shall be noted at the applicable operation
- When manufacturing lot quantities are reduced or split, the change must be recorded on both the original and the new Shop Traveler for the applicable operation

Document Title: Supplier Quality Manual

- For operations performed by an outside source, records must identify the source (e.g. PO)
- Required rework
- Completion of MRB disposition

8.4 Control of Monitoring and Measuring Equipment

The Supplier shall determine the monitoring & measurement method and devices needed to provide evidence for conformity of product. To ensure valid results, measuring equipment shall be identified and:

- Calibrated or verified at specified intervals to international or national measurement standards. When a standard is not applicable; the method used for calibration or verification shall be recorded
- Status identified
- Compliant to requirements of ISO/IEC 17025

8.5 Special Requirements and Key Characteristics

The Supplier shall demonstrate conformity to special requirements designated by Northstar through:

- Documentation
- Appropriate control methods
- Reviews
- Identification
- Control of other product and processes

The Suppliers' variation management program shall be in compliance with requirements of AS/EN/SJAC9103. When specified in the Control Plan, the Supplier is required to apply effective statistical control.

8.6 Error Proofing

The Supplier should use error-proofing devices and techniques as a form of process control, for:

- Repetitive functions
- Difficult tasks prone to error
- Where the cost of error is high

8.7 Preventive Maintenance

The Supplier should identify key process equipment and:

- Provide resources for machine/equipment maintenance activities
- Develop an effective preventive maintenance system



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 19 of 35

Document Title: Supplier Quality Manual

8.8 Shelf Life Control

The Supplier shall have data for materials or products with a limited or specified shelf life that shows:

- Cure or manufacture date
- Expiration date or shelf life
- Lot or batch number
- Any special handling or storage requirements

There must be a minimum of 75% total shelf life remaining on all product delivered to Northstar unless otherwise specified by contract.

8.9 Operator Self-Verification

Suppliers may delegate inspection authority, product/process inspection and acceptance to qualified production operators. The Supplier's OSV program shall comply with the requirements of SAE ARP9162. Prior to implementation of the program on products/processes scheduled for delivery to Northstar, the Supplier shall request and obtain approval from Northstar in writing.

Section 9: Product Identification and Product Traceability

9.1 Identification Requirements

The Supplier shall provide clear identification of materials and components during all stages of storage, including:

- Receipt
- Manufacturing
- Assembly
- Delivery

The Supplier's QMS shall include reference to perform the following:

- Product identification must be clearly legible after final surface coatings unless specified by engineering
- Parts requiring serialization be identified with unique serial numbers, which shall not be duplicated
- Serial numbers remain consecutive for each engineering drawing part number regardless of revision
- Non-serialized parts identified with date of manufacture, batch or lot number
- Assigned kit or part number and revision level. Each item shall be identified for engineering requirements and quality acceptance of kit
- Final acceptance stamp on product or tag/package if product does not have adequate space for stamping
- Country of origin identified on all products, bags or tags for imported parts. Imported parts must be in accordance with Canadian Border Service Agency (CBSA) B13A Export Declaration or US ITAR requirements as applicable
- Packaging identification

9.2 Traceability Requirements

The Supplier's QMS should provide for the following:

- Identification maintained throughout product life
- Traceability of all products manufactured from the same batch of raw material or from the same manufacturing batch to destination
- Identification of assembly components and those of the next assembly
- Retrievable sequential record of production for a detail part, including both assembly and sub-assembly

Section 10: Inspection and Testing

10.1 General

The Supplier shall provide for mandatory verifications that manufactured products meet technical requirements. Verification activities shall be carried out throughout the manufacturing cycle.

10.2 Receiving Inspection and Testing

Purchased product shall be verified using defined procedures. Incoming material shall be isolated and held until verification of conformity to the contractual requirements and all applicable requirements.

10.3 In-Process Inspection and Testing

In-process inspection and testing shall be performed using documented procedures. Results shall be maintained by the Supplier.

