

SUPPLIER QUALITY ASSURANCE REQUIREMENTS



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SUPPLIER QUALITY ASSURANCE REQUIREMENTS

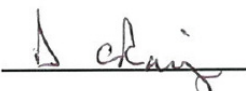
AMENDMENT RECORD

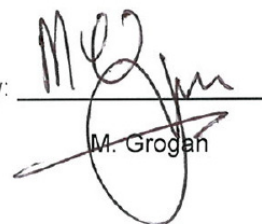
ISSUE	DATE	ORIGINATOR	REASON FOR CHANGE
1	Jan 95	I. Scott	Initial Issue
2	June 97	N. Hatch	Rewritten completely to include ISO requirements
3	Mar 99	J. Nash	Rewritten completely to address CAA and customer requirements
4	Mar 00	R.Wallace	Revised and rewritten
5	July 02	N.Pelletier	Revised and rewritten
6	Feb 05	P Higham	Revised and rewritten to cover the changes required for ISO 9001:2000, AS9100, EASA and FAA regulations.
7	Aug 05	P Higham	Addition of Supplier source change
8	April 06	N. Pelletier	Shelf life para 9.9.1.4 Annex A Procurement of raw materials Annex C deviation application form update.
9	Feb 09	N. Pelletier	Update to section 9.7.7 FAI. Update to section 12 Non-conforming product. and Annex D, E, F, G. Update to section 14.2 Control of quality records. Update to Procurement of raw material, Annex A. Update to Procurement of standard and proprietary parts, Annex B. Update to section 11. Design Update to section 10.2.3 Mandatory Occurrence Reporting Update to section 8.1 Management Responsibility Update to section 9.1 Review and Planning

10	Aug 11	N. Pelletier	Addition of 9.1.3.1 approved alternative list Update to 9.11.2 release documentation Update to 12.1.2 deviation applications email address Annex C update to reflect the latest version of deviation form CAS 303 Annex G update to reflect the latest version of RFC form CAS 108
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1.0 INTRODUCTION

- 1.1 This document identifies the quality assurance requirements for suppliers of goods and services to Meggitt Avionics (MAv), Fareham, Hampshire. The primary objective of this document is to ensure that specified product and service requirements are met which support customer expectations and maintain customer satisfaction at the highest levels possible.
- 1.2 This document compliments the requirements of ISO 9001:2008 in order to meet (AS EN 9100), MAv customers' quality assurance requirements, civil aviation regulatory requirements and includes additional requirements as specified by MAv.
- 1.3 Suppliers that have not been certified to ISO 9001:2008 are expected to have a quality management system that meets the requirements of this standard where it relates to the product being supplied to MAv.

2.0 SCOPE/APPLICABILITY

- 2.1 The requirements specified in this document apply to all 'controlled suppliers' listed on the MAv Controlled Suppliers List. This list is maintained by MAv QA, a 'controlled supplier' will have, 'Release in accordance with APP05 (at the current revision level)' stated on the quality assurance conditions section of purchase orders placed by MAv.
- 2.2 The requirements are applicable to all suppliers where a MAv Purchase Order has been placed to the extent stated on the Purchase Order. In the event of any conflict between the requirements of the Purchase Order and this document, the Purchase Order has precedence.

3.0 DEFINITIONS/ABBREVIATIONS

3.1 Definitions

3.1.1 Controlled Suppliers

Organisations which provide goods and services forming part of those products and services covered by the approved work scopes of the approvals held by MAv. Where supplier appears in this document, this shall mean controlled supplier unless otherwise advised.

3.1.2 National Aviation Authorities

UK – CAA
USA – FAA
Europe – EASA

3.2 Abbreviations

ISO	International Organisation for Standardisation
SPC	Statistical Process Control
FAI	First Article Inspection
NDT	Non Destructive Testing
CAA	Civil Aviation Authority
FAA	Federal Aviation Administration
NAA	National Aviation Authority
EASA	European Aviation Safety Agency
MAv	Meggitt Avionics
MAv QA	Meggitt Avionics Quality Assurance Department
MAv BMS	Meggitt Avionics Business Management System
EDM	Electro Discharge Machining
ECM	Electro Chemical Machining
ESD	Electrostatic Sensitive Device
UKAS	United Kingdom Accreditation Service
BS	British Standard
EN	European Standard
ASIC	Application Specific Integrated Circuit
FOD	Foreign Object Debris / Damage



