



Supplier Quality Manual

GKN Aerospace Alabama

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REVISION	APPROVAL	DATE
D		2022 October 28
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GKN Aerospace Alabama (GKN) considers printed copies of this manual to be both uncontrolled & for reference only. All suppliers are responsible for verifying the latest revision of this manual online, at the website shown below.

<https://www.gknaerospace.com/globalassets/downloads/aerospace-suppliers-portal/usa/alabama/supplier-quality-manual.pdf/>

INTRODUCTION

Warmest greetings from GKN Aerospace Alabama (GKN). GKN strives to meet the needs of our customers by delivering both conforming & compliant products, either on time or early, either at or under cost. In order to meet the needs of our customers in this highly competitive environment, more apparent in the wake of the COVID-19 global pandemic, GKN both anticipates & expects our supply base to strive to meet our needs in the same manner. By collectively working to these ends, it is the intention of GKN to build long-lasting, performance-based, symbiotic relationships with suppliers across the globe.

The purpose of this document is to communicate information needed by suppliers to facilitate GKN receiving both products & services that meet our aforementioned needs. Note that any specification or standard quotes within are of the latest revision at the time of this document's publication. Should you have any comments, concerns, ideas, questions or other feedback with respect to this document, please relay this information to your respective Buyer(s).

GKN looks forward to working with your company.

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REFERENCES

- AS9100
- AS9102
- AS9110
- AS9120
- AS9145
- AS13100
- ISO9001
- ISO14001
- NIST (www.nist.gov)

- GKN T&Cs
- BSO 10.1.0.1
- BSO 10.1.0.2
- PUR 1.1.2
- PUR 1.3.3.1
- PUR 1.9.1.2
- PUR 1.9.1.3
- PUR 1.9.1.5

CONTRACTING

GKN considers the supplier to be wholly responsible for adhering to GKN's Terms & Conditions, Quality Clauses, as well as any instructions within the Purchase Order, including any & all engineering flow downs (e.g. Vendor Instruction Sheet(s) (VISs), drawing(s) / parts list(s) / operation sheet(s) / 3D model(s) at their listed revisions, etc.).

GKN considers the supplier to be wholly responsible for flowing down any & all specified requirements to their sub-tiers, as well as for any & all sub-tier activity completed against these requirements, per AS9100, § 8.4.1.

The organization shall be responsible for the conformity of all externally provided processes, products and services, including from sources defined by the customer.

GKN considers the supplier to be wholly responsible for providing objective evidence of a review of requirements per AS9145, § 4.5.1, upon request.

The organization shall identify and review the production process design input requirements, including:

- *Product design records.*
- *Targets for productivity, process capability, quality, and cost.*
- *Customers and regulatory requirements, including customer demand rate.*
- * *Lessons learned.*

NOTE: If the supplier is responsible for any design activity, GKN expects the supplier to provide objective evidence of a review of design requirements, to the extent possible, per AS9145, § 4.4.1, upon request.

The product design requirements (e.g., product safety, performance, service reliability, service life, maintainability, manufacturability, and cost) shall be expressed in terms that can be verified and validated.

GKN considers the supplier to be wholly responsible for acquiring any & all needed information to produce both conforming & compliant product from either GKN or reputable sources (e.g. Original Equipment Manufacturer(s)).

GKN may coordinate with GKN's Global Commodity Team (GCT) for assistance with supplier risk assessments, supplier selection, etc.; GKN expects suppliers to cooperate with any & all requests from GCT.

Lastly, the supplier must confirm the validity of any directions given from GKN personnel outside of the Procurement department with the Buyer(s) of Record. GKN considers the supplier to be wholly responsible for any and all effects caused by following directions not confirmed with the supplier's Buyer(s) of Record.

APPROVAL OF NEW SUPPLIERS

Suppliers must be on GKN's Approved Supplier List (ASL) to be able to supply product to GKN. Suppliers are placed on GKN's ASL by proving that their Quality Management System (QMS) either meets or exceeds the requirements flowed down from GKN to the supplier in the T&Cs, Quality Clauses & Purchase Order(s).

