

GKN Aerospace Supplier Quality Assurance Manual

Document Responsibility

If you have any queries about this document, then please contact the GKN **Supplier Development Team. Your Procurement Commodity Manager will be able to put you in contact with the appropriate person(s)**

Scope:

This GKN Aerospace Supplier Quality Assurance Manual("SAM") applies to all suppliers and their sub-contractors (each being referred to as the "Supplier") who provide Products (as defined below) to GKN Aerospace Services Limited ("GKN") irrespective of (i) where the Supplier is located; (ii) the industry within which the Supplier operates; and/ or (iii) any certifications and/or accreditations which the Supplier may have.

This SAM shall be in addition to any other agreement or terms and conditions which may be in place between GKN and the Supplier.

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1. Record of Revisions

Issue	Date	Summary And Reasons For Changes	
1	February 2015	Initial Issue	
2	April 2015	Replacement of EN9100 reference with AS/EN9100 reference	
3	June 2018	Inclusion of Product Safety requirements Page 3 and 19 Inclusion of Prevention of Counterfeit Parts Page 3 and 19 Page 3 page numbers changed from page 19 to page 28 to reflect additions in page 19	
4	Aug 2018	Section 7.12 updated to clarify "Record Retention" requirements for tooling suppliers to GKN.	



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3.Purpose

This SAM and any documents referenced herein specify the minimum standards and/ or requirements that GKN requires a Supplier to meet. These are in addition to any other requirements that GKN and the Supplier have agreed. In the event of a conflict between the contents of this SAM and the terms of any other Agreement, the terms of such other Agreement shall prevail.

GKN's rights and remedies in connection with this SAM are in addition to any and all other rights and remedies that GKN may have available to it at law or otherwise. Where a Supplier does not understand the extent of any obligation imposed on it by GKN, whether in this SAM or any other Agreement, it must immediately seek clarification from GKN. Failing to understand its obligations shall not allow a Supplier to be discharged from its obligations to GKN.

Any approval which GKN gives to the Supplier under or pursuant to this SAM is solely for the purposes of ensuring that the Supplier meets the minimum quality standards required by GKN and shall not discharge the Supplier from any liability or responsibility relating to the Product under the Agreement and/or this SAM and the Supplier shall remain fully responsible for the Product. The Supplier shall not be entitled to claim that a delay or refusal by GKN in providing any approval required under this SAM discharges the Supplier from the performance of its obligations under the Agreement and/or this SAM.

4.Reference Documents

The Supplier shall comply with:

- (a) the requirements specified in the latest revisions of each of the documents listed below;
- (b) any additional requirements which the Supplier is required to comply with by the authorities of the country from which it is supplying GKN; and
- (c) any other requirements which GKN may notify the Supplier of from time to time.
 - In the event of any conflict between the provisions of any of those requirements listed at (a) to (c) inclusive above, the Supplier shall be obliged to meet the more onerous of the requirements.



Document	Document name	
reference	(document as may be amended/ updated from time to time)	
AS9120	QMS – Aerospace requirements for Stockists and Distributors	
ASTM E2782	Standard guide for Measurement Systems Analysis	
CAP747	CAA Mandatory Requirements for Airworthiness	
EN4179	Standard for the Training, Qualification and Certification of NDT personnel	
AS/EN9100	Quality Management Systems — Requirements for Aviation, Space and Defence Organizations	
EN9102	Quality systems — First article inspection	
AS/EN9103	Quality management systems — Variation management of key characteristics	
AS/EN9132	Aerospace series. Quality management systems. Data matrix quality requirements for parts marking	
ISO 10005	Quality management systems — Guidelines for Quality Plans	
ISO 11462	Guidelines for implementation of statistical process control (SPC) Capital-	
	ize Statistical Process Control	
ISO 14001	Environmental management systems	
ISO 17025	General requirements for the competence of testing and calibration la-	
	boratories	
J-STD-001	Training & Certification in Aerospace Electronic Hardware Applications	

It is each Supplier's responsibility to:

- (a) access these documents and familiarise itself with their contents;
- (b) ensure that they are complying with the latest version of each of these documents; and
- (c) ensure that where there is an obligation on the Supplier in this SAM, that the Supplier procures that each of its Supplier Personnel complies with these obligations as if a reference to Supplier in this SAM was deemed to be interpreted as a reference to the Supplier Personnel.

Failure by the Supplier to access these documents shall not discharge the Supplier from having to comply with the obligations which are specified in each of the documents.



5. Definitions / Abbreviations

The following words and expressions appear throughout this SAM. On each occasion they appear, they have the meaning set out below:

	<u>, </u>	
ADP	means the Acceptance Demonstration Plan as further described in paragraph 7.6	
Agreement	means any agreement or terms and conditions between GKN and the	
	Supplier in relation to the Products, materials or services	
Approval	means a formal notification from GKN to the Supplier that it meets the	
	GKN Approval Standards in respect of a Product (or any part of it). Such	
	approval may be limited in terms of scope or duration	
Authorised Re-	means a person that has been trained, assessed and qualified by the	
lease Signatory	Supplier through a regulated process to release Products to GKN.	
Class 1 part	means a part that has been defined as "critical" by GKN's design engi-	
-	neers in terms of safety, performance and service life.	
CofC	means the certificate of conformity issued by the Supplier to GKN	
Concession Dis-	means the documented response made to a concession request sub-	
position	mitted by the Supplier in accordance with paragraph 11	
CoS	means condition of supply	
Cpk	The process capability index or process capability ratio	
EASA	means the European Aviation Safety Agency	
ESD	means Electronic Sensitive Discharge	
FAA	means the Federal Aviation Administration	
FAI	means First Article Inspection, which shall include a complete and docu-	
	mented physical and functional inspection process to verify that pre-	
	scribed production methods have produced an acceptable item as spec-	
	ified by engineering drawings, planning, purchase order, engineering	
	specifications, and/or other applicable design documents	
FAR	means First Article Review, which shall include a complete review of all	
	aspects of the FAI process	
FAIR	means First Article Inspection Report	
FOD	means foreign object damage	
GD&T	means Geometric Dimensioning & Tolerancing	
GKN	means GKN Aerospace Services Limited	
GKN Approval	means the minimum standards and/or requirements that GKN requires	
Standards	a Supplier to meet, including but not limited to those specified in para	
	graph 7.1	
GKN's Customer	means anyone that places an order with GKN for Products	
GKN Personnel	means GKN's employees, agents and/ or representatives, customers,	
	sub-contractors and suppliers other than the Supplier	

