Aerospace Composite Center

Aerospace Composite Center, LLC Supplier Quality Assurance Manual

This manual contains requirements that are applicable when invoked by Aerospace Composite Center, LLC ("ACC") Purchase Orders. Use of this manual is required for Contract Review and Quality Planning Activities.

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1. – Introduction

1.1 Mission Statement

It is the responsibility of the Aerospace Composites Center, LLC ("ACC" throughout) Supply Chain function to establish and develop a base of suppliers with the demonstrated capabilities to consistently supply parts, raw materials and processing services that meet all specified requirements while minimizing total procurement-related costs. The cornerstone of this effort will be the collective requirements and processes described within this ACC Supplier Quality Assurance Manual.

Principal strategies essential to the achievement of this mission are as follows:

- Source qualification based on compliance with established criteria.
- Utilization of this Supplier Quality Assurance Manual as a tool for communicating ACC expectations and for guiding supplier quality system development efforts in accordance with AS9100.
- Facilitation of effective corrective/preventive actions in concert with suppliers to ensure root cause solutions to purchased part/material concerns identified by ACC and/or its customers.
- Performance monitoring and feedback to facilitate supplier improvement and as a basis for ACC source selection decisions.
- Communicating the importance of ensuring that our suppliers are aware of their contribution to product or service conformity; their contribution to product safety; and the importance of ethical behavior.

1.2 Introduction to the Supplier Quality Assurance Manual

In supplying goods and services to its customers, ACC acknowledges its important obligation to assure compliance with all specified requirements. Likewise, ACC requires its suppliers to accept full responsibility for the quality of the goods and services they provide. In order to fulfill this obligation, it is necessary that ACC suppliers develop, implement, and maintain management procedures and related controls that will provide evidence that they are capable of executing contractual responsibilities to the satisfaction of ACC. It is also required that all ACC suppliers of direct parts/materials and processing services develop and maintain a plan of the overall organization defining the responsibility and authority for the Assurance of Quality in the form of a Quality Manual or similar document which at minimum encompasses those requirements outlined within AS 9003 – Inspection & Test Quality System. Guidance for the development of this Quality Management Systems Manual may be found in ISO 10013.

This Supplier Quality Assurance Manual contains prescribed methods for interaction between ACC Aerospace - St. Louis and its suppliers. These methods are to be adhered to at all times in order to further ensure the conformance of products and services to specified requirements.

This document is a contractual obligation of the supplier, when invoked in whole or in part by a ACC Aerospace - St. Louis purchase order.

ACC Aerospace – St. Louis expects to obtain the following outcomes through this document:

- Minimization of supplied nonconformances and their related costs.
- Enhanced customer satisfaction through consistent and cost-effective conformance to requirements leading to optimal value for ACC and its customers.
- Implementation of efficient and effective problem reporting and resolution methods.
- Rapid and open communication between ACC it suppliers through the use of defined systems, tools, resources and contacts for routine quality-related business practices.

1.3 Definitions

- AS9102 – The SAE Aerospace Standard (AS) that establishes documentation requirements for the First Article Inspection.
- Approved Supplier List (ASL) – a list of those direct part/material and processing sources deemed capable of supporting ACC-St. Louis procurement needs.
- CAST Letter – Formal document notifying the Supplier of the initial of CAST proceedings.
- Consultation, Action, Selection, and Termination (CAST) – The process used to address unsatisfactory supplier performance.
- Corrective & Preventive Action – Actions planned and implemented to contain, correct, and prevent the causes of a product, process, or system nonconformance.
- Deviated Supplied Parts Cover Sheet – Label to be affixed by supplier in order to facilitate ACC identification of deviated parts/materials.
- Disposition – Engineering determination of the appropriate further actions associated with nonconforming parts/materials. Typical options include Scrap, Rework, Use as Is, etc.
- First Article Inspection (FAI) – The development of objective evidence to support that all engineering design and specification requirements are properly understood, accounted for, and verified.
- First Article Verification (FAV) – A review of supplied parts and associated data to confirm compliance with AS9102 as conducted by ACC personnel.
- Improvement Plan – A detailed plan describing specific actions, responsibilities, and targeted completion dates associated with areas requiring significant improvement as identified through the on-site assessment.
- On-Site Supplier Assessment – An on-site review of a supplier's processes, systems, and capabilities as conducted by ACC personnel.
- Nonconformance Tag – An internal ACC tool used for documenting conditions that violate specified requirements.

- Permanent Specification Change – A modification to any specified product requirement (blueprint, specification, etc.) as approved by the appropriate design authority which is unbounded by quantity or time.
- Process Change – Any change to the materials, methods, machinery, or location from that previously approved by ACC.
- Process Flow Chart – A depiction of all process sequences, process inputs, process outputs, and applicable materials, machines, methods, manpower, and measurements. Process Flow Charts should encompass receipt of raw materials through shipment of finished products.
- Quality Requirement (QR) – a defined special purchase order condition relative to quality assurance needs for procured direct parts/materials or processing services.
- Supplier Corrective Action Request (SCAR) – A request to a supplier for formal documented corrective and preventive action in response to a nonconformance or performance concern.
- Supplier Corrective Action Request Response Form – This form details the steps necessary for the supplier to respond to the Request for Corrective Action.
- Supplier First Article Label – A specific label used to facilitate ACC identification and verification of supplier First Article parts.
- Supplier Non-Conformance Record – ACC template completed by the Supplier for submittal of Supplier Non-Conformances to ACC.
- Supplier Performance Ratings – the ACC Aerospace quantified measure of supplier performance.
- Supplier Process Assessment (SPA) Checklist – Periodic detailed on-site examination of the manufacturing processes, procedures, and controls used in the fabrication, assembly, inspection, and delivery of individual purchased parts/materials. Successful FAI is a prerequisite for such Supplier Process Assessments (SPA's).
- Supplier Process Change Request – A form used to document a supplier's request for implementation of a process change with respect to production of parts/materials to be supplied to ACC.
- Supplier Request for Specification Deviation or Change – A formal request for a temporary deviation or permanent change to a ACC purchase order specification requirement.
- Supplier-Responsible Nonconformance – Any violation of a specified contractual requirement imposed by a ACC purchase order.
- Supplier Self-Assessment – A formal documented evaluation of the supplier's quality system in order to verify compliance with minimum requirements (ref. AS9003) for inclusion on the ACC Approved Supplier List (ASL).