NOTE: GKN is required to maintain this ASL per AS9100, § 8.4.4.1.1(b).

The organization shall:

b. maintain a register of its external providers that includes approval status (e.g., approved, conditional, disapproved) and the scope of the approval (e.g., product type, process family);

GKN will approve new suppliers via any of the following means:

1. Certified to any combination of ISO 9001 (Quality Management requirements related to business-to-business dealings), ISO 14001 (Quality Management requirements related the environment, health & safety), AS9100 (Requirements for Aviation, Space, & Defense Organizations), NADCAP (industry-managed program for aerospace industry special processes), or other industry standard as applicable. GKN considers the supplier to be wholly responsible for providing objective evidence of compliance to any & all applicable standards upon request, including any Federal Aviation Administration (FAA) requirements.

NOTE: GKN is working towards AS13100 (Quality Management requirements for aero engine design & production) compliance; with reasonable notice, GKN intends to require suppliers, as necessary, to achieve AS13100 compliance.

NOTE: Some suppliers may be certified to either AS9110 (Requirements for Aviation Maintenance Organizations) or AS9120 (Requirements for Aviation, Space, & Defense Distributors) in lieu of AS9100.

2. A supplier currently in good standing with GKN, that has current work, may take on additional GKN work.
3. If the customer, via written approval, mandates the use of a certain supplier.
4. Completion of the GKN Supplier Survey Questionnaire (PUR 1.9.1.2) prior to the start of production if the supplier does not either have an industry standard certification, cannot demonstrate a pre-existing supplier relationship, or is not mandated to be used by GKN's customer(s).

NOTE: GKN will request the completion of PUR 1.9.1.2 regardless of industry standard certification.

5. The supplier may pass an on-site audit by GKN, conducted at our sole discretion. If an on-site audit is conducted, the supplier will be assessed according to several metrics within the GKN Supplier Process Assessment (PUR 1.9.1.3); GKN reserves the right to deem additional metrics necessary as required.

Approval as a new supplier is granted with the understanding that GKN may either revoke, suspend or otherwise discontinue said approval at any time, either with or without notice.

MAINTAINING APPROVAL

Metrics directly related to each supplier's quality & delivery performance will be continuously monitored. The supplier will remain on the ASL by maintaining both a quality rating of ninety-eight percent (98%) & a delivery rating of ninety-five percent (95%). If a supplier fails to maintain either one of these two levels of performance, GKN will monitor their performance over a six-month period before considering removing them from the ASL. GKN considers this six-month "grace period" to be more than sufficient for the supplier to either get their performance back on track, either with or without GKN assistance, or to plan their next actions (e.g. exiting the GKN supply chain). GKN anticipates that, by providing this generous "grace period", the supplier will be forthcoming with any plans to exit the GKN supply chain so that both GKN & the supplier can work together for our mutual benefit until dissolution.

Similar to AS9102, § 4.6(f)(6), suppliers must be reapproved through the process for approving new suppliers if there is a lapse in production for two years, from completion of the last production operation to the actual restart of production.

The organization shall perform a full FAI or a partial FAI for affected characteristics, when any of the following occurs:

6. A lapse in production for two years shall require an update for any characteristics that may be impacted by the inactivity. This lapse is from the completion of last production operation to the actual restart of production.

GKN reserves the right to conduct on-site assessments of its suppliers, which GKN expects suppliers to pass.

Removal from GKN's ASL may occur if any of the following conditions are either met or exceeded:

1. The supplier fails to respond to Supplier Corrective Action Requests (SCARs) within (15) business days after receipt of the SCAR.
2. The supplier fails to notify GKN of customer exposure to any nonconformance within (2) business days of initial discovery.
3. The supplier fails to notify GKN of loss of any applicable industry accreditation (i.e. ISO, AS, NADCAP, etc.) within (2) business days of receiving an official notice.
4. The supplier fails to provide a completed annual representations and certifications form (PUR 1.9.1.5).