Test specimen(s) shall be processed with each production batch and returned to Northstar as applicable. The results shall be documented and show full compliance to technical requirements.

10.4 Final Inspection and Testing

Final inspection and verification of manufactured products to contractual requirements shall be conducted prior to delivery, unless written authorization has been received from Northstar. Procedures for final inspection and testing activities shall be documented.

10.5 Inspection and Test Records

Records shall be maintained and provide objective evidence that delivered products have passed inspection and verification.

Electronic records are acceptable provided traceability, data integrity, system security, data backup and retrieval requirements are documented in the QMS.

10.6 Inspection and Test Authority

Documented procedures shall identify and control authorized methods for verification, certification and release of products.

Section 11: Control of Document and Configuration Management

11.1 Control of Documents

Documentation related to products or services must be controlled. This includes:

- All Supplier documentation and data
- Sub-tier supplier's documentation and data
- Customer data provided to Suppliers by Northstar

Obsolete documents must be removed from all points of use or controlled to prevent unintentional use.

11.2 Configuration Management and Change Control

The supplier shall maintain a configuration management program.

Changes to Engineering and Quality documentation must comply with the Supplier's QMS to ensure implementation. Affected personnel must be informed of changes to documentation. Change records must be maintained.

11.3 Change Authority

Suppliers must have written approval from Northstar prior to making changes to their processes, products, services, location of manufacture, facilities, equipment, material, product design regarding the following:

- Correction of a discrepancy on a previously submitted part
- Product modified by an engineering change to design records, specifications, or materials

Supplier may submit to Northstar an ECR for review and approval.

Section 12: Control of Non-Conforming Product

12.1 Non-Conforming Product

Non-conforming product is defined as material that cannot be reworked into a conforming condition prior to a controlled process. Non-conforming product shall be identified and controlled to prevent its unintended use or delivery. This includes non-conforming product returned by Northstar or its customers.

Upon discovery of non-conforming product, Supplier Non-Conforming Product Notification Form (NCO-SQ-FRM-0002) shall be used to notify Northstar of the discrepancy and request a Northstar engineering instruction prior to product delivery. Non-conforming product shall not be delivered to Northstar without prior Northstar engineering instruction. Supplier Non-Conforming Product Notification Form (NCO-SQ-FRM-0002) must accompany all nonconforming product delivered to Northstar.

12.2 Build-To-Print-Designs

Suppliers shall not perform unauthorized rework on non-conforming product. Non-conforming product that cannot be reworked within the normal drawing tolerance, applicable specification or special process shall be reported to Northstar for review and disposition. Non-conforming product shall not be shipped until disposition is complete and the product is accepted through the Supplier's QMS, unless otherwise directed by Northstar.

Dispositions of *use-as-is* or *repair* shall only be used after approval by Northstar. Product disposition for scrap shall be conspicuously and permanently marked, or positively controlled until physically rendered unusable.

12.3 Product Returned to the Supplier for Repair, Rework or Modification

Product returned for repair, rework or modification shall be returned to Northstar in condition compliant to the contract and applicable requirements. Instructions for rework, including re-inspection requirements shall be made accessible and used by the Supplier. All rework shall be documented and accepted by Supplier Quality. Repairs are not permitted without written approval from Northstar.

12.4 Disclosure

The Supplier shall promptly provide written notification to Northstar within one (1) business day when a noncompliance is discovered in the Supplier's processes or components for a product already delivered to Northstar. All affected product must be disclosed to Northstar for proper evaluation and disposition. Written notification shall include as a minimum:

- Affected process or product number and name
- Concise description of discrepancy (what it is and what it should be)
- Parts and serial numbers



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 24 of 35

Document Title: Supplier Quality Manual

- Lot numbers
- Delivered quantities
- Delivered dates
- PO/Invoice number

12.5 Supplier Containment

The Supplier shall provide documented evidence with subsequent shipments that product has been inspected and meets all applicable requirements for all Northstar identified non-conformances. Formal corrective action will be required for all nonconforming product that is delivered to Northstar.