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GKN Property	means any free issue materials, jigs, fixtures and gauges that have been		
	provided or loaned to a Supplier by or on behalf of GKN for use in the		
	Supplier's Product, including any tooling supplied, bailed and/or other-		
	wise owned or supplied by GKN or GKN's Customer to the Supplier in		
CKN On although	accordance with paragraph 10		
GKN Quality Ap-	means the on-going GKN approval process to ensure that all Suppliers		
proval Process GKN EHS Site	meet the criteria required to be able to supply Products to GKN		
Rules	All visitors to any GKN site must report to reception where they will be briefed on the EHS rules applicable to the site they are visiting.		
GR&R	means Gauge Repeatability & Reproducibility		
History Card	means a standard document demonstrating the manufacturing history and traceability of the Product from raw material to the end product.		
HS&E	means Health, Safety & Environment		
ISO	means the International Organisation for Standardisation		
Infrastructure	means anything that is associated with the manufacture of the product,		
	including but not limited to machinery, buildings and environment		
ITAR	means the International Traffic in Arms Regulations (as may be		
	amended and supplemented from time to time)		
KCs	means Key Characteristics		
Kit List	means a list of items that form a kit of parts and has been supplied un-		
	der a single part number described as a kit.		
KPI means a Key Performance Indicator			
MSA	means Measurement Systems Analysis		
NADCAP means the National Aerospace and Defence Contractors Accre			
	Program		
NDT	means Non Destructive Testing		
OEM	means the original equipment manufacturer		
PPE	means Personal Protective Equipment that is not Standard PPE		
Products	means any and all parts, materials, goods or services supplied by a		
	Supplier to GKN, including parts, components and materials or sub con-		
	tract operations		
Production Per-	means the positive GKN response given to a Supplier when requesting		
mit	to manufacture a part that cannot conform to the Specification		
POA	means Production Organisation Approval		
PO	means a purchase order, vendor schedule, delivery schedule or any		
	other note, order or other written instruction issued by GKN to the		
QMS	Supplier in respect of an order of the Products means the Quality Management System		
Quality Plan	means the documented evidence that all aspects of the Suppliers Pro-		
Quality Fidil	cess has been assessed by the Supplier for any risks to product qual-		
	ity/integrity and that any risks identified have been mitigated.		
SAM	means this GKN Aerospace Supplier Quality Assurance Manual		
SPC	means the Statistical Process Control		
<u> </u>	I means the statistical i rocess control		

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Specification	Specification means the design definition, data file, drawings, models, process specifications etc., standard that the Product is required to meet	
Special Process Suppliers	means Suppliers whose processes fit under NADCAP approval systems and/or whose processes are required to comply with special GKN and/or GKN's Customer requirements in accordance with paragraph 13.4	
Standard PPE	means safety glasses, safety footwear and ear defenders	
Supplier Person- nel	means the Supplier's employees, agents and/ or representatives, sub- contractors and suppliers	
Supplier	means the Supplier and their sub-contractors any sub-contractor used by the Supplier must be approved by the GKN Quality Approval process)	
Supplier's Facil-	means any premises owned or leased by the Supplier for the purpose of	
ity	performing its obligations in connection with the Products	
TC	means a Type Certificate	

6. General Requirements

6.1 Continuous Improvement

GKN is required by its Customers to remain competitive and embody a culture of continuous improvement. The Supplier acknowledges that GKN's failure to embody this culture will have an impact on GKN's ability to sell its Products or services as well as GKN's Customers imposing financial liabilities on GKN. Suppliers are therefore required to continuously use every effort to:

- (a) maximise the quality and efficiency of each Product; and
- (b) minimise the acquisition, development, manufacturing, operating and other costs, which arise in connection with the Product.

The Supplier undertakes to improve, at its own cost and expense, the overall competitiveness level of the Product throughout the term of its supply to GKN to ensure that GKN has the most competitive Products in the marketplace.

6.2 Purchasing, Supply & Training

Where GKN issues any PO, such PO shall be deemed to be accepted unless Supplier's rejection of such PO is received in writing by GKN in writing within 3 business days of Supplier's receipt of the PO.

Suppliers must manage their business in a manner that is conducive to uninterrupted supply and shall ensure that it takes all steps to avoid any disruption or delays to the delivery schedules agreed with GKN. The Supplier shall bear all costs of taking such steps. Disputes of any

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kind (including disputes between the Supplier and GKN) shall not entitle a Supplier to suspend deliveries and/or performance of any of its obligations.

All records needed for qualification, manufacturing, verification and/or acceptance of the Product or for any other reason shall be written in English and must be supplied by the Supplier to GKN along with the Products. Where there are legal requirements for such documents to be in a language other than English, then the Supplier shall supply such documents in the language that such documents are required to be in, as well as providing an English translation of such documents. In the event of any conflict between the English translation and the version in a foreign language, the English translation version shall prevail.

Compliance with this SAM shall not relieve the Supplier from meeting all other requirements stipulated in the PO issued by GKN or any other Agreement.

All Supplier Personnel performing work on the Products shall have the appropriate qualifications, training and certifications required in order for them to perform the tasks that they are required to do. The Supplier shall maintain qualification and training records for all Supplier Personnel and shall provide copies of such records to GKN upon request.

6.3 Health & Safety

The Supplier must ensure that prior to visiting any GKN facility it:

- (a) familiarises itself with GKN EHS Site Rules where such GKN EHS Site Rules have not been provided to the Supplier, the Supplier must request a copy from GKN; and
- (b) equips itself with Standard PPE. GKN shall:
 - (i) be under no obligation to provide Supplier with Standard PPE; and
 - (ii) reserves the right to refuse the Supplier entry to GKN's facility where the Supplier fails to bring (and wear) the Standard PPE. Any costs associated with or resulting from such refusal, including any costs which GKN incurs due to delays caused due to Supplier not being granted entry to GKN's facility shall be borne by Supplier.

Whilst at GKN's facility, Supplier's Personnel must comply with GKN EHS Site Rules.