- Temporary Specification Deviation – A temporary modification to any specified product requirement (blueprint, specifications, etc.) as approved by the appropriate design authority. Deviations are typically bounded by a timeframe or quantity of parts/material.

1.4 Associated Forms

- MI 7.4-16 (a) – Supplier Request for Specification Deviation/Change
- MI 7.4-16 (b) – Supplier Nonconformance Record
- MI 7.4-16 (c) – Supplier Process Change Request
- MI 7.4-16 (d) – Deviated Supplied Parts Cover Sheet Plus Instructions
- MI 8.1-11 (e) and MI 8.1-11 (f) – Nonconformance Attachment Templates
- MI 7.4-23 (a) – Supplier Corrective Action Request Form

2. - Initial Approval of Direct Material Sources

2.1 Initial Approval of Sources

ACC maintains an Approved Supplier List (ASL) as a basis for identifying those direct part/material and processing suppliers who meet the minimum standards necessary to fulfill its procurement needs.

Purchases of direct parts/materials and outside processing services may be made only from those suppliers on the Approved Supplier List (ASL). Once added to the ASL, the supplier must continue to demonstrate an acceptable level of performance in order to remain eligible for new business and to maintain their approved status.

2.1.1 Minimum Requirements for Inclusion on the ACC-St. Louis ASL

In order to be considered eligible for the ACC Approved Supplier List (ASL), prospective new suppliers must meet at least one of the following criteria:

AS9100 / ISO Registration

Prospective suppliers of direct parts/materials or outside processing services that can substantiate a current site registration to AS9100 or ISO 9000:2000 through an accredited Registrar will be considered eligible for addition to the ACC Aerospace - St. Louis ASL.

NADCAP Certification – Outside Processors Only

Prospective suppliers of processing services who can substantiate a current site accreditation to NADCAP (National Aerospace and Defense Contractors Accreditation Program) requirements will be considered eligible for addition to the - ASL. Such suppliers will be required to provide a completed ACC-Aerospace Supplier Self-Assessment for informational purposes.

A Pre-existing Customer/Supplier Relationship

Suppliers who provide direct parts/materials and/or outside processing services to an existing business venture at the time of a transition to ACC will be added to the Approved Supplier List (ASL). Suppliers will be required to complete a ACC Supplier Self-Assessment for informational purposes.

Customer-Directed Sources

Suppliers of direct parts/materials and/or outside processing services who are directed for use by one or more ACC customers will be added to the Approved Supplier List (ASL). Customer-directed sources are also required to complete a ACC Supplier Self-Assessment for informational purposes.

2.1.2 Additional Suppliers "Approved" Only As Needed

When there is a need to add a supplier to its ASL, ACC Procurement personnel will contact the supplier and invite them to substantiate their eligibility. ACC Supplier Quality Engineering and/or Procurement Management will review the supplier's eligibility and add the supplier to the ASL only upon verification of compliance with one or more of the criteria outlined above. Suppliers will be added to the ASL only when a specific sourcing need has been identified.

2.1.3 Maintenance of "Approved Supplier" Status

Purchases of direct parts/materials and outside processing services affecting product quality may be made only from those suppliers on the Approved Supplier List (ASL). Once added to the ASL, the supplier must continue to demonstrate an acceptable level of performance in order to maintain their eligibility for new business and their approved status.

ACC Supplier Quality Engineering and Procurement Management monitor suppliers' performance on a monthly basis. Suppliers who demonstrate continued unsatisfactory performance are subject to formal Supplier Corrective Action Requests (SCAR's) and/or other more extensive remedial action. In those cases where supplier performance does not respond to this remedial action, suppliers may be removed from the ASL.

3. - Initial Production Part/Material Approval

3.1 Quality Requirements

ACC purchase orders for direct parts/materials and outside processing services will include a number of clauses relating to specific quality assurance requirements.

3.1.1 Identifying Applicable Quality Requirements (QR's)

In addition to identifying the applicable technical requirements as specified within engineering drawings/blueprints, material and processing specifications, etc., ACC purchase orders will contain a number of additional *Quality Requirement* (QR) clauses.

QR's encompass a broad range of additionally imposed contractual requirements, including but not limited to:

- Critical Part/Material Traceability and/or Serialization Requirements
- ACC Right of Entry for review of Products/Processes/Systems
- Record Retention Requirements
- Special Restrictions on the Use of Qualified Sources
- Special Control and Disposition of Nonconforming Materials
- Program or Customer-specific Quality System Requirements

The *Quality Requirements* selected for individual purchase orders will vary based upon a number of factors including the criticality of the procured part/material and the needs of individual programs and ACC customers. Applicable *QR* clauses are assigned on a part number basis and are identified on ACC purchase orders by their unique alphanumeric identifiers (QC2098 = First Article in accordance with AS9102, e.g.). In order to view the complete text of *QR's* applicable to their individual purchase orders Suppliers are required to access the following ACC Supplier Portal: http://www.ACC.com/aerospace/supplier-info/st-louis/Pages/Quality-Information.aspx

ACC Buyers will assist Suppliers in gaining the necessary access to this site for purposes of reviewing *Quality Requirements*.