Section 13: Handling, Storage, Preservation and Shipping

13.1 Chemical Substance Control

Suppliers shall take all reasonable action to comply with laws related to environmental manufacturing practices.

13.2 FOD Control

Suppliers shall have a written procedure for the prevention, detection and removal of FOD (reference NAS 412). This must include a training program for proper material handling, part preservation, housekeeping and work to prevent FOD. This requirement shall also apply to sub-tier suppliers.

13.3 Preservation

The condition of product in stock should be assessed at appropriate planned intervals. The Supplier should use an inventory management system to optimize inventory turn-over time and stock rotation, such as FIFO.

13.4 Packaging

The Supplier must provide adequate packaging to prevent product contamination, deterioration or loss and shipping damage. Suppliers should provide expendable packaging or returnable containers, where appropriate. Expendable materials and packaging must meet local and national standards for safe disposal or recycling.

13.5 Delivery

The Supplier must inform Northstar of any delay in delivery of product and provide a new dispatch date. The Supplier is responsible for additional transport costs due to delays.

The following documents shall accompany each shipment to Northstar:

- Packing Slip
- C of C
- Final Inspection Report (as applicable)
- For Canadian Suppliers, Export Declaration including country of origin identified in accordance with Canadian Border Service Agency (CBSA) B13A
- US suppliers in possession of ITAR controlled goods must provide to Northstar their ITAR registration number prior to shipment of ITAR controlled goods from their premises. The ITAR registration number is required for the purpose of filing electronic export information (EEI) in the automated commerce environment formerly "AES" by either the US supplier or a 3rd party designated by Northstar
- Northstar disposition NCRs with clear evidence of completion



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 26 of 35

Document Title: Supplier Quality Manual

The C of C shall be authorized by the Supplier's Head of Quality (or authorized delegate) that all products and/or services delivered are compliant with contract requirements. Title of signatory must accompany signature. Electronic format with electronic signatures is acceptable. All C of Cs must be in English. The C of C shall include:

- Supplier name and address
- Part number and drawing revision level
- Northstar PO number
- Quantity delivered
- Northstar operation number (as applicable)
- Lot number (as applicable)
- Serial number (as applicable)
- Shelf life expiry date (as applicable)
- Specification and revision level (as applicable)
- Parts destination (i.e. Primary, Critical, Flight Safety) (as applicable)

FAI delivered product shall include:

- A copy of the AS9102 completed forms
- Uniquely identified (bubbled) engineering drawing(s)
- Material and process certifications
- Applicable test records

Additional required certifications or test reports will be specified on the PO. Suppliers are required to maintain all applicable inspection records and certifications in such a manner that they may easily be retrieved and provided, upon request from Northstar.

13.6 Drop Shipments

When authorized by Northstar PO, Suppliers can ship directly to Northstar customers. The Supplier shall provide a completed packing slip, C of C and applicable certification per contract requirements.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 27 of 35

Document Title: Supplier Quality Manual

Section 14: Improvement

14.1 CAR

Northstar may issue a CAR to the Supplier when:

- Nonconforming material, components, assemblies are received at Northstar and determined to be supplier liability
- Incomplete or incorrect paperwork is received at Northstar and determined to be supplier liability
- Second-party audit findings
- Quality and / or delivery scorecard performance

When a formal reply for CAR is requested, the Supplier shall complete the Corrective Action Request form (NCO-QA-FRM-0102) and submit to Northstar.

14.2 FAR

When product is returned to the Supplier for evaluation, the Supplier shall generate a FAR for repaired units within 30 days of receipt, including the following items:

- Summary of work performed, including minor adjustment
- Summary of repairs
- List of replaced parts
- Alteration done
- Tests performed
- Approved documentation referenced

14.3 Continual Improvement

Suppliers should define a process for continual improvement. A copy of the Supplier's continual improvement program shall be provided upon request.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 28 of 35

Document Title: Supplier Quality Manual

Section 15: Supplier Performance

15.1 General

Northstar's evaluation system uses the following to determine the Supplier's performance rating:

- Quality
- On-Time Delivery
- Certification Documentation
- Service

This rating will serve as an objective measurement to determine if Northstar's requirements and expectations are being met.