Where GKN Personnel are visiting a Supplier's Facility, the Supplier must ensure that prior to GKN Personnel visiting, that the GKN Personnel are made aware of any relevant Supplier's Facility site rules and regulations regarding HS&E that may be applicable. Supplier shall provide GKN Personnel with a copy of any and all such rules and regulations prior to their visit. Supplier shall ensure that any necessary PPE that is not Standard PPE is provided to GKN Personnel for use whilst at the Supplier's Facility (at no charge).



6.4 Project Manager

The Supplier shall appoint a project manager who will be the first point of contact for any matters for GKN Personnel. The contact details of the assigned project manager shall be provided to GKN no later than the date of any Agreement.

6.5 Warehousing & Distribution

The Supplier must ensure that any conditions for distribution and/or storage conform to AS9120 Standards. GKN shall be entitled to audit any Supplier's Facility at any point in time in order to check the Supplier's compliance with AS9120 Standards and any additional requirements which GKN may specify from time to time.

7. Quality Requirements

7.1 Supplier Assessment – Quality Approval

GKN shall be entitled to continuously assess its Suppliers to ensure that they continue to meet the GKN Approval Standards. Such assessment criteria shall include but not be limited to the following:

- Contract review;
- Facility HS&E requirements;
- Organisational structure, human resources, staff development;
- Risk analysis & risk prevention/mitigation;
- Manufacturing process control & technical capabilities;
- Configuration management;
- Sub-tier supplier management;
- Project management;
- Special process controls & approvals (OEM, NADCAP etc.);
- Quality Plan specific to Product package(s);
- Export control / ITAR;
- Corporate social responsibility; and
- Distribution and warehousing.

Any Approval granted shall not extend to the Supplier's sub-suppliers or sub-contractors unless GKN notifies the Supplier of such as part of GKN's Quality Approval Process.

GKN may conduct either a remote assessment or an on-site assessment at the Supplier's Facilities. The Supplier agrees to take any and all corrective action that GKN determines to be necessary following such assessment.

GKN Personnel shall have a right to access the Supplier's Facilities and the Supplier shall procure GKN and GKN Personnel the right to access any of the Supplier's sub-contractors' or sub-suppliers' facilities at a mutually agreed time to review the Supplier's performance in respect



of POs. Supplier shall co-operate with GKN Personnel (and shall procure its sub-contractors and sub-suppliers co-operate) to ensure that GKN Personnel are given access to all areas and data deemed necessary for review by the relevant GKN Personnel.

The Supplier shall be subject to continuing KPI performance level reviews as part of an ongoing approval assessment. Quality and performance data analysis will form a key part of the performance review and failure by the Supplier to maintain an acceptable level of performance in the areas specified above shall be deemed a material breach of contract, entitling GKN, by notice in writing to the Supplier, to terminate any Agreement with a Supplier.

A successful Supplier will be formally advised of the outcome of its GKN Quality Approval Process and will be granted an Approval. The Supplier is not permitted to carry out any work that is not covered by the scope of the Approval granted to it.

The grant of any Approval shall not oblige GKN to accept or purchase any Products from the Supplier or to place any POs. GKN may revoke any Approval granted at any time. In the event of any problems with the Products, without prejudice to any other rights or remedies available to GKN, the Supplier shall perform timely root cause corrective action on the Product(s).

7.2 Process Assurance

Critical to manufacture of the Product is the capability of a Supplier to meet stringent controls governing the manufacturing or supporting processes that it employs. The Supplier must adopt process controls that are designed and implemented to reduce or eliminate the risk of failures occurring.

The Supplier shall define its process steps in a controlled document, assess each step for potential risk(s) and develop appropriate controls that reduce the occurrence of any potential failure modes. The Supplier shall provide a copy of such controlled document to GKN. The Supplier shall use every effort to eliminate any risks associated with or connected to the Product and shall supply a Product that meets the standards required by GKN.

It is essential that the Supplier ensures that the every aspect associated with the Product meets adequate processes, including but not limited to the technical design, processes and materials. The Supplier agrees that it is, and shall remain fully responsible for all such matters.

7.3 Process Change and Sub-contracting

A process change may affect the Products and / or the infrastructure being assessed. The Supplier must obtain GKN's prior written approval for any process changes before implementing any such changes.

Process changes include but are not be limited to the following:

- Changes in the inspection and testing process
- a change in design;

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- a change in manufacturing source, process, inspection method, location of manufacture, tooling or materials;
- a change in numerical control program or translation to another media; and
- a natural man-made event which may affect a manufacturing process.

Any approval which GKN gives to the Supplier shall not discharge the Supplier from any liability or responsibility associated with the change and the Supplier shall remain fully responsible for the Product.

The Supplier must obtain GKN's prior written approval before sub-contracting any of its requirements under the Agreement and/or this SAM.

7.4 QMS

The Supplier shall have and maintain its own QMS, which must as a minimum be accredited to AS/EN9100, or any other standard prescribed by GKN from time to time.

7.5 Quality Plans

Where the Supplier has been awarded the supply of more than one Product or range of Products from GKN, the Supplier is required to have a Quality Plan for each Product and each Product range that will control the various aspects that are in place to ensure that the Supplier's processes are adequate for each Product.

As a minimum the Quality Plan shall:

- (a) be prepared in accordance with ISO10005: and
- (b) prescribe ways of dealing with the following:
 - Quality objectives & KPI's (including process improvements);
 - Management responsibilities;
 - Configuration management of documents and data control of records;
 - Resources;
 - Requirements;
 - Customer communication;
 - Design and development;
 - Purchasing;
 - Production and service provision;
 - Identification and traceability;
 - Customer property;
 - Preservation of Product;
 - Control of nonconforming Product (including customer feedback);
 - Monitoring and measurement; and
 - Audits

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The Quality Plan should be documented and submitted to GKN's Personnel in the quality department for approval before the Supplier can start any work or production on, or perform any services in relation to, the Product. GKN shall provide the Supplier with the details of how to contact the GKN Personnel in the quality department following the date of the Agreement. Once approved in writing by GKN, the Quality Plan shall become part of the Supplier's QMS to ensure appropriate management of the Product.

If at any point in time, GKN deems the Quality Plan to be inadequate (including after GKN has approved such Quality Plan) GKN may request that such Quality Plan be amended and Supplier shall amend such Quality Plan until it reaches a standard that is acceptable to GKN. Once the amendments have been agreed between GKN and the Supplier, the Supplier shall forward a final version of the Quality Plan to GKN. No amendment to the Quality Plan will be made unless GKN confirms its acceptance to such amendment in writing. Failure by GKN and the Supplier to agree a Quality Plan shall not discharge the Supplier from its obligation to provide one.