3.1.2 Integration of *QR's* into Production Processes

Suppliers are expected to review all applicable *QR's* as a part of their Contract Review and Quality Planning processes. Requirements imposed by *QR*'s should be integrated into the Supplier's Quality Systems and/or product-specific planning and related controls to ensure consistent compliance for all parts/materials supplied.

Certificates of Conformance supplied to ACC indicating compliance with all purchase order requirements should take into account and reflect compliance with all applicable *QR's* listed on the ACC purchase order.

3.2 First Article Inspection Requirements

ACC requires its suppliers of direct production parts to employ a First Article Inspection process in accordance with AS9102. The purpose of this requirement is to develop objective evidence to support that all engineering design and specification requirements are properly understood, accounted for, and verified. A copy of the completed First Article Inspection Report and the sample part from which First Article data were obtained are to be provided to ACC for its review and approval. ACC Quality Assurance personnel will review the First Article part and associated data for compliance to engineering requirements and for required content in accordance with AS9102. Until formal ACC acceptance of the First Article is received, suppliers are not authorized to make on-going production shipments. Partial or complete re-accomplishment of the First Article Inspection for affected characteristics is required for changes in product design, any change in the supplier's manufacturing process, or other events as prescribed within AS9102

3.2.1 Development of First Article Inspection Report Data

Prior to shipment of production parts, ACC suppliers are required to conduct and submit for ACC review/approval a complete, independent, and documented physical and functional inspection to verify that prescribed production methods have produced an acceptable item in accordance with engineering drawings, planning, purchase order, engineering specifications, and/or other applicable design documents. These data are to be developed and documented in accordance with methods prescribed within AS9102 - Aerospace First Article Inspection Requirement (revision 2000-08). Suppliers are to utilize the forms associated with this standard where possible. Suppliers' own equivalent forms may be used in place of those contained within AS9102, provided all content prescribed within AS9102 is included. Suppliers may acquire copies of AS9102 and the associated forms at the following web-site address:

www.sae.org

NOTE: This requirement applies to supplied castings & forgings but excludes supplied basic raw materials such as metallic plate/sheet, chemicals, fibers, fabrics, and outside processing services unless otherwise a part of approval processes administered by a ACC customer.

3.2.2 Submission of First Article Inspection Report & Associated Part

Suppliers are to coordinate the transmission of their First Article Inspection Reports and the associated part through their ACC Buyer. Packaging associated with such parts should be sufficient to prevent potential damage during shipment to ACC. On-going production shipments for such parts are not to proceed until authorization from their ACC Buyer indicating that their First Article has been successfully verified by ACC.

NOTE: For critical and other select parts, ACC may elect to have the supplier withhold their First Article submission in order to allow ACC Supplier Quality Engineering to conduct a verification of the First Article part and data at the supplier's production facility. Arrangements for this review will addressed by a specific Quality Requirement (QR) and be coordinated well in advance between ACC Supplier Quality Engineering and the supplier.

3.2.3 ACC Review and Approval of Individual Part First Article Submissions

ACC Quality Assurance personnel will review the First Article part and associated inspection report data for compliance to engineering requirements and for required content in accordance with AS9102. Suppliers will be

notified of the acceptance or rejection of their First Article submission through their ACC Buyer. Until informed of the acceptance of their First Article by their ACC Buyer, suppliers are not authorized to make on-going production shipments. Rejected First Articles will require resubmission of complete or partial First Articles part and data. Partial or complete re-accomplishment of the First Article Inspection for affected characteristics is required for changes in product design; any change in the supplier's manufacturing process, or other events as prescribed within AS9102 and this Supplier Quality Manual.

3.2.4 ACC Review and Validation of Supplier First Article "Processes"

Where appropriate ACC Supplier Quality Engineering may utilize specifically tailored Supplier Process Assessments (SPA's) in order to validate the thoroughness and effectiveness of those processes developed and deployed by individual suppliers for purposes of generating and verifying their First Article documentation in accordance with AS9102. Those suppliers whose processes are successfully validated in this manner will still be required to transmit their First Article Reports along with the labeled parts from which the data were derived but will not be required to seek ACC First Article Verification approval for individual parts prior to commencing ongoing production shipments.

4. - On-going Formal Communications

4.1 Supplier Requests for Specification Deviation Or Change

Suppliers are not to ship parts or materials that violate engineering specifications or other contractual requirements without prior authorization from ACC. A deviation is a temporary modification to specifications as approved by the appropriate design authority. In the event that a temporary specification deviation is considered necessary, suppliers must submit a formal documented request to their ACC Buyer and obtain documented approval prior to shipment to ACC. If a permanent specification change is required, suppliers must also request and obtain formal documented approval through their ACC Buyer prior to shipment of such materials.

4.1.1 Temporary Specification Deviations

Temporary specification deviations are to be requested by Suppliers when there is a need for relief from engineering specifications for a limited number of parts/material or for a limited time. Suppliers should initiate specification deviation requests only after all efforts to meet ACC purchase order requirements have been exhausted. Suppliers must withhold shipment of production parts/materials that do not meet contractual requirements pending receipt of an approved request for temporary specification deviation request that authorizes a "use as is" disposition. Suppliers may also ship parts based on alternate dispositions such as rework at supplier, rework at ACC, or ship to ACC for ACC Engineering analysis/review when documented within a ACC response.