A scorecard for key suppliers will be issued on a quarterly basis.

15.2 Supplier Performance Measures

The quality performance measures shall include:

- Quantity received vs. quantity rejected per month
- Quality System certification in good standing
- RCCA Activity or number of CARs per month

The on-time delivery performance measure shall include:

- Number of shipments delivered by the agreed upon due date

The certification documentation performance measure shall include:

- Quantity received vs. quantity rejected for certification documentation per month

The service performance measure shall include:

- The overall responsiveness across the Supplier's organization with Northstar (e.g. requesting quotes, placing orders, response to changes, response to CARs)



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 29 of 35

Document Title: Supplier Quality Manual

Section 16: End Customer Requirements

16.1 FAR and DFARS Clauses

The clauses from the Federal Acquisition Regulation (FAR) and the Defense Federal Acquisition Regulation Supplement (DFARS) are incorporated into this Northstar purchase order by reference where applicable and form part of the terms and conditions for Philadelphia / CH47 and Mesa / Apache parts. Refer to Appendix A.

The full text of the FAR and DFARS clauses can be found at:

<http://farsite.hill.af.mil/>

Seller agrees to flow down all applicable FAR and DFARS clauses to lower tier subcontractors.

16.2 Boeing Clauses

The clauses from Boeing are incorporated into this Northstar purchase order by reference where applicable and form part of the terms and conditions for Philadelphia / CH47 and Mesa / Apache parts. Refer to Appendix B.

The full text of the clauses can be found at:

http://www.boeingsuppliers.com/idscommon/clauses/clause_index.htm

Seller agrees to flow down all applicable Boeing clauses to lower tier subcontractors.



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 30 of 35

Document Title: Supplier Quality Manual

Revision History

REVISION	DATE	DESCRIPTION OF CHANGES
-	28FEB17	Initial Release
A	21FEB19	Revised sections 6.2, 6.3, 6.4, 7.3, 7.4, 10.3, 12.1, 13.5, 14.1; Added Section 16; Added Appendix A and B