7.6 Inspection & Test

The Supplier must prove to GKN's satisfaction that there are controls surrounding aircraft part production to ensure that parts manufactured are within the Specifications defined during the Product's TC. The verification of control systems related to aircraft part production must continue after the first article has been produced and inspected under the FAI process to ensure that the first production and every subsequent part is manufactured using the same controls. The Supplier shall prepare a process map in a form acceptable to GKN. The links between the process map, the risks analysed for this process and the subsequently defined controls are of paramount importance in defining the inspection and test and should be instrumental as inputs to the development of the inspection and test philosophy, methods, training and tools. The Supplier shall undertake to comply with EN9102 shall apply.

Where GKN or GKN's Customer have a specific requirement and the Supplier is notified of such requirement by GKN, then the Supplier must weigh the components in accordance with both the FAI protocol, and GKN's or GKN's Customer requirements. The results shall be recorded and reported as part of the FAIR pack to GKN's Customer (if applicable) via GKN's Personnel in the Procurement function.

GKN reserves the right to verify the source of deliveries at the Supplier's premises prior to shipment.

All inspection and testing activities which the Supplier is required to carry out must be included within the process map, risk analysis and control plan which is submitted to GKN by the Supplier. Where required by GKN, an ADP shall also be provided. An ADP is GKN's opinion on the Supplier's activities and its inspection and test methodology and devices. It shall contain the following information as a minimum:

- inspection philosophy for each characteristic type;
- list of devices to be utilised for the different characteristic types;

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- typical accuracy of the devices (OEM specification);
- calibration process for the devices; and
- MSA or GR&R results against the specification(s) intended to be used for the Product.

The Supplier shall use inspection stamps which are unique to the Supplier and to the Authorised Release Signatories signing off GKN Products to identify acceptable inspection status for Products and associated documentation (the "Inspection Stamps"). The Inspection Stamps are to be controlled by the management personnel for quality within the Supplier's organisation.

A register shall be compiled and procedure shall be created to record:

- the control of the Inspection Stamps;
- the individual Inspection Stamp holders;
- quarantine periods for Inspection Stamps withdrawn for mis-inspection events; and
- the consequences of poor inspection performance.

Where an Inspection Stamp has been lost, that lost Inspection Stamp number shall be quarantined and not used for at least 2 years. Stamps that are withdrawn due to termination of employment or withdrawal of authority to inspect due to mis-inspection events shall be quarantined, and not used for a minimum of 6 months.

All Supplier Personnel engaged in inspection tasks on Products shall have regular eye sight assessments, which must as a minimum be in accordance with the relevant national standard.

No sampling inspection is acceptable on GKN Products unless the details of any sampling plan have been formally approved by GKN in writing. Where GKN does approve a sampling inspection, then in addition to any other matters which GKN may prescribe, the Supplier will be required to document the process to cover the sampling process.

7.7 NDT

A Supplier supplying Product which involves NDT shall ensure that such tests comply with the requirements of the mandatory CAA requirement of CAP747 GR23.

NDT Personnel shall as a minimum be qualified and certificated in accordance with the appropriate levels as stated in EN4179. The Supplier shall designate an individual qualified at NDT Level 3 in the appropriate Product sector as the Responsible Level 3 (for UK Based suppliers, as the Nominate Level 3), with responsibility for all NDT methods used.

Where the Supplier is not able to perform NDT, the Supplier must submit any alternative process requirements to GKN for GKN's prior written approval. The Supplier must not employ such processes until it has obtained GKN's prior written approval. For the avoidance of doubt, GKN assumes no liability for such approval and such approval shall not discharge the Supplier from complying with its obligations under the Agreement or this SAM. The Supplier shall be solely responsible for any delays in production as a result of its failure to obtain GKN's prior

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written approval and shall not be entitled to claim that a delay or refusal by GKN in providing its approval discharges the Supplier from the performance of its obligations under the Agreement and/or this SAM.

7.8 Calibration

The Supplier shall ensure that all devices used to measure a recorded characteristic that verifies that the Product meets a specification are compliant with ISO17025. Any Supplier that cannot demonstrate this accreditation must apply to the GKN Certification Manager (details of whom will be supplied to Supplier upon request) with full details of the Supplier's own method of qualification and await GKN's approval before continuing with manufacture. The Supplier shall be solely responsible for any delays in production as a result of its failure to obtain GKN's prior written approval and shall not be entitled to claim that a delay or refusal by GKN in providing its approval discharges to the Supplier from the performance of its obligations under the Agreement and/or this SAM.

All devices shall have a suitable means of identifying its calibration status to the user. For example this may be in the form of a sticker affixed on the device stating a calibration expiry date (such as 'DO NOT USE AFTER...').

All devices used in the calibration process shall have a unique identification reference number that is kept within a database which accurately records the device calibration history.

The Supplier shall record the calibration device identification reference number against the measurements taken during the process. Unless GKN otherwise agrees in writing, it is mandatory to record each calibration for KC measurement results. The Supplier shall upon request provide GKN with this information and any other information that GKN may require in order to verify the calibration tests.

7.9 MSA

The Supplier shall ensure that any devices that are used to measure KCs shall be subject to an MSA that determines its ability to measure the following specific characteristics:

- Device:
- Qualifications of relevant Supplier Personnel;
- Part; and
- Environment.

The Supplier shall comply with the following standards as a minimum requirement:

- (a) ASTM E2782 –Standard Guide for MSA; and
- (b) Minitab Problem Solving & Data Analysis



The results of an MSA shall be assessed by GKN and the Supplier will be required to take actions to improve where it achieves a result of GR&R >10%. The Supplier shall not proceed until all actions are completed and a GR&R rate of ≤10% which has been ratified by GKN Personnel in the Quality department and who confirm GKN's approval in writing to the Supplier. The Supplier shall be solely responsible for any delays in production as a result of its failure to obtain GKN's prior written approval and shall not be entitled to claim that a delay or refusal by GKN in providing its approval discharges the Supplier from the performance of its obligations under the Agreement or the SAM. GKN may but is not obliged to accept a GR&R that is ≤30% where the device is not being used to control a KC and where GKN confirms in writing to the Supplier that such a rate is acceptable. This will be considered an exception. The Supplier shall upon request provide GKN with such information and any other information that GKN may require in order to verify the MSA tests.