4.0 ASSOCIATED DOCUMENTS


ISO 9001:2008	Quality Management System Requirements
AS EN 9100	Aerospace Quality Management System Requirements (based on ISO 9001)
EASA-21	Certification Procedures for Aircraft and Related Products and Parts.
EASA-145	Approved Maintenance Organisations
FAR- 145	Approved Maintenance Organisations
RTCA/DO-178B	Airborne Systems Software Certification
RTCA/DO-254	Airborne Systems Hardware Certification
BS ISO 2230:2002	Rubber Products, Guidelines for Storage
BS EN 100015	Protection of Electrostatic Sensitive Devices
BS 6001	Sampling Procedure for Inspection
AQAP 2110	NATO Quality Assurance Requirements for Design, Development and Production.
IPC/JEDEC	J-STD-033 Handling Packaging Shipping and use of Moisture/Reflow Sensitive Surface Mount Devices

5.0 SUPPLIER QUALITY RESPONSIBILITIES

- 5.1 Organisations holding ISO 9001 (AS EN 9100) series and Aviation Authority approvals are must be able to demonstrate quality management systems that are compliant with the relevant approval requirements. Where no such approvals exist, the supplier will be required to demonstrate compliance with the relevant requirements outlined within this document.
- 5.2 MAv will only enter into a contract for supply of products and services with those suppliers which demonstrate a capability to produce or supply products and services to MAv at the quality cost and delivery required.
- 5.3 MAv are committed to continuous improvement of business processes and performance and require that its suppliers demonstrate a continuous improvement process and adequate control over the key processes used in the supply of goods or services to MAv.
- 5.4 Suppliers must notify MAv of any significant changes in approval status, capability, location, key processes, systems or personnel which may affect the integrity of the product or service being supplied. Also if MAv identifies a process, system or individual as being key during the approval process then MAv's approval is required before any change can be made.

6.0 APPROVAL AND ASSESSMENT

- 6.1 An organisation selected to provide products and/or services to MAv shall be assessed as technically and operationally capable and that the supplier's Business Management System meets the requirements of MAv. This may take the form of an onsite visit and audit by the appropriate MAv authority dependant on perceived risk.
- 6.2 MAv Quality Assurance will issue a BMS questionnaire for completion by the potential supplier. The completed document will be reviewed by MAv QAS as the first stage of the assessment of the supplier's BMS. An assessment of the level of certification required and the product type supplied will determine the risk.
- 6.3 Prior to placement of contract a risk assessment will be carried out by MAv to determine the risk rating for the supplier and will be based on criteria relating to complexity and maturity of product, manufacturing processes and inspection criteria. The results of the questionnaire plus the risk assessment will determine the initial level of surveillance. Further surveillance will be determined by the Supplier's performance based on quality and delivery metrics, surveillance visit results and the risk rating.
- 6.4 MAv approval shall be confirmed prior to the placement of full production orders or prototype orders if deemed necessary by MAv. A 'controlled supplier' shall have a clearly defined work scope that shall not be exceeded without the written agreement of the MAv QAS. An approval may be amended or discontinued at MAv's discretion.



6.5 Reasonable access shall be made available to authorised MAV personnel engaged in surveillance or other investigative activities which may include examination of the BMS, products and processes and associated records. MAV customers and regulatory bodies may also require to conduct their own assessments at the supplier's premises and the supplier shall afford them the same access rights as MAV. Assessments may also flow down to include the supplier's sub-tier suppliers, as considered necessary and the supplier will ensure that access rights are granted to MAV representatives. **These requirements are standard terms and conditions of MAV Purchase Orders.**

6.6 The supplier will be assigned a 'review status' if the frequency, duration or severity of non-conformance to the MAV contract is considered unacceptable or if the supplier fails to implement effective action to correct non-conformances. Failure to implement timely effective corrective actions may result in the 'review status' progressing to the withdrawal of the supplier's approval and termination of any orders outstanding on the grounds of breach of contract..

7.0 SUPPLIER'S MANAGEMENT SYSTEMS

7.1 General Requirements

7.1.1 Where the supplier chooses to outsource any process that affects conformity the supplier must ensure that the requirements detailed in this document are cascaded to sub-tiers to ensure control over such processes.