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 31 of 35

Document Title: Supplier Quality Manual

Appendix A

FAR/DFARS Clause	Clause Description
52.203-6	Restrictions on Subcontractor Sales to the Government
52.203-7	Anti-Kickback Procedures
52.203-8	Cancellation, Rescission, and Recovery of Funds for Illegal or Improper Activity
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity
52.203-12	Limitation on Payments to Influence Certain Federal Transactions
52.203-13	Contractor Code of Business Ethics and Conduct
52.203-14	Display of Hotline Posters
52.203-15	Whistleblower Protection Under the American Recovery and Reinvestment Act of 2009
52.203-19	Prohibition on Requiring Certain Internal Confidentiality Agreements or Statements.
52.204-2	Security Requirements
52.204-10	Reporting Executive Compensation And First-Tier Subcontract Awards
52.204-13	System for Award Management Maintenance
52.204-21	Basic Safeguarding of Covered Contractor Information Systems
52.209-6	Protecting the Government's Interests When Subcontracting With Contractors Debarred, Suspended or Proposed for Debarment
52.211-5	Material Requirements
52.211-15	Defense Priority and Allocation Requirements
52.215-2	Audit and Records - Negotiation
52.215-10	Price Reduction for Defective Certified Cost or Pricing Data
52.215-12	Subcontractor Certified Cost or Pricing Data
52.215-14	Integrity of Unit Prices
52.215-15	Pension Adjustments and Asset Reversions
52.215-18	Reversion or Adjustment of Plans for Post-Retirement Benefits (PRB) Other Than Pensions
52.215-19	Notification of Ownership Changes
52.215-21	Requirement for Certified Cost or Pricing Data or Information Other Than Certified Cost and Pricing Data - Modifications
52.215-23	Limitations on Pass-Through Charges
52.219-8	Utilization of Small Business Concerns
52.219-9	Small-Business Subcontracting Plan
52.219-28	Post-Award Small Business Program Representation
52.222-1	Notice to the Government of Labor Disputes
52.222-4	Contract Work Hours and Safety Standards Act-Overtime Compensation
52.222-20	Contracts for Materials, Supplies, Articles, and Equipment Exceeding \$15,000
52.222-21	Prohibition of Segregated Facilities
52.222-26	Equal Opportunity
52.222-35	Equal Opportunity for Veterans
52.222-36	Affirmative Action For Workers With Disabilities
52.222.37	Employment Reports on Veterans
52.222-40	Notification of Employee Rights Under the National Labor Relations Act
52.222-50	Combating Trafficking in Persons
52.222-54	Employment Eligibility Verification
52.223-3	Hazardous Material Identification and Material Safety Data
52.223-11	Ozone Depleting Substances
52.223-18	Encouraging Contractor Policies To Ban Text Messaging While Driving
52.224-3	Privacy Training
52.225-13	Restriction on Certain Foreign Purchases
52.225-26	Contractors Performing Private Security Functions Outside the United States
52.227-1	Authorization and Consent
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement
52.230-6	Administration of Cost Accounting Standards
52.232-39	Unenforceability of Unauthorized Obligations
52.232-40	Providing Accelerated Payments to Small Business Subcontractors



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 32 of 35

Document Title: Supplier Quality Manual

FAR/DFARS Clause	Clause Description
52.234-1	Industrial Resources Developed Under Defense Production Act Title III
52.244-6	Subcontracts for Commercial Items
52.245-1	Government Property
52.245-2	Government Property
52.247-64	Preference for Privately Owned U.S.-Flag Commercial Vessels
52.248-1	Value Engineering
52.253-1	Computer Generated Forms
252.203-7001	Prohibition on Persons Convicted of Fraud or Other Defense-Contract-Related Felonies
252.203-7002	Requirement to Inform Employees of Whistleblower Rights
252.203-7003	Agency Office of the Inspector General
252.203-7004	Display of Fraud Hotline Posters
252.204-7000	Disclosure of Information
252.204-7012	Safeguarding of Unclassified Controlled Technical Information
252.209-7010	Critical Safety Items
252.211-7000	Acquisition Streamlining
252.211-7003	Item Unique Identification and Valuation
252.215-7000	Pricing Adjustments
252.222-7006	Restrictions on the Use of Mandatory Arbitration Agreements
252.223-7001	Hazard Warning Labels
252.223-7002	Safety Precautions
252.225-7001	Buy American and Balance of Payments Program
252.225-7004	Reporting Of Contract Performance Outside The United States And Canada - Submission After Award
252.225-7008	Prohibition of Hexavalent Chromium
252.225-7009	Restriction on Acquisition of Certain Articles Containing Specialty Metals
252.225-7013	Duty Free Entry
252.225-7016	Restriction on Acquisition of Ball and Roller Bearings
252.225-7048	Export-Controlled Items
252.226-7001	Utilization of Indian Organizations and Indian-Owned Economic Enterprises--DoD Contracts and Native Hawaiian Small Business Concerns
252.227-7013	Rights In Technical Data -- Noncommercial Items
252.227-7014	Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation
252.227-7015	Technical Data -- Commercial Items
252.227-7016	Rights in Bid or Proposal Information
252.227-7019	Validation of Asserted Restrictions - Computer Software
252.227-7025	Limitations on the Use or Disclosure of Government-Furnished Information Marked With Restrictive Legends
252.227-7026	Deferred Delivery of Technical Data or Computer Software
252.227-7027	Deferred Ordering of Technical Data or Computer Software
252.227-7030	Technical Data -- Withholding of Payment
252.227-7037	Validation of Restrictive Markings on Technical Data
252.228-7001	Ground and Flight Risk
252.228-7005	Accident Reporting and Investigation Involving Aircraft, Missiles, and Space Launch Vehicles
252.231-7000	Supplemental Cost Principles
252.234-7001	Notice of Earned Value Management System
252.234-7002	Earned Value Management System
252.239-7000	Protection Against Compromising Emanations
252.243-7001	Pricing of Contract Modifications
252.244-7000	Subcontracts for Commercial Items
252.245-7001	Tagging, Labeling, and Marking Of Government-Furnished Property
252.245-7004	Reporting, Reutilization, and Disposal
252.246-7003	Notification of Potential Safety Issues
252.247-7023	Transportation of Supplies by Sea - Basic
252.247-7024	Notification of Transportation of Supplies by Sea
252.249-7002	Notification Of Anticipated Contract Termination Or Reduction