The Supplier shall ensure that any Supplier Personnel conducting any inspection and tests are competent and have obtained adequate training in order for them to perform the tasks required of them to allow Supplier to meet its obligations hereunder and under the terms of the Agreement. The Supplier shall ensure that it maintains a record of all such training in order to demonstrate compliance with this SAM. Copies of such records shall be supplied to GKN upon request.

7.10 Part Identification, Traceability & Counterfeit Part Prevention

The Supplier must ensure that GKN is able to identify the origin of all parts that form part of or are used in the supply of the Products. GKN should be able to identify the origins of such parts even after any processes are carried out. The final part identification format will be defined in GKN or OEM specification(s) referenced in the design data or other supporting documentation.

The Supplier shall have a counterfeit detection process for all Products supplied to GKN.

The Supplier must upon request supply to GKN all component certifications from an approved source. If evidence of supply chain traceability to an approved source is not available, the Supplier must notify GKN immediately and obtain authorisation from GKN prior to purchasing and incorporating the Product or any such component in its manufacturing process.

Where GKN identifies, or reasonably suspects a Product (or any part thereof) at any of its own or customer's sites to be a counterfeit part then GKN shall isolate the counterfeit part and the Supplier shall immediately replace it with a part that can be traced to an approved source. Such replacement shall be at the sole cost to the Supplier.

The counterfeit part will be quarantined until the Supplier arranges collection or destruction of such part in accordance with this SAM. Suspect or confirmed counterfeit parts will not be returned to the Supplier except under controlled conditions which would preclude the resale or re-introduction of the counterfeit part into the supply chain. This means that where GKN agrees to return the counterfeit parts, it will, at Supplier's cost, destroy the part to prevent its reintroduction into the supply chain before the Supplier collects it.

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Class I Parts shall have detailed traceability in accordance with all applicable laws and/or regulations including the latest EASA/FAA rules applicable at the time of the Supplier performing its obligations.

The Supplier shall clearly mark batch and/or serial numbers on both the Product being delivered to GKN and all associated certifying documentation. Where possible, batch numbers of fasteners shall be recorded against any supplied assembly to aid in any traceability event.

Without prejudice to any other requirements which the Supplier is required to meet, in order for the Supplier to meet its traceability requirement, a Supplier must be able to demonstrate the following to GKN:

- (a) operations performed on a Product;
- (b) consumables consumed in processing;
- (c) details of the operators that performed activities in connection with the Product; and
- (d) raw materials involved in the certifying of the Product.

Where GKN issues a Specification which states that data matrix markings are utilised, such data matrix markings shall comply with the requirements of AS/EN9132 – 'Quality management systems — Data matrix quality requirements for parts marking'.

All part marking is required, as a minimum, to be tested and validated as being legible after exposure to:

- Aerospace hydraulic fluid;
- Kerosene; and
- Methyl Ethyl Ketone (MEK),

(each being referred to as the "Fluids").

N.B. Where HS&E laws and legislation prevent the Supplier from using the above Fluids, then GKN and the Supplier shall agree suitable substitutes in order to avoid contravention of HS&E laws and regulations. The Supplier is responsible for ensuring its compliance with all HS&E laws and regulations. The Supplier shall ensure that all part identification shall comply with and match the statements made on any release documentation.

The Supplier shall pay particular attention to part identification during process mapping, risk analysis and control planning phases of a Product as the incorrect identification and documentation of parts accounts for a high degree of delay or rejection of Products on receipt across the aerospace industry.

7.11 Delivery certification

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All Products supplied to GKN shall have all the necessary documentation with them at the point of delivery. The elements that make up the documentation pack will depend on the Product being supplied. As a minimum, unless otherwise specified by GKN in writing, the Supplier shall provide the following documentation with any Product:

- EASA/FAA Form 1 (for POA organisations);
- Weight report;
- Traceability records (i.e. History Cards, mill certification etc.) (where applicable);
- FAI Forms;
- A CofC detailing GKN and PO Number, Supplier name, part number, quantity dispatched, country of origin, commodity code, a "kit list" if a kit of parts have been supplied in one box and under one part number, GKN part description, serial number/batch number, cure date, date of assembly or manufacture (applicable to items subject to ageing restrictions), and References (as applicable) to Concession's or Production Permit approved by GKN;
- Certification signed by an Authorised Release Signatory employed by the Supplier, that
 materials and/or process items comply in every aspect with the requirements of the
 PO and Specification contained in the PO;
- When a kit of parts is supplied, a kit list, duly stamped and signed by an Authorised Release Signatory must be included with the despatch documentation;
- For detail parts (fabrications or machining) that have been subjected to sub-contract operations or special processes, the CofC (or Kit List) must define the special process description, specification and the process source for each individual part.

Unless otherwise specified by GKN in writing, the form of the documentation shall be agreed between the Supplier and GKN.

To ensure an acceptable delivery, particular attention shall be given to the process controls that surround the creation of release documentation and the formal dispatch of Products. Final checks shall be performed by the Supplier to ensure that the documentation, Product identification and any other associated elements are in accordance with the requirements of this SAM and the Agreement. Unless otherwise agreed in writing by GKN, these checks shall be recorded in Product inspection records.

7.12 Record Retention

The Supplier shall have a systematic process for ensuring that all manufacturing and release records are retained in an archive facility that guarantees traceability appropriate to its importance. A full list of the relevant documents, their respective retention periods and storage conditions with which the Supplier is required to comply are contained in the GKN Work Instruction WI MB02 001 which can be obtained from GKN upon request. Failure by Supplier to request this document will not discharge the Supplier from having to comply with the obligations specified in it.

Direct tooling suppliers must store all tooling related documents (excluding tool drawings) for a minimum of 4 years. Tool drawings are to be retained for 12 months (after GKN acceptance).

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This requirement is secondary to any overriding requirements such as health and safety or contractual requirements that may be invoked.

Should technical data (E.G. intellectual property) be withheld by the supplier, it will be the supplier's responsibility to retain this information in line with any legal or end customer requirements.

7.13 Storage Conditions for Archived Documents

In order to protect the aforementioned documents, the Supplier must ensure that storage areas are protected against fire, water damage or other physical risks of loss or damage.