When a supplier determines that a temporary specification deviation request is necessary, they are to complete a ACC Supplier Request for Specification Deviation/Change (MI 7.4-16 (a)) and transmit to their ACC Buyer. For deviations to the Material Issue Card (MIC) for raw/prepped material, the ACC Buyer forwards the ACC Supplier Request for specification Deviation/Change Form to Manufacturing Engineering for review/approval. If Manufacturing Engineering determines that a finished part can be produced from the material without deviating from the engineering drawing/specification, then the Manufacturing Engineer shall approve the form and revise the original MIC. If the raw/prepped material will deviate from the engineering drawing/specification, ACC will need to submit a Request for Deviation to the customer and obtain approval. If the customer approves the deviation, then the Manufacturing Engineer shall approve the form and revise the original MIC. The supplier shall note the material size that is actually being shipped to ACC on their associated certification and shipper.

For requests other than deviations to the MIC for raw/prepped material the ACC Buyer will review the ACC Supplier Request for Specification Deviation/Change Form for completeness and link it to a ACC Nonconformance Tag for purposes of acquiring the necessary review by ACC Engineering and/or ACC customer engineering personnel. The supplier will receive notification of the request disposition from their ACC Buyer in the form of the copy of the approved or rejected request and the associated Nonconformance Tag.

To facilitate ACC identification of deviated parts/materials, suppliers are required to attach a ACC Deviated Supplied Parts Cover Sheet (MI 7.4-16 (d)) to applicable packaging in a manner, which conspicuously identifies the parts/materials as such. Such labels are also required for nonconforming parts/materials dispositioned for rework at ACC, engineering analysis/review at ACC, or scrap at ACC. Supplier certificates of

conformance must also note the applicable ACC Nonconformance Tag number. Suppliers are authorized to ship deviated materials only in accordance with the quantity or timeframe indicated on the approved deviation request.

NOTE: Materials shipped in accordance with approved specification deviations will not be charged against Supplier Performance Rating.

4.1.2 Permanent Specification Changes

Permanent specification change requests are to be initiated only when the supplier has determined that established processes are not able to produce materials in compliance with existing engineering requirements and that necessary improvements to processes and/or appropriate control systems are believed to be prohibitive.

Suppliers are to submit permanent specification change requests to their ACC Buyer using a ACC Supplier Request for Specification Deviation/Change. The ACC Buyer will coordinate the review of the request by ACC Engineering and/or applicable ACC customers. The supplier will withhold shipment of production parts/materials pending receipt of the approved change request, the modified applicable engineering documentation from ACC and/or its customer, and an updated ACC purchase order where appropriate.

4.2 Supplier Process Change Approvals

Once an approved First Article Inspection Report and part have been provided to, and approved by ACC, suppliers **are not to make any changes** to the process that produces the part (i.e. methods, materials, machinery, etc.) or the location at which the part is produced without prior written authorization from ACC. In the event that it becomes necessary or desirable to modify the process or location, suppliers are required to submit a ACC-STL Supplier Process Change Request (MI 7.4-16 (c)) to their ACC Buyer through the ACC Virtual Community web site or via fax. Any manufacture of parts from changed processes without prior ACC approval will be done so at the supplier's risk. Suppliers are not authorized to ship parts from modified processes until they have:

- Received documented authorization in the form of an approved ACC Supplier Process Change Request from their ACC buyer **and,**
- Achieved applicable First Article process validation or part approvals as described in section 3.2 of this manual.

4.2.1 Initiation of Requests for Manufacturing Process Changes

In the event that a change to the established part process is desirable, suppliers are required to submit a ACC Supplier Process Change Request to their ACC Buyer. Completion of this form will require the supplier to fully describe the nature and reasons for the proposed change including the benefit to be derived by ACC as a result of the proposed change. It will also require the supplier to fully describe how the change will be verified as producing materials in accordance with all specified requirements. Typically this will include a detailed description of a proposed partial or complete First Article Inspection in accordance with AS9102. The ACC Buyer will review the form for completeness and route it through ACC for the necessary internal review by ACC Supplier Quality Engineering and Business Unit Quality Assurance. Suppliers will receive notification of acceptance or rejection of the request from their ACC Buyer in the form of the approved or rejected request.

4.2.2 Production Shipment Approval for Authorized Process Changes

After a supplier has received the necessary approval to proceed with a proposed process changes, they may also be required to develop and transmit appropriate First Article data (and labeled part as appropriate) prior to commencing ongoing production shipments. This will enable the supplier and ACC to substantiate that the change has not had any substantial detrimental impact on the supplier's ability to produce parts in accordance with all specified requirements. Any required First Article data and associated parts will be defined within the approved ACC Supplier Process Change Request.

4.3 Nonconformance Reporting

4.3.1 Recording & Reporting of Supplier-Responsible Nonconformances

Supplier-responsible nonconformances are defined as any violation of a specified contractual requirement imposed by a ACC purchase order. This includes technical engineering requirements defined on blueprints, specifications, etc. as well as requirements for Certificates of Conformance, quantified test results, use of appropriately qualified sources, special part/material identification requirements, or any other requirement imposed by ACC Quality Requirements (QR's) applied to the subject purchase order.