UNCONTROLLED WHEN PRINTED



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 33 of 35

Document Title: Supplier Quality Manual

Appendix B

Boeing Clause	Clause Description
A001	Solicitation Instructions
A002	Quotations Sent Via FAX
A004	Bid Control
A005	Return Proposal to Buyer
A006	Alternate Proposals
A007	Firm Quote for 3 months
A008	Quote Validity (Variable)
A009	No Bid Response
A010	Evaluation of Quote
A012	Bidder's Size and Point of Manufacture
A014	Code of Conduct
A018	Electronic Trading Account
A300	Raw Material Risk Mitigation
A400	Rent-Free Use of Government-Owned Special Tooling
A403	Special Tooling and/or Special Equipment
A700	Cost Accounting Standards
A701	Cost or Pricing Data
A703	Royalties
A706	Annual Reqs and Certs
A707	Representations and Certifications
A709	Small Business Subcontracting Plan Certificate of Compliance
A710	Compliance with Export Laws and Regulations
A711	Industrial Participation
A713	Technical Data Legend
A717	Combating Trafficking in Persons
A720	NAICS Code and Related Size Standard Determination
A800	Restrictive Legends on Proprietary Data
A900	Bidder to Advise Location of Qualification Tests
A903M	Flight Safety Parts Program
C002	Authorization for Early Shipment
C003	Accelerated Delivery Desired
C103	Commercial Bill of Lading - Freight Prepaid
C104	Commercial Bill of Lading - Freight Collect
C121P	Package, Marking, and Shipping
C130M	Delivery, Notice of Delay, Packaging and Shipment
C400	Bar Coded Shipping Labels
C504	Delivery Stretch-Outs
D400	Bar Coded Shipping Labels
D408	Safety Requirements
D501	Blueprint/e.o.speco revision coordination (Variable)
D504	Approval of Changes
D506(S)	Seller Verification
D507S	NDT Procedure
D519S	Process and Material Specifications
D607	Material Substitution Prohibition
E000	Supplier Requirements for Buyer/Government/Customer Property
E017	Government Property - Risk of Loss
E223	BDS Seller Special Tooling Requirements
F218	Termination Liability Schedule (Variable)
F302	INVOICING ADDRESS – COMMON INSTANCE