The Supplier must keep all documentation in connection with the Agreement and GKN confidential and unless otherwise agreed in writing by GKN, the Supplier must not share such information with any third party without GKN's prior written consent. To ensure security and confidentiality of data, storage conditions shall only allow authorised persons access to archived documents. Archived original documents shall be physically removed from the archive only if their removal is required for disposal or in case of legal dispute, only copies shall be retrieved in other circumstances. Any copies made must match the original document, be traceable and must not be amended.

The Supplier shall have suitable procedures to ensure the adequate and effective control of all software and/or electronic data or other information that is used for or provided by GKN for the purpose of design, manufacture, or inspection of all Products supplied to GKN. Such procedures must be adequate to protect such information/ software and/or data from an actual cyber-attack or a threat of such attack.

7.14 Product Safety

Product safety is defined as "The state in which a product is able to perform to its designed or intended purpose without causing unacceptable risk of harm to persons or damage to property". (AS9100 definition)

Why This Matters

Products manufactured by GKN and its supply chain will be fitted to flying aircraft, and any issue affecting Product Safety (no matter how small or seemingly important) can put the safety of aircraft strucutres at risk. Worst case would be catastrophic failure of an aircraft resulting in multiple fatalities and / or life changing injuries

Requirement

The supplier shall plan, implement and control suitable processes to satisfy Product Safety of either its products or services as per AS9100.

This should be achieved through,

Individuals awareness and individuals contribution to product safety

Determining the requirements of the products and services through operational planning and control

Establishing criteria for the acceptance of products and services through design verification Ensuring Product safety considerations exist throughout the entire product lifecycle

The cummunication and adequacy of external providers of their contribution to Product safety

Standards

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- (1) Follow processes / procedures correctly each and every time whether carrying out production or office-based support activities (*If in doubt....Ask*)
- (2) Ensure the appropriate storage and handling of product at all times
- (3) Provide accurate and forthright information regarding the status of product including the reporting of actual or potential non-conformities
- (4) Complete product safety briefings
- (5) Be aware that human factors such as environment, tiredness, complacency, distraction, etc. can have an adverse effect on product safety

7.15 Prevention of Counterfeit Parts

A counterfeit part is an unauthorised copy, imitation, substitute or modified part (e.g material part, component) which is knowingly misrepresented as a specified genuine part of an original or authorised manufacturer (AS9100 definition)

Why This Matters

- Counterfeit / suspect parts unlikely to meet specification requirements resulting in non-conforming parts that may not be fit for use in aircraft, and if undetected could have life or death consequences within the aerospace industry
- Rework and/or corrective action activities could be costly in monetary terms as well as disruption to production activities

Standards

Use the following strategy for the prevention of counterfeit / suspect parts.

- (1) Avoidance of receiving counterfeit / suspect parts by
 - > Only source parts from approved suppliers and ongoing monitoring of suppliers
 - Flow down of counterfeit parts prevention requirements to the supply chain
- (2) **<u>Detection</u>** of receiving counterfeit / suspect parts through
 - > Employee awareness, training, and responsibility
 - ➤ Robust goods receipt and inspection process to identify suspect / counterfeit parts (eg) unknown supplier, missing or incorrect documentation, poor quality and/or out of specification parts, incorrect part marking, packaging issues, etc.
- (3) Mitigation and Disposition to minimise the impact of counterfeit / suspect parts
 - If a part is identified as suspect or counterfeit, then
 - Quarantine all affected parts (including parts in stock and on assemblies)
 - Retain all associated documentation and notify the Procurement function so that they
 can inform the supplier and put future deliveries on hold
 - Conduct investigation to verify that the part is or is not suspect / counterfeit
 - ➤ If parts are confirmed as suspect / counterfeit then a plan will be initiated for the rework / replacement of all affected parts.

8. FOD

The Supplier shall have appropriate processes and process controls in place to ensure that FOD is prevented and that no FOD is present on any Product supplied to GKN. The Supplier



shall ensure that during the risk analysis process, it takes measures to prevent the likelihood of any FOD and implements and defines appropriate process controls.

A final check that FOD is not present should be conducted before supply of the Product to GKN. Any risks identified shall be recorded in inspection records.

9. Governance and Communications

The Supplier shall at all times:

- (i) ensure that GKN Personnel have the right of access to Supplier's Facility; and
- (ii) procure such access rights for GKN Personnel to the Supplier's Facility and the premises of the Supplier's sub-suppliers and sub-contractors,

in order to allow GKN to audit Supplier's compliance with the Agreement and/or the SAM.

The Supplier shall notify GKN Personnel in the quality department immediately of any changes in the Supplier's ability to meet the requirements of this SAM or the Agreement. Such notification shall not discharge Supplier of its obligations to meet such requirements.

The Supplier shall notify GKN of the individual designated as the Supplier's quality manager. Such individual shall be regarded as the principal link between the Supplier and the GKN Personnel in the quality department on all matters affecting the quality of the Product supplied to GKN.

The Supplier shall maintain an up to date list of those sub-contractors that GKN has approved as being ones that Supplier is able to use on GKN programs (including Special Process Suppliers). The list shall include details of the Supplier approvals and any approved processes. The Supplier shall make this list available to GKN on request.

GKN reserves the right to source inspect deliveries at the Supplier's Facility prior to shipment. The Supplier will be notified by GKN if source inspection is to be undertaken.

GKN shall be entitled to share any information which it receives from the Supplier in connection with the Agreement or this SAM with any third party, including a GKN Customer.

10. Tooling Specific Requirements

Any GKN Property supplied by GKN or GKN's Customer to the Supplier and used in the execution of the Agreement or this SAM shall remain, without limitation, the property of GKN and/or GKN's Customer (as applicable). The Supplier shall protect GKN's or GKN's Customer's title in the GKN Property and keep it free and clear of any liens, encumbrances, mortgages or other charges or rights of any kind whatsoever and the Supplier shall not do or permit to be done any act or thing which may jeopardise the title rights or interest of GKN or the GKN's Customer

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to the GKN Property. Supplier shall store GKN Property separately from the property of any other party. The Supplier shall treat GKN Property with care and professionally maintain and safely store it (at Supplier's own expense). At GKN's request, the exact place and type of storage must be advised to GKN and supported by appropriate proof. The Supplier shall insure GKN Property against loss or damage. The cost of insurance shall be borne by the Supplier and GKN must be expressly named in the insurance policy as a beneficiary.