Nonconforming parts/materials or processing services will be recorded on ACC Aerospace - St. Louis "Nonconformance Tag" documents when encountered. Such documents will be developed as a result of supplier-responsible nonconformances encountered at any point in the value chain established between ACC and its customers. The ACC Buyer will transmit copies of ACC's Quality Management Information System (QMIS) generated "Nonconformance Tags" to the applicable Suppliers.

Nonconformances found by the supplier prior to delivery to ACC shall be documented on a Supplier Nonconformance Record (Form MI 7.4-16 (b)) using Attachment Form (MI 8.1-11 (e) or MI 8.1-11 (f)), as applicable. The ACC Buyer will consider processing such non-conformances, and if approved, will record the nonconformance into ACC's QMIS and provide the system generated ACC Nonconformance Number and Nonconformance Tag to the supplier for inclusion on all documentation.

The supplier is required to attach Form MI 7.4-16 (d) to applicable packaging in a manner which conspicuously identifies the parts/materials with the associated Nonconformance Tag. Supplier Certificates of Conformance must also note the applicable ACC Nonconformance Tag Number. A copy of ACC's Nonconformance Tag must also be included within the documentation package. Suppliers are authorized to ship deviated materials only in accordance with the quantity or timeframe indicated on the approved Nonconformance Tag.

4.3.2 Supplier Responsibilities upon Notification

Suppliers are expected to immediately route ACC-STL Nonconformance Tag information internally to appropriate Operations and Quality personnel. Once notified, Suppliers are required to undertake immediate containment action to minimize or eliminate any further impact to ACC and its customers as a result of similar nonconformances, which may be in-process, in inventory, or in-transit.

Suppliers will also be expected to participate in discussions with their ACC Buyer regarding appropriate disposition options for nonconformances encountered as well as the future availability of known-acceptable replacement stock as required. Suppliers may request return of nonconforming parts/materials, at their expense, when such parts/materials are not otherwise suitable for immediate use or rework by ACC. Alternately, Suppliers are encouraged to examine nonconformances at ACC prior to final disposition in order to aid the development of timely and appropriate corrective/preventive actions.

Form Number MI 7.4-16 (e) - Supplier Preliminary Root Cause and Corrective Action for ACC Nonconformance Reports, shall be used to document containment and a preliminary Root Cause and Corrective Action when the supplier is notified of the nonconformance written by ACC.

4.3.3 Supplier-Responsible Nonconformance Cost Recovery

Suppliers are subject to charges for recovery of costs associated with any/all supplier-responsible nonconforming parts/materials in accordance with **QR # QC1900**. Such charges will at minimum include:

- An administrative charge for each nonconformance document generated by ACC-STL,
- A rework charge for each part requiring rework by ACC or ACC customer personnel,
- Part and/or material charges per P.O. or contract pricing for each part and/or material scrapped at ACC or its customer.

Additional charges may also apply where parts or materials, as supplied by ACC and/or its customer, require scrapping at the supplier as a result of the supplier's actions.

Additional charges may also apply where supplied parts/materials require extraordinary rework at ACC or its customer.

4.3.4 Post-Delivery Notification from Supplier to ACC

In the event that a supplier knows or suspects that it may have delivered nonconforming goods to ACC, they are required to promptly notify their ACC Buyer in writing. Such notifications should describe the affected part numbers, the specific nonconforming conditions, the quantities affected, applicable lot identification information, and the dates delivered to ACC.

4.4 Supplier Corrective Action Requests

ACC requires its suppliers to employ a closed loop Corrective and Preventive Action methodology in order to address product, process, and Quality System nonconformances. ACC Supplier Quality Engineering initiates the Supplier Corrective Action Request process by documenting an observed nonconforming product, process, or Quality System condition on a formal Supplier Corrective Action Request and transmitting it to the responsible supplier. Each Supplier Corrective Action Request requires the supplier to utilize the following multi-step approach in order to successfully and permanently resolve the condition:

(a) Description of the Problem or Nonconformance

(b) Interim Containment Action

(c) Root Cause Analysis

(d) Permanent Corrective Action

(e) Permanent Corrective Action Verification Plan

(f) Controls to prevent recurrence

(g) Preventive actions associated with similar products/processes/systems

Suppliers are required to respond prior to the deadline noted on the request (typically no more than 7 calendar days from initiation) with a comprehensive action plan encompassing each of the above aspects. ACC Supplier Quality Engineering will review the supplier's response for completeness and timeliness. Late and/or rejected responses will be documented and have an adverse impact on Supplier Performance Indicator Ratings. Suppliers who demonstrate a consistent inability to provide acceptable responses to Supplier Corrective Action Requests or within the deadlines established are subject to probationary status.

4.4.1 Initiation of a Supplier Corrective Action Request

ACC Supplier Quality Engineering initiates the Supplier Corrective Action process by documenting the nonconforming product, process, or Quality System condition on a formal ACC Supplier Corrective Action Form (MI 7.4-23 (a)), upon which the supplier is to document the various actions taken to resolve the concern. These documents are transmitted to the responsible supplier's Quality Assurance Manager or other appropriate managerial representative through the ACC Virtual Community web site or fax. ACC Supplier Quality Engineering subsequently contacts the supplier to confirm receipt and to answer any questions they may have.