7.2 Documentation Requirements

7.2.1 Access to the Management System must be available to all supplier personnel and the supplier will ensure all personnel are aware of the relevant procedures.

7.2.2 Where applicable a defined and documented set of processes and procedures must exist between production and the design functions to provide comprehensive controls.

7.2.3 Where parts or services being procured affect the conformance of the MAV product or service the supplier will develop a quality plan in support of such contracted work. Once approved by MAV QA it cannot be altered in any way without formal approval of MAV QA.

7.3 Control of Records

7.3.1 Records of the types identified in Para 14 relating to MAV products are to be retained in a manner that allows for identification, protection and retrieval for the periods defined.

7.3.2 Records must be made available for review by MAV customers and regulatory bodies as required.


7.3.3 If for any reason these records can no longer be retained by the supplier they are to be forwarded to MAV, at no cost to MAV.

7.4 Configuration Management.

7.4.1 The supplier shall establish and maintain a properly documented and maintained configuration management process appropriate to the product.

8. SUPPLIER'S MANAGEMENT RESPONSIBILITY

8.1 An established Quality, Safety and Environmental policy are available and that these policies reflect the requirements of MAV. Suppliers are encouraged to review and minimise the environmental impact of products & services provided. MAV endeavour to promote environmental best practice throughout the supply chain and intend to forge robust relationships in efforts to lessen its own supply chain environmental footprint. MAV actively encourages a transition to less deleterious substances where possible, without compromising the quality & safety of the product portfolio.

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- 8.2 The supplier will ensure that responsibilities and authority with regard to the supply of MAV product are clearly defined and communicated throughout the organisation.
 - 8.3 The supplier will ensure that objectives and measures relating to the product and the performance of related processes are established at relevant functions and levels throughout the organisation and that prompt remedial action is taken where these are not achieved.
 - 8.4 The supplier will ensure that the nominated quality representative for MAV business activity has the organisational freedom and authority to resolve matters pertaining to quality and performance.


9 PRODUCT REALISATION

9.1 Review and Planning

- 9.1.1 A review of the contract will be carried out prior to the supplier's commencement of work on the order. This review must include identification of risks (new technology, delivery, timescale etc.) and their evaluation and plan for mitigation.
- 9.1.2 If at any stage in the contract review or fulfilment of the contract there is ambiguity in the instructions, data, drawings or terms and conditions provided by MAV the supplier will raise these in writing with MAV purchasing department for resolution. **Verbal instructions from MAV must not under any circumstances be accepted by the supplier or its subcontractors, particularly, where such instructions affect any aspect of the purchase order or drawing requirements.**
- 9.1.3 When Product requirements are changed by MAV the supplier must ensure the change is formally reviewed and that relevant documents are amended and that relevant personnel are made aware of the change in requirements.
 - 9.1.3.1 **Approved Alternative List.** Many MAV drawings refer to specifications, standards and processes, these specifications, standards and processes are regularly updated and may be superseded or become redundant / obsolete. The task of identifying these changes and amending the drawings to reflect these changes is time consuming and for many Legacy products not cost effective. In order to expedite these changes MAV has issued a document, Data Sheet 124 "Approved Alternatives List" that identifies redundant / superseded specifications, standards, processes and details the equivalent / replacement that may be used to meet production requirements. The document is available at <ftp://www.meggitt-avionics.co.uk>. To access the site a user ID and password will be required which can be provided by your MAV buyer.
- 9.1.4 When the supplier plans the product realisation the specific processes, documents and resources relating to the product will be determined and may be reviewed by MAV as part of the approval process.
- 9.1.5 Unless already determined by MAV in the purchase order the supplier will agree the criteria for product acceptance with MAV and ensure that the defined verification, validation, inspection and test activities specific to the product are clearly identified.
- 9.1.6 The supplier will carry out resource planning to ensure adequate resources are available and continue to be available to fulfil the requirements of the order.

9.2 Purchasing

- 9.2.1 The Supplier is responsible for the quality of all products and services purchased from their suppliers, including MAV designated suppliers.
- 9.2.2 The supplier shall maintain a register of approved suppliers that includes the scope of approval and ensure that regular reviews are carried out to ensure the approvals are topical.