Continued approval as a supplier is granted with the understanding that GKN may either revoke, suspend or otherwise discontinue said approval at any time, either with or without notice.

Lastly, for suppliers that are required to be used via customer-provided engineering documentation, GKN reserves the right to explore options other than ASL removal to resolve unfavorable quality & delivery performance trends.

SUPPLIER PERFORMANCE

As previously stated, GKN expects our suppliers to help us meet the needs of our customers by delivering both conforming & compliant products, either on time or early, either at or under cost by means of a symbiotic relationship. GKN will first trust that suppliers are meeting their objectives, then verify via monitoring performance.

GKN will monitor supplier performance via issuance of supplier scorecards, issued monthly. These scorecards will provide each supplier a glimpse of both their quality & delivery performance against the targets detailed below.

QUALITY RATING (QR)

GKN expects high quality standards from our suppliers; because of this, GKN will gauge a supplier's quality performance against a monthly QR target of 98%, calculated against parts received in GKN's system as follows:

$$R_Q^S = \left(\frac{P_{Total} - P_{NC}}{P_{Total}} \right) \times 100\%$$

Where:

- R_Q^S = Supplier Quality Rating
- P_{Total} = Total Pieces Delivered
- P_{NC} = Nonconforming Pieces Delivered

DELIVERY RATING (DR)

GKN expects high delivery standards from our suppliers; because of this, GKN will gauge a supplier's delivery performance against a monthly DR target of 95%, calculated against parts received in GKN's system as follows:

$$R_D^S = \left(\frac{P_{Total} - P_{Early} - P_{Late}}{P_{Total}} \right) \times 100\%$$

Where:

- R_D^S = Supplier Delivery Rating
- P_{Total} = Total Pieces Delivered
- P_{Early} = Pieces delivered more than (10) business days before the ODD*
- P_{Late} = Pieces delivered after the ODD*

NOTE: ODD = Original Dock Date, the original PO delivery promise date agreed between the supplier & GKN

In addition to the supplier scorecards, GKN will also actively both monitor & inquire about items related to costs to GKN, customer service, & other issues that GKN deems relevant. GKN reserves the right to either modify, add, or remove any performance metric, with notice provided to the supplier before the modified metrics become effective.

FIRST ARTICLE INSPECTION (FAI)

Per AS9102, § 1.2:

The primary purpose of FAI is to validate that product realization processes are capable of producing parts and assemblies that meet engineering and design requirements.

GKN has adopted AS9102 as a standard for FAI completion, flowing down this requirement, as well as customer-specific requirements, via our Purchase Orders; this includes the creation of FAI reports (FAIRs). GKN considers the supplier to be wholly responsible for meeting all requirements of AS9102 unless explicitly specified, in writing, that a supplier can deviate from AS9102.

GKN expects suppliers will complete either full or partial (“delta”) FAIs when any of these circumstances are met:

1. When a new product is introduced, per AS9102, § 4.1(a).
 - a. The organization shall perform FAI on new product representative of the first production run. The first production delivery parts require an FAI.*
2. Any of the conditions outlined in AS9102, § 4.1(f).
 - f. The organization shall perform a full FAI or a partial FAI for affected characteristics, when any of the following occurs:*
 - 1. A change in the design characteristics affecting fit, form, or function of the part.*
 - 2. A change in manufacturing source(s), process(es), inspection method(s), location of manufacture, tooling, or materials that can potentially affect fit, form, or function.*
 - 3. A change in numerical control program or translation to another media that can potentially affect fit, form, or function.*
 - 4. A natural or man-made event, which may adversely affect the manufacturing process.*
 - 5. An implementation of corrective action required to complete a previous FAI, as described in 4.4.*
 - 6. A lapse in production for two years shall require an update for any characteristics that may be impacted by the inactivity. This lapse is from the completion of last production operation to the actual restart of production.*

Packages with FAIs must be both clearly & visibly marked, on the outside of the package, with either “FAI enclosed” or equivalent. All paperwork must be placed inside an envelope within the shipping container; the envelope must be clearly labeled, stating either “FAI documentation enclosed” or equivalent.