In the event that GKN Property is damaged whilst on the Supplier premises the Supplier shall be responsible for repairing said GKN Property but only when the type and source of repair has been permitted by GKN.

Where the Supplier reasonably believes that normal wear and tear of GKN Property is likely to affect the quality of the Product, the Supplier must obtain GKN's prior consent as to the type and source of the maintenance before instructing a third party to perform any maintenance on the GKN Property where not already done, the Supplier shall upon obtaining prior written permission from GKN, attach to each item of GKN Property and maintain a metal fire-proof nameplate in a reasonably prominent position bearing the inscription "PROPERTY OF GKN" (or, where required by GKN identifying the item as "Property of" the relevant GKN Customer).

The Supplier shall ensure that any GKN Property including gauging is satisfactory for the purpose intended and any damage or error identified during periodic inspection by the Supplier is to be formally reported to GKN immediately. Such reporting shall in no way discharge the Supplier from any liability that it may incur as a result of any damage to the GKN Property.

The Supplier shall ensure that GKN Property is not removed from the Supplier's Facility without GKN's prior written consent. GKN Property may only be used by the Supplier in connection with the supply of Products to GKN. GKN or GKN's Customer (as the case may be) is entitled at any time to withdraw the right to use GKN Property from the Supplier with immediate effect. However, GKN will not do this contrary to any existing contracts between the GKN and the Supplier on the supply of ordered Products. If so requested by GKN, the Supplier shall hand GKN Property over to GKN immediately without any delay.

A register of all GKN Property must be kept by the Supplier and audits must be carried out by the Supplier and supplied to GKN upon request. GKN reserves the right to audit the GKN Property, tooling inventory and register kept by the Supplier.

11. Product Non-Conformance and Request for Change

Without prejudice to any other rights and remedies that may be available to GKN, whether at law or otherwise, all Products supplied by the Supplier to GKN shall be:

- fit for purpose;
- of high quality;
- free from defects (latent or actual);
- of a standard expected by GKN; and



• in accordance with any and all instructions, descriptions or specifications supplied by GKN (including the Specifications).

Where a Supplier identifies that any Product does not meet GKN's requirements, then it must notify GKN immediately by contacting GKN Personnel in the procurement function. The Supplier must not dispatch any non-conforming Products without GKN's prior consent. Such consent shall be without prejudice to GKN's rights and remedies in respect of a non-conforming Product.

Products that do not comply with the Specifications shall be considered as non-conforming and their acceptance must be subject to authorisation by GKN via the "Concession Process" as defined by GKN from time to time. Application for concessions must be made through the GKN Procurement Quality department who will forward them to the relevant design office. For the avoidance of doubt, GKN may, in its sole discretion, reject any such requests and/or impose any conditions it deems appropriate as part of its approved Concession Disposition.

Concession Disposition responses are the responsibility of the relevant design office. GKN shall return a copy of the approved Concession Disposition to the Supplier once it has sufficient time and information to properly evaluate the Supplier's request. The Supplier shall be solely responsible for any delays as a result of its failure to obtain GKN's prior written approval and shall not be entitled to claim that a delay or refusal by GKN in providing its approval discharges the Supplier from the performance of its obligations under the Agreement and/or this SAM.

Where GKN requires the Supplier to perform any repair or supply further Product as part of the approved Concession Disposition, the Supplier must perform such activities, delivering the Product to GKN. The Supplier shall document the actions taken to accomplish the required repair/ further work, including the re-inspection to verify the completion of the Product in accordance with the approved Concession Disposition in the Supplier's manufacturing records.

The Supplier shall not deliver Products to GKN with open concessions, i.e. unanswered concession applications. GKN will only consider shipment with open concessions in exceptional circumstances (but not without written authorisation from GKN in any event) and in such circumstance the Product shall be conspicuously tagged highlighting the condition.

The Supplier's CofC shall declare all applicable GKN concession numbers on delivery of non-conforming Product that has been accepted via approved Concession Dispositions. A copy of the approved Concession Disposition shall be included with the Supplier's delivery documentation.

Products that do not comply to the GKN's condition of supply requirements as referenced via the PO but do conform to the engineering design requirements (e.g. specific condition of supply requires pilot hole in lieu of drawing requirement for full size holes, or excess trim to be left on etc.), are considered as non-conforming to the condition of supply requirements and their acceptance must be subject to authorisation by GKN.

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Any request to change GKN documentation or requirements or the Product must be made in writing and before incorporating any such change, formal approval from GKN in writing must be received. The Supplier shall be solely responsible for any delays as a result of its failure to obtain GKN's prior written approval and shall not be entitled to claim that a delay or refusal by GKN in providing its approval discharges the Supplier from the performance of its obligations under the Agreement and/or this SAM.

Where a Supplier has design authority, any changes to Products controlled by Supplier drawings and incorporated into GKN assemblies/ systems must be subject to design review/ verification/ validation. GKN shall be notified of any such changes by the methods stated in the Agreement or Quality Plan.

Where Products are found to be non-conforming and need to be recalled, the Supplier shall contact GKN immediately. In this situation, the Supplier must provide ongoing co-operation and support until the issue has been resolved, including the immediate supply of replacement Products to support GKN's programme requirements. Supplier shall promptly provide to GKN any information requested by it. GKN shall be entitled to resolve the issues itself but all associated costs shall be borne by the Supplier.

12. Electronic Sensitive Discharge (ESD) Control

A GKN approved ESD programme must be in place where handling of electronic assemblies is involved. All soldering must be performed by qualified operators trained to a minimum of J-STD-001 or its equivalent.

13. Production Engineering

13.1 Process Planning

The Supplier shall ensure that all manufacturing processes are as efficient as possible. The Supplier shall establish and maintain, for the Product (or Product family), a document setting out the Supplier's manufacturing process from source of material through to completion of the part. including the following information:

- Physical flow;
- Information flow;
- Measuring points for delivery performance (on time delivery) and rejection rate;
- Customer demand (quantity per week or month and lot size) and delivery frequency;
- Reject rate for every process step;
- Lead time for every process step; and
- Bottleneck identification.