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- 9.2.3 The supplier shall have a process to review their supplier's performance and use the records as a basis for establishing the levels of controls to be implemented. It shall include defined actions against suppliers that do not meet the requirements and that the function having responsibility for approval of suppliers has the authority to remove or suspend approval.
 - 9.2.4 Suppliers shall where ever possible purchase items in support of MAV orders from a source certified by a recognised certification body (e.g. UKAS accredited) to an appropriate ISO standard. The supplier is responsible for all sub-tier procurement unless otherwise advised by MAV. An approved certificate of conformity or equivalent Aviation Authority certificate, providing traceability to the sub-tier supplier's batch, material etc. shall be obtained.
 - 9.2.5 When changing a supplier of parts manufactured to a MAV drawing, MAV are to be informed and the change must be risk assessed and managed to ensure continuity of quality and delivery. The supplier will advise MAV purchasing department of the proposed change and give MAV the opportunity to review the proposal before implementation.
 - 9.2.6 Specific purchasing conditions are shown at 'Annex A' for manufacturing sub-contractors who purchase raw material, and for stockists, distributors and proprietary part manufacturers at 'Annex B'.
 - 9.2.7 Suppliers shall endeavour to flow down terms from the purchase contract / purchase orders to sub-tier suppliers where appropriate.

9.3 Verification of Supplier Purchased Product

- 9.3.1 Where specific requirements are in place with MAV to have procured product verified, it shall be held prior to commencement of manufacture until the appropriate verification activity has been completed by MAV or their designated agents.
- 9.3.2 If the supplier wishes to proceed with production of procured items which do not have the required accompanying certification or verification results, build is at the supplier risk and a robust containment control process must be in place so that release of the completed product/assembly cannot occur without the receipt of outstanding certification / verification results from the sub tier source.

9.4 Production Control

- 9.4.1 The supplier will establish adequate process controls and develop control plans where key requirements have been identified to secure quality and consistency of output.
- 9.4.2 The supplier will establish processes which maintain accountability and traceability for all products during manufacture and subcontract (e.g. parts, quantities, split batch orders, nonconforming product).
- 9.4.3 Evidence will be maintained by the supplier that all manufacturing and inspection operations have been completed as planned, or as otherwise documented and authorised by MAV.
- 9.4.4 The supplier will operate an established process for the detection and removal of foreign objects.



9.5 Additional Requirements for Processing Organisations


- 9.5.1 The supplier will ensure that adequate processes and controls are in place to manage processing work and that the company or subcontractor holds the appropriate certification to undertake such work.
- 9.5.2 A processing organisation is defined as a supplier performing heat treatments, NDT in all its forms, metal finishing and plating, metal spraying, painting, shot / glass peening, welding and brazing, conformal coating, PCB manufacturing and component plating.
- 9.5.3 When the MAV purchase order requires a supplier or sub-contractor to carry out the complete requirements of MAV supplied drawings and specifications the following shall apply:
 - 9.5.3.1 For parts not previously manufactured, a FAI shall be completed as detailed in 9.7
 - 9.5.3.2 Parts sent for processing to a lower tier processing source shall be under the cover of the sub-contractor's purchase order and the MAV requirements shall be complied with.
 - 9.5.3.3 Parts returned from a lower tier source, shall be under the cover of a certificate of conformity clearly describing the process used.
- 9.5.4 Welding and NDT shall only be carried out by personnel appropriately qualified to nationally recognised standards. Civil Aviation requirements concerning the use of qualified welders for aircraft parts shall apply where civil aircraft work is undertaken.
- 9.5.5 NDT techniques shall be approved by a PCN Level 3 qualified person for UK suppliers and a recognised equivalent for non-UK suppliers.

9.6 Computer Aided Manufacture and Software Control

- 9.6.1 Software generated or procured by the supplier for computer aided manufacture or inspection, shall demonstrate a disciplined approach to software quality assurance techniques which shall include formal definition of software standards, configuration control, testing and acceptance requirements.
- 9.6.2 The supplier's procedures and disciplines shall ensure that only authorised versions of software are available for use within the manufacturing / inspection departments and that a secure back-up of programs is maintained.
- 9.6.3 Where product contains user loadable or embedded software / firmware including software embedded within electronic hardware devices, i.e. ASICS, the BMS shall include procedures and instructions which satisfy the agreed airworthiness requirements i.e. RTCA/DO-178B, for software design, development, delivery and support.
- 9.6.4 Advice and assistance can be obtained from MAV Quality Assurance on such requirements.