4.4.2 Supplier Corrective Action Request Response Development

Receipt of a ACC Supplier Corrective Action Request is an important event. It is a formal notification that nonconforming supplied parts/material have created a significant unplanned disruption in the manufacturing operations of ACC and/or its customer. ***A Supplier Corrective Action Request should be given the highest priority within the supplier's operations and thus requires the urgent and active participation of the supplier's management team.*** Response development should begin immediately upon notification and include the identified actions, due dates, responsibilities and the resultant outcomes appropriate to each step in the process. Suppliers are required to respond to the requestor (ACC Supplier Quality Engineering) via the ACC Virtual Community web site or fax within the timeframe indicated using the ACC-STL Supplier Corrective Action Response Form provided. A step-by-step Supplier Corrective Action Guide is also available on the ACC Supplier Portal. Suppliers are strongly

encouraged to utilize this guide as it reflects the expectations that ACC has for acceptable content to Supplier Corrective Action Request responses.

ACC Supplier Quality Engineering reviews the Supplier Corrective Action Request responses for completeness and timeliness upon receipt. The assigned ACC Supplier Quality Engineer will communicate the response acceptance or rejection and compliance with established response timing.

Extensions to the required due date may be granted by ACC Supplier Quality Engineering when warranted. Suppliers are cautioned, however, not to rely on due date extensions because they are granted only in rare circumstances.

Responses, which do not fully address appropriate content for all sections on the response form are rejected and require supplier modification and resubmission.

The due date for resubmission is established by the Supplier Quality Engineer on a case-by-case basis but is typically no longer than 2-3 business days from the date of the initial rejection.

Suppliers who demonstrate a consistent inability to provide acceptable responses to Supplier Corrective Action Requests or within the response deadlines established are subject to Probationary Status and/or CAST.

4.4.3 Supplier Corrective Action Request Implementation & Closure

Upon notification that a Supplier Corrective Action Request response is acceptable, suppliers are expected to complete all actions within the timeframe indicated on the request. This is typically no more than 28 calendar days from the date of the request initiation. Information/data supporting the implementation and effectiveness of actions cited on Supplier Corrective Action Request responses must be provided to ACC Supplier Quality Engineering before a Supplier Corrective Action Request is successfully completed.

Typical examples of evidence supporting the implementation and/or effectiveness of corrective/preventive actions include but are not limited to: modified procedures or work instructions, training records, inspection/test records, modified engineering planning, experimental data, and inspection results. Evidence supporting successful implementation and effectiveness should be transmitted via the ACC Virtual Community web site to the requesting Supplier Quality Engineer. Having developed and implemented an appropriate and comprehensive Supplier Corrective Action Request response, subsequent shipments of the subject part/material should then conform to all ACC Aerospace - St. Louis purchase order requirements.

Suppliers will be notified by ACC Supplier Quality Engineering regarding the open/closed status of their assigned Supplier Corrective Action Requests.

4.4.4 Probationary Status

In those cases where suppliers demonstrate an inability to respond properly to Supplier Corrective Action Requests, such suppliers will be placed on Probationary Status and will thus be considered ineligible for new business opportunities unless otherwise directed by a ACC customer. Such suppliers will be removed from this probationary status and returned to full ASL Approval status 90 days after the successful completion of the applicable Supplier Corrective Action Request.

Thresholds for Probationary Status are as follows:

- One or more rejected responses to the same Corrective Action Request.
- Failure to provide an acceptable comprehensive response within 14 calendar days of the SCAR initiation date.
- Failure to provide appropriate evidence of successful implementation and/or effectiveness within 45 days of the SCAR initiation date.

4.5 Supplier Performance Rating

ACC Aerospace - St. Louis monitors the performance of its direct part/material and processing suppliers on a monthly basis. When utilized, the Supplier Performance Rating measures a supplier's demonstrated performance with respect to product delivery and product quality (percentage of supplied materials/services which meet all specified requirements). These measures when weighted appropriately may be combined to achieve an overall measure of each supplier's performance on a scale of 0-100. ACC Suppliers who do not maintain satisfactory Supplier Performance Rating scores will be required to provide formal documented corrective action plans and/or to participate in formal performance reviews at ACC. Where these remedial activities are unsuccessful, suppliers may be subject to removal from the Approved Supplier List (ASL).

4.5.1 Metrics Calculation Formulas

Delivery Performance Calculation:

Delivery performance will be calculated on a monthly basis as follows, numbers in parenthesis are used in the sample calculations:
Traditional or Discreet Purchase Orders to be calculated as follows:

Total Due = Current + Arrears + Lag

150 + 15 + 5 = 170

On Time % = On Time / Total Due

145 / 170 = 85%

Total Received = Total quantity received in a calendar month

Current - Total open quantity on orders scheduled in the current month (150)

Arrears - Total undelivered quantity on orders due prior to current month (15)

Lag - Total quantity delivered against orders due prior to current month (5)

Future – Total quantity delivered against orders scheduled in later months (10)

On Time – Any quantity due within the month that is received 14 calendar days prior to or 7 calendar days after the scheduled delivery date (145)

The metric will be calculated 14 days after the month ends or the next business day if the 14th day is not a business in order to allow for the +7 delivery window.