The Supplier shall provide an Industrial Process Layout equal to Production line layout (e.g. Spaghetti Diagram, which depicts the physical movement of parts through the process and



can highlight an inefficient process flow meaning that the lead-times are longer than they could be), mapping the overall Product flow from the receiving area to the shipping area.

13.2 Condition of Supply

GKN will purchase Products that meet a Specification. GKN may wish to amend the Specification. Where this right to amend is invoked, GKN will provide a 'Condition of Supply' document (the "CoS") that defines any special delivery requirements including packaging.

A CoS may include specific packaging requirements or standards. In any event, the Supplier has an obligation to use returnable or recyclable packaging where possible. All costs associated with such packaging shall be borne by the Supplier.

If bespoke packaging is required, the Supplier shall upon request from GKN design and develop all aspects including interior partitions. In all cases the packaging design must ensure that the Product performance and characteristics will remain unchanged during packing, transit and unpacking and be compatible with all material handling equipment. GKN should be consulted during the design process and requested to approve the design prior to use. Such approval shall not discharge the Supplier for having design responsibility for the packaging. The process of manufacturing packaging and any of its subcomponents must as a minimum comply with ISO 14001.

Any bespoke packaging designed by the Supplier must be manufactured in quantities that will support the GKN build rate. These quantities must also consider lead-time requirements to ensure continuous availability.

13.3 Key Characteristics

KC's shall be defined and continually controlled by the design engineering team and the process engineering team. KC's are to be controlled for both design KC's which are set out by the design engineering team and process KC'S set out by the process engineering team to a minimum standard of AS/EN9103. A document relating to the variation management of KCs shall be compiled by the Supplier for definition and control of all KCs unless otherwise agreed in writing by GKN.

For guidance:

- design KCs are those that are defined as such in the Specification, typically this will be by the use of a KC designation on the Specification with a GD&T definition of the actual KC and its tolerance; and
- process KCs are defined by the Supplier following detailed analysis of the process through a process map and risk analysis. These should be defined parameters that a process must meet in order to supply a compliant Product.

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KCs shall include documented controls and records of all results shall be maintained and reported as requested by GKN. The documentation of these controls shall define the following as a minimum:

- The characteristic to be controlled;
- The specification (including tolerances that apply);
- The frequency of measurement;
- The gauge/device used to measure it;
- Who is responsible for taking the measurement;
- Method of record; and
- Reaction if out of control.

The measurement and recording of KCs shall be continual, however sampling plans may be considered where statistical process controls can be demonstrated as meeting CpK>2.0. Sampling plans must be approved by in writing GKN and/or GKN's Customer prior to any reduction from continual process control.

The SPC shall be adopted for the control of KCs where possible. Where SPC is adopted it shall be used in accordance with the ISO 11462 standard.

13.4 Special Processes

Special processes are defined as those that are difficult to inspect during the process itself and thus the output is entirely dependent on good control of all process inputs. Examples of Special processes are defined to be:

- Chemical Processing (CP)—surface treatments, corrosion protection systems etc.;
- Coatings (CT);
- Composite materials (COMP);
- Conventional Machining as a Special Process (CMSP);
- Elastomer Seals (SEAL);
- Electronics (ETG);
- Fluid Distribution Systems (FLU);
- Heat Treating (HT);
- Materials Testing Laboratories (MTL);
- Measurement and Inspection (M&I);
- Nonconventional Machining and Surface Enhancement (NMSE);
- Non-Destructive Testing (NDT);
- Non Metallic Materials Manufacturing (NMMM);
- Non Metallic Materials Testing (NMMT);
- Sealants (SLT);
- Welding (WLD);
- Any processes identified as special processes in accordance with the NADCAP approval system; and



 Any additional special processes as mandated by GKN and/or GKN's Customers from time to time

A Supplier that uses these processes shall be expected to comply with NADCAP requirements and/or any other specific GKN or GKN's Customer requirements for each process. Exceptions to this may be approved by GKN in writing provided GKN is satisfied that appropriate process controls are in place and meet GKN's and/or GKN's Customer's requirements. In all cases process controls will be expected to be documented and any change to the documented control systems must be notified to GKN in accordance with the change process in this SAM <u>prior</u> to any change being made.

All special processes shall be subject to continual process controls. Sampling plans may be considered where statistical process controls can be demonstrated as meeting CpK>2.0. Sampling plans must be approved by GKN and/or GKN's customer prior to any reduction from continual process control.

13.5 Process Qualification

All special processes and other processes that GKN specifies shall be qualified. The Supplier must ensure that processes covering the following areas are qualified:

- Personnel;
- Materials;
- Equipment; and
- Inspection.

Processes that require qualification for any Product will be defined by GKN once the Supplier has submitted a detailed process map of how they intend to produce the relevant Products. GKN shall define any qualification requirements for each process defined in the Supplier's process map, typically this will be either a GKN, GKN's Customer or OEM process specification. Qualification shall be approved by GKN or GKN's Customers prior to commencement of production or supply through the relevant process.

In certain circumstances it may be accepted by GKN that Products may pass through processes that are not qualified but are in the process of becoming qualified (i.e. testing is underway but not complete). This will be based on the risk analysis and mitigation of those risks and confidence based on previous experience of both of GKN and the Supplier. However, any liabilities during this interim period are the responsibility of the Supplier and not GKN or GKN's Customers. Supplier shall not proceed with using processes that are not qualified without obtaining GKN's prior written consent.

A qualification plan shall be documented by the Supplier and submitted to GKN covering the following:

- List of certificates/approvals;
- List of material Products to be qualified (incl. qualification schedule);

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- List of manufacturing special processes and inspection process and test methods to be qualified per manufacturing site (including qualification schedule);
 List of processes certified and/or scheduled to be certified by NADCAP (including associated schedule); and
- FAI planning and scheduling.
 The Supplier shall list in the qualification plan all material/source couples to be qualified which will be integrated into the Product and the associated qualification schedule.

The implementation of any qualification process pursuant to this SAM shall not discharge the Supplier from any liability or responsibility relating to the Product under the Agreement and/or this SAM and the Supplier shall remain fully responsible for the Product.

14. Software / Electronic Data

The Supplier shall have suitable procedures to ensure the adequate and effective control of all software and or electronic data used for the purpose of design, manufacture, or inspection of all parts manufactured for GKN. If required by GKN, the Supplier shall provide GKN with evidence of the same and shall take any additional precautions or measures which GKN may request from time to time in order to safeguard such data.