GKN considers suppliers to be wholly responsible for adhering to Procurement Quality Clause #16 regarding FAIs.

GKN expects suppliers to send all items necessary to complete the FAI (e.g. drawing(s), model(s), Mylar(s), tool(s), etc.) along with the FAI part & documentation. Failure to do so will result in delays in completing the FAI. Once the FAI is bought-off, GKN will promptly return all necessary items provided for FAI completion to the supplier.

Additionally, GKN expects that suppliers will provide necessary items to facilitate FAI completion upon request.

PARTS RECEIVING

GKN may reach out to the supplier when there are issues with receiving product into our facility. GKN anticipates that suppliers will respond to inquiries related to parts receiving in a timely manner. After reaching out to the supplier via email, GKN may initiate returning parts if the supplier has not responded to communication within (3) business days after initial receipt of GKN's email.

SUPPLIER CORRECTIVE ACTION REQUESTS (SCARs)

At our discretion, GKN may issue a SCAR in the event we discover a nonconformance with the supplier's product. At our discretion, GKN may request objective evidence of a root cause & corrective action (RC/CA) investigation in lieu of issuing a SCAR. At our discretion, GKN may give the supplier an opportunity to correct documentation issues before creating a supplier tag. Following feedback to the supplier via email, this "grace period" should extend no longer than (2) business days, but may be extended at the discretion of SQE.

In the event that a supplier receives a SCAR from GKN, we expect to receive responses in line with the following:

- The supplier must notify GKN within (2) business days of initial receipt of the SCAR that containment of the nonconformance has been achieved.
- The supplier must formally respond to the GKN-issued SCAR within (15) business days.

GKN considers the supplier to be wholly responsible for conducting a RC/CA investigation upon receipt of the SCAR. If, during the containment period of (2) business days, it is both determined & communicated to GKN that a prolonged investigation of more than (15) business days is required, GKN anticipates that suppliers will keep GKN informed of the progress of the RC/CA investigation by providing updates every (5) business days after the initial response period of (15) business days.

If GKN requests additional information in relation to a SCAR response, this additional information must be provided within (5) business days after the request is initially received.

Failure to respond to SCARs in the manners described above may result in either loss of approval status, suspension of deliveries, review of future contracts, or any combination of these ends.

The supplier should use BSO 10.1.0.1 and BSO 10.1.0.2 to explain activities against corrective action requests.

DEVIATION REQUESTS

Outside of allowed deviations explicitly stated within customer documentation (i.e. engineering drawing, specification, etc.), no substitution of material specification, size, or any other characteristic will be allowed except by amendment of the Purchase Order. GKN must be notified of any utilization of allowed deviations specified above via the FAIR. GKN expects suppliers to specify both the actual condition (Is), the stated condition (Should Be), as well as the rationale for the deviation (i.e. Deviation allowed per ...).

If a deviation outside of the aforementioned conditions becomes necessary, suppliers must submit a Supplier Technical Support Request (STSR) (PUR 1.3.3.1) to their respective Buyer(s). Upon receipt of the STSR(s) by GKN, they will be promptly dispositioned (i.e. either approved or not approved), to either allow or not allow the requested deviation. GKN will strive to include the necessary rationale behind any & all unfavorable dispositions.

CERTIFICATES OF CONFORMANCE (COCs)

Certificates of Conformance (COCs) must be sent along with each shipment of product beyond the FAI unit(s).

COC(s) must be attached to the packing list, & contain the following information:

- GKN part number (with revision(s))
- Part description
- Batch / Lot number(s)
- Quantity
- Purchase Order number (with line item(s))
- Supplier name & address
- Name & title of person completing the form
- Original signature (in blue ink only) (with date)

COST RECOVERY

According to the latest Cost of Poor Quality (COPQ) metrics, GKN incurs costs of approximately \$840 for each supplier nonconformance tag. GKN also incurs additional costs from customers when we submit requests for deviation, regardless of whether or not they are supplier-related. For both supplier nonconformance tags & deviation requests to customers that are based on any supplier nonconformance, GKN may pass along, either in part or in full, these costs incurred to the supplier.