Min/Max orders to be calculated as follows:

Total Due = The number of Opportunities in a month

On Time % = Sum of the In Range occurrences / Total Opportunities in period

37/55 = 67.3%

Opportunities – Count of part numbers currently rated and managed by this order method each Monday morning – (excludes parts with a metric effectivity date set in the future) (e.g. 10, 15, 15, 15)

In Range – when the inventory level for a part number is between the min and max level as shown in the web portal

On Time (Within Range) – Opportunities In Range on each (e.g. 5/10, 9/15, 8/15, 15/15 = 5+9+8+15 = 37)

Kanban or pull items to be calculated as follows:

Total Due = Current + Lag + Arrears

400 + 50 + 50 = 500

On Time % = On Time / Total Due

375 / 500 = 75%

Current – Count of signals sent to supplier in the current month(400)

Lag – Count of signals opened in prior months but satisfied in current month(50)

Arrears – Count of unsatisfied signals open from prior months(50)

On Time – Any signal satisfied in the current month that meets contractual obligations (e.g. St. Louis cut to size is 14 calendar days) (375)

If a supplier is managed by a combination of the above methods the following formula should be used to calculate the on time percentage:
Total On Time % = (On Time + On Time + On Time) / (Total Due + Total Due + Total Due)

78% = (145 + 32 + 375) / (170 + 40 + 500)

Suppliers will be monitored on a periodic basis for quality rating. Quality Performance will be calculated on a periodic basis in the following manner:

Only nonconformances found at ACC Receiving Inspection (RI Tag Type), ACC Stock or Work In Process (WIP) (EX Tag Type) and coded as the supplier's responsibility will be counted in the supplier's quality rating. Nonconformances initiated and submitted by the supplier (SP Tag Type) will not be counted within the supplier's quality rating.
Item 2.11 will be calculated as follows:

% Acceptable = (Total Received - Total Rejected) / Total Received

Total Received - Total quantity received during the time period in question.

Total Rejected – Total quantity rejected by a ACC representative (Escapes).

Data shall be calculated and reported for the last month, last 3 months and 12 month rolling time period.

The SQE will evaluate all suppliers under the 98% for the 12 month rolling calculations and document if any additional actions are required.

Overall Supplier rating will be calculated as follows:

Total = (Delivery rating x 50%) + (Quality rating x 50%)

Threshold levels for supplier performance.

The Quality Performance Rating will be grouped into the following categories:

Gold: Equal to 100%

Silver: Greater than or equal to 99.8% and less than 100%

Bronze: Greater than or equal to 99.55% and less than 99.8%

Yellow: Greater than or equal to 98% and less than 99.55%

Red: Less than 98%

The Delivery Performance Rating will be grouped into the following categories:

Gold: Equal to 100%

Silver: Greater than or equal to 98% and less than 100%

Bronze: Greater than or equal to 96% and less than 88%

Yellow: Greater than or equal to 90% and less than 96%

Red: Less than 90%

The Overall Supplier Rating will be grouped into the following categories:

Gold: Quality and Delivery Performance equal to 100%

Silver: Quality greater than or equal to 99.8% and less than 100%.
Delivery greater than or equal to 98% and less than 100%

Bronze: Quality greater than or equal to 99.55% and less than 99.8%
Delivery greater than or equal to 96% and less than 88%

Yellow: Quality greater than or equal to 98% and less than 99.55%
Delivery greater than or equal to 90% and less than 96%

Red: Quality less than 98%
Delivery Less than 90%

Suppliers with an Overall Supplier Rating of Red for 3 consecutive months will be evaluated by Supply Quality Engineering and Supply Chain Management for appropriate actions. If the Supplier does not meet the Supplier Performance criteria, corrective action per MI 7.4-23 may apply and SCM may place the Supplier in CAST (Supplier Consultation, Action, Selection, and Termination) per MI 7.4-14 or remove the suppler from the ASL.

4.5.2 Supplier Appeal Process

Suppliers may submit a written appeal to the Purchasing Manager within 10 working days of receipt of their Supplier Performance Rating Scorecard. Purchasing and Supplier Quality Engineering Management will review the appeal and respond within an additional 10 working day period.

5. - Continuous Improvement

5.1 On-site Supplier Assessments

5.1.1 Scheduling of On-site Assessments

ACC conducts periodic on-site assessments of its major suppliers. Such assessments encompass a broad range of supplier performance considerations. These considerations are contained within 6 major assessment categories that include: **Quality, Operations, Delivery, Strategy, Capability, and Total Value.** The purpose of these assessments is to conduct a comprehensive evaluation of suppliers' strengths and weaknesses and to provide direction regarding developmental needs and opportunities.

ACC Supplier Quality Engineering will notify those suppliers it wishes to assess, in advance, and coordinate mutually agreeable dates and schedules for conducting on-site assessments. These schedules will include sufficient time for an Opening Meeting in order to review the planned activities, as well as a Closing Meeting to review the final assessment results. A team of ACC personnel encompassing a variety of functional disciplines including Supplier Quality Engineering and Procurement typically conducts on-site assessments. The duration for an on-site assessments varies depending on the size of the supplier's facility, the scope of the work being undertaken for ACC, the number of ACC personnel participating, and other factors. It should be noted that on-site assessments include considerable time spent reviewing relevant manufacturing processes from receipt of raw materials through shipment of finished goods. For the majority of supplier locations, 2 full days is required to achieve a satisfactory review of all areas of interest.

5.1.2 Supplier Preparation for an On-site Assessment

Suppliers are expected to prepare for a ACC On-site Assessment. To prepare suppliers are encouraged to assess themselves with respect to each question contained within the on-site assessment form. In this manner, suppliers will be able to identify and document all meaningful evidence necessary to substantiate their true plant-wide performance relative to the established criteria. Documentation and operational evidence in support of performance should be organized to facilitate timely presentation and review by ACC personnel. The importance of preparation for the On-site Assessment cannot be over-stated. There is only a limited amount of time available to cover all the elements within the assessment. ACC personnel will not conclude compliance unless they are presented with substantiating evidence that criteria have been met.

5.1.3 The Opening Meeting

At the Opening Meeting, ACC and Supplier personnel will introduce themselves and review the final assessment schedule. Individual ACC Assessors and their Supplier counterparts will be paired according to the assignments outlined in the schedule. Finally, applicable safety precautions and any other site-specific considerations will be reviewed.