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 34 of 35

Document Title: Supplier Quality Manual

Boeing Clause	Clause Description
F303	E-Invoicing
F310	(M) Auto-Pay Provisions
F411	Performance-Based Payments (Severable)
F502	Resale (sales tax exempt)
F509	Research
GP1	General Provisions
GP2	General Provisions
GP7	Fixed Price Goods under Government Contract
H001	Cost Accounting Standards
H002	Disclosure and Consistency
H007	Disclosure and Consistency of Cost Accounting Practices - Foreign
H106	RFP/RFQ/RFI - Legend - U.S. Suppliers
H108	Subcontracting with a Foreign Seller
H113	Compliance with Export Laws
H126	Political Contributions, Fees, and Commissions
H200	DPAS Rating
H202	Customer Contract Requirements
H203	Subcontract for Commercial Components
H204	Customer Contract Requirements (CCR) - DOD Contract
H217	Affirmative Action & Nondiscrimination Obligations
H511	Termination - No Cost in 30 Days
H601	Release Against a Strategic Agreement - Select Terms
H602	Contract Number: W58RGZ-13-C-0002, CHC/087,
H603	COMINGLING OF PARTS FOR GOVERNMENT SOURCE INSPECTION
H609	Release Against a Strategic Agreement - All Terms
H900	Additional General Provisions
H903	Seller Compliance with Occupational Safety & Health Act of 1970
H918P	True Manufacturer (Variable)
H930	Electronic Commerce Accounts
I000	Reports of Patents
J001	Repair / Rework
J002	Repair Responsibility
J101	Seller to Furnish Material
J200	Repair to Serviceable Location
M000	Reporting Discrepancies in Buyer Drawings
M001	Configuration Management
M007M	Buyer Furnished Data/Drawings
M008	Supplier Delivery Follow-Up
M100	Solicitation/Contract Attachments
M401	Surveillance and Written Technical Direction
M412P	Manufacturing Plan Approval for Critical Items
M422L	Spares Provisioning
M430	Collaborative Performance Management
Q003	Boeing Quality Management System Requirements For Suppliers,
Q004	Boeing Quality Management System Requirements for Suppliers,
Q006	Boeing Quality Management System (BQMS) Requirements, Appendix
Q010	Seller's Quality Control Requirements
Q013	Boeing Quality Management System Requirements for Suppliers,
Q018	Boeing Quality Management System Requirements for Suppliers,
Q019W2	Approved Processors - F/A -22 Program - Deliverable
Q020	D1-4426 Approved Process Source
Q021P	Quality Requirements For Critical / Process Sensitive Items

UNCONTROLLED WHEN PRINTED



Effective: 21FEB19

Document No.: NCO-SQ-MAN-0001

Revision: A

Page 35 of 35

Document Title: Supplier Quality Manual

Boeing Clause	Clause Description
Q022M5	Flight Safety/Critical Item Control - AH64 Program - Deliverable
Q028	Production Dataset / Drawing Information (Variable)
Q029	Digital Product Definition (DPD) / Model Based Definition (MBD)
Q030	Manufacturing and Inspection Control Plan
Q032	Key Characteristic
Q040	Buyer Right of Entry and Surveillance
Q041	Discretionary Government Surveillance
Q049	Government Source Inspection
Q053	Buyer's Source Inspection Required
Q058	Discretionary FAA Surveillance
Q074	First Article Inspection and Boeing First Article Inspection
Q079	Manufacturer Acceptance Test Reports - Deliverable
Q080	Raw Material Test Results - Deliverable
Q090	Seller / Manufacturer COC (Signature Required)
Q091	Seller / Manufacturer COC - Deliverable
Q091P	Certificate of Conformance - Deliverable
Q112P	Seller Serialization
Q170P	Destruct Test Unit Requirement
Q180W	Special Tool Control
Q185	Quality Requirements Review
Q186	FOD Prevention Program
Q219MM	Requested Material Review Board
Q219P	Nonconforming Material Control and Disposition
Q224M	Record Retention
Q224P	Retention of Records
Q224S	Retention of Records
Q300	Corrective Action
Q301	Unconfirmed Failure Rejections
Q302	Rework/Repair/Replacement Description Required.
Q302MM	Rework, Repair Order, Overhaul, or Configuration Upgrade -
Q311M5	EPB 6-128 Qualification Requirements - AH64 Program
Q312	MRB Disposition of Qualification Items
Q320	Sellers Notification of Escapement
Q420	Serviceable Tag
Q510W	Control of Changes
Q831	Validation of Raw Material Test Reports
Q925	Delegation of Buyer Source Inspection
Q966P	Identification of Test Items