For the purposes of this manual, the decision of both when & how these costs are passed along will be left to the discretion of both GKN's Finance Department & Buyer(s) of Record.

SITE ACCESS

When access to the site of either a supplier or their sub-tier supplier is required for auditing & / or source inspection purposes, GKN will provide reasonable notice, in advance of the required site visits.

SOFTWARE

Before the release of any data to the supplier, said supplier must submit a completed Audit Data Route Questionnaire (ENG 1.2.2). The supplier must maintain effective revision control, ensure adequate security of electronic data / media, & adhere to Quality Clause 22 regarding software (REF PUR 1.1.2).

COMMUNICATION

GKN must be notified of any & all changes within a supplier's QMS that affect quality of product delivered to GKN. Per GKN's T&Cs, we may unilaterally change the scope of any Purchase Order in writing, without notice.

ENVIRONMENT, HEALTH & SAFETY (EH&S)

GKN is committed to protecting the environment, & expects all suppliers to partner with us in a commitment to both a safe & eco-friendly workplace. Our goals are to reduce consumption of water, energy, solid waste & eliminate Volatile Organic Compound (VOC) emissions. We expect suppliers to share these goals & provide information that either might relate to a supplied product that would be a significant aspect to meeting these goals or have a negative impact on either the environment, health or safety.

A Safety Data Sheet (SDS) / Material Safety Data Sheet (MSDS) must accompany all potentially hazardous materials.

Domestic deliveries must abide by Occupational Safety & Health Administration (OSHA) regulations, whereas European international materials must abide by European Union (EU) & / or other relevant regulations. All part & material deliveries must be marked, labeled, & packaged according to United States Department of Transportation (USDOT) regulations.

SDSs (MSDSs) must include VOC content, preferably in pounds per gallon (lbs. / gal.).

NOTE: GKN is compliant to ISO 14001.

SUPPLIER STAMPS & TAGS

All parts received must have positive traceability to inspection status; additionally, both tags & stamps must both identify the individual inspector & be unique to the supplier.

PART MARKINGS

All materials must be identified with part markings that are traceable to original certification. In-process material traceability must begin with raw material & continue through final product inspection.

Markings must be transferable both during & after operations that remove part markings. Markings must be unique, & duplication of markings must be prevented.

Markings must be traceable to test data & unique to the individual supplier.

NONCONFORMANCES, REJECTS & SCRAP

During production, any & all nonconforming & rejected parts must be identified, documented & quarantined to prevent mixing of both conforming & nonconforming product. Quarantined areas must be access-restricted.

WORK ORDERS

All manufacturing processes & procedures must have specific work orders. Work instructions must define the requirements needed to complete each of these processes & / or procedures.

GAUGES

Gauges & other tooling used during both inspection & special processing must be both calibrated & traceable to NIST standards.

GKN-SUPPLIED MATERIALS

GKN-provided materials (e.g. drawing(s), tool(s), model(s), etc.) must be both controlled & identified.

HOUSEKEEPING

GKN considers the supplier to be wholly responsible for maintaining both safe & clean work environments. GKN expects suppliers to both supply & encourage use of appropriate personal protective equipment (PPE) during production. Controlled areas must have accompanying objective evidence of such control.

TERMS & CONDITIONS (T&Cs) & QUALITY CLAUSES

GKN considers the supplier to be wholly responsible for both reading & adhering to the GKN's Terms & Conditions (T&Cs). GKN considers the supplier to be wholly responsible for both reading & adhering to any & all Quality Clauses called out within the GKN Purchase Order(s) (REF PUR 1.1.2).

REVISION HISTORY

- Revision D: 26 October 2022
- Revision C: 12 August 2022
- Revision B: 04 April 2017
- Revision A: 12 September 2008