5.1.4 Conducting the On-site Assessment

The following supplier representatives, at minimum, should be available for the on-site assessment for the times and purposes noted below:

- Operations Manager, Plant Manager, or General Manager to participate in both the Opening and Closing Meetings.
- Site Quality Director or Quality Manager to participate in the entire process.
- Functional Managers of applicable areas such as Manufacturing, Engineering, and Purchasing will be available for consultation during the assessment and to address assessment topics related to their specific functional areas.

The assessment will proceed on a section-by-section basis in accordance with the schedule established in advance. Applicable supplier personnel will be asked to provide evidence to ACC representatives in support of their compliance with established performance criteria detailed within the on-site assessment form.

5.1.5 The Closing Meeting

Prior to the closing meeting, ACC personnel will seek a private office to quietly finalize the assessment scoring. Comments will be prepared for individual questions as required.

At the closing meeting, ACC personnel will:

- Summarize the results of the on-site assessment and identify areas that represent strengths/weaknesses.
- Discuss the final percentage score from the assessment results and provide a copy of the final assessment report with scores and comments included.
- Discuss specific items that require Improvement Plans and the timing for submission of these plans (typically 30 days from date of closing meeting). Improvement Plans must be specific as to the activities being undertaken to resolve the performance issue, the individuals responsible for their completion, and the anticipated completion dates.

5.1.6 Improvement Plan Review & Follow-Up

Upon receipt of the supplier's Improvement Plan, ACC Supplier Quality Engineering will review the plan and provide appropriate feedback. Improvement Plans that fail to appropriately address performance issues in a timely manner will require resubmission.

ACC Supplier Quality Engineering will follow-up with suppliers to review the implementation of Improvement Plans. This follow-up will occur through subsequent on-site assessments and/or a specific request to the supplier to provide evidence to substantiate the successful implementation of targeted improvements.

5.2 Supplier Process Assessments (SPA's)

ACC conducts periodic detailed on-site examinations of the manufacturing processes, procedures, and controls used in the fabrication, assembly, inspection, and delivery of individual purchased parts/materials. Successful FAI is a prerequisite for such Supplier Process Assessments (SPA's). The objective of such examinations is to help improve the supplier's manufacturing and support processes and to achieve continuous improvement with respect to quality and related costs. Supplier Process Assessments entail comparisons of the supplier's processes and controls against their internal procedures as well as contractual requirements inclusive of AS 9003. Nonconformances identified during SPA's will require initiation of formal Supplier Corrective Action Requests in order to document the resolution. ACC will utilize SPA results as a basis for determining the amount and nature of additional supplier oversight required.

5.2.1 Initial Data Search & Review

Prior to conducting the SPA, ACC Supplier Quality Engineering will undertake a review of the following data:

- Formal Corrective Action Requests issued against the supplier and/or parts / processes targeted for review.
- ACC-STL Nonconformance Tags generated against the supplier and/or parts / process targeted for review.
- Customer escapes, i.e. nonconformances reported by ACC customers, against the parts/processes targeted for review.

This information will be used as a basis for targeting specific areas of concern requiring more in-depth review and evaluation during the SPA.

5.2.2 Coordination & Scheduling of SPA's with Suppliers

SPA's will be scheduled with suppliers in advance by ACC Supplier Quality Engineering in order to ensure that appropriate supplier personnel can actively participate and support the process assessment activities. Coordination will take place between supplier personnel and ACC Supplier Quality Engineering to ensure that subject parts/materials are in production at the time the SPA is conducted. Suppliers will be asked to provide a process flow chart in advance that depicts all process sequences, process inputs, process outputs, and applicable material, machines, methods, manpower, and measurements. Process Flow Charts should encompass receipt of raw materials through shipment of finished products. Upon review of the process flow chart, the full scope of the SPA will be established. Supplier Quality Engineering will also clarify any questions the supplier may have regarding the SPA process at this time.

5.2.3 Conducting the SPA

The overall objective of the SPA is to help improve the supplier's manufacturing and support processes and to achieve continuous improvement with respect to quality and related costs. To accomplish this, a comparison of the supplier's processes and controls against their internal procedures as well as contractual requirements is conducted. Each part/process shall be evaluated using the ACC-STL Supplier Process Assessment Checklist. This checklist is based on the requirements outlined in *AS 9003: Inspection & Test Quality System* and incorporates those areas from

this standard that most closely pertain to the production environment. This checklist may also be tailored to cover areas with unique or specific requirements.

Particular consideration will be given to the following aspects of the subject part/material processes:

- The completeness and accuracy of work instructions,
- The adherence to specified work and inspection instructions,
- The appropriateness and thoroughness of process controls and related data analysis,
- The depth and breadth of operator knowledge and experience, effectiveness of Corrective Action efforts,
- The application of preventive quality measures, and demonstrated continuous improvement

5.2.4 SPA "Out Brief"

At the conclusion of the SPA, the Supplier Quality Engineer will coordinate with the supplier to schedule sufficient time to conduct an out brief of the findings. SPA out briefs will cover the following topics:

- The detailed results as documented on the SPA Checklist
- Generalized Strengths and Weaknesses
- Review of those areas requiring formal Corrective Action and associated timing.

5.2.5 Corrective Actions Based on SPA Findings

ACC Supplier Quality Engineering will initiation Supplier Corrective Action Requests for those nonconformances identified during SPA's. Supplier responsibilities for response to these requests and subsequent substantiation of effective implementation will be the same as the same as those outlined within the Supplier Corrective Action Request section of this manual.