9.7 First Article Inspection

- 9.7.1 The supplier shall conduct a First Article Inspection (FAI) that meet the requirements of AS 9102 on:
 - 9.7.1.1 A component from the first production batch of a new product.
 - 9.7.1.2 A component from the first batch produced by a new supplier.



9.7.2 The FAI requirement once invoked shall continue to apply even after initial compliance. Partial or complete re-accomplishment of the FAI for affected characteristics is required for the following events (ref AS9102 para 5.2):

9.7.2.1 A change in the design affecting form, fit or function of the part.

9.7.2.2 A change in manufacturing source(s), processes, inspection method(s), location, tooling or materials with the potential of affecting fit, form or function.

9.7.2.3 When required as part of corrective action for a part number with repetitive rejection history (typically, a part with three repeated rejections or as required by MAV).

9.7.2.4 A change in numerical control program or translation to another media.

9.7.2.5 A natural or man-made occurrence which may adversely affect the manufacturing process.

9.7.2.6 A lapse in production for two years or as specified by customer.

9.7.3 All components subject to FAI are to be clearly identified to an FAI Report which shall accompany the product on delivery. If the report is not available on delivery, the product to which it applies will be held at MAV goods inwards inspection area.

9.7.4 The FAI Report shall provide evidence that the component complies 100% with the requirements of the Drawing or test/process schedule, or other requirements as specified by the purchase order. A FAI Report should be compiled ensuring completion of all elements detailed on the Supplier FAI Completeness Checklist, Annex E.

9.7.5 The Report shall:

9.7.5.1 Record dimensions, test results and other features with reference to the drawing / specification requirement.

9.7.5.2 Define where applicable the manufacturing process and controls.

9.7.5.3 Relate to the identified component, which the FAI has been conducted.

9.7.5.4 Be accompanied with certificates of conformity for the raw material and any lower tier processes.

9.7.6 Sub-tier suppliers shall produce an FAI report when required. The MAV supplier should retain a copy of this report.

9.7.7 Changes to the production process, production equipment, tools and programs shall be captured and verified by delta FAI.

9.7.8 The FAI is not complete until all non conformances affecting the part are closed and associated corrective actions are implemented. The FAI shall be repeated for the characteristics which do not conform and new results shall be recorded.

9.8 Product Identification And Traceability

9.8.1 Documented controls are required where acceptance authority media are used e.g. stamps, electronic signatures, passwords.

9.8.2 All materiel used in the manufacturing of a product shall be traceable to a level as agreed with MAV QAS. As a minimum this shall be to the reference number of the goods received documentation received by the supplier. The requirements of Annexes A and B also apply in providing the traceability required.



9.9 Preservation of Product

9.9.1 Where applicable in accordance with product specification or MAV requirements, provisions shall be made for:

9.9.1.1 The prevention, detection and removal of foreign objects.

9.9.1.2 Special handling for sensitive products.

9.9.1.3 Marking and labelling including safety markings.

9.9.1.4 Shelf life control and stock rotation. The supplier will ensure that lifed items such as paint, adhesive etc., at the time of delivery to MAV, shall have no more than one quarter of the manufacturer's recommended shelf life expired and must apply 'First in First Out' principles when issuing stock.

9.9.1.5 Product deterioration during storage.

9.9.1.6 Special handling for hazardous materials.

9.10 Inspection

9.10.1 The supplier will ensure that environmental conditions are suitable for calibrations, inspections measurements and tests being carried out.

9.10.2 The supplier shall notify MAV QA in the event of any calibration failures that may affect any products previously supplied. Products affected by serial number or batch reference shall be identified.

9.10.3 The supplier shall carry out 100% in-process inspection of all individual manufacturing operations unless a sampling process has been formally agreed with MAV QA. A Final Inspection shall be performed on all products in order to verify conformance with the requirements of the contract.


9.11 Release Documentation

9.11.1 All supplies submitted to MAV shall be accompanied by a recognised Certificate of Conformity or a National Aviation Authority 'approved release certificate' where the supplier holds the appropriate approvals. Such documents shall be signed by approved personnel as included on the supplier's authorised signatory list.

9.11.2 As a minimum a Certificate of Conformity shall include a statement confirming that purchase order requirements have been complied with. The Certificate shall contain particulars which provide traceability both to work carried out and to the original source of manufacture, **including the ordered MAV part number, revision status and any applicable change notes and/or deviations**. This includes the source of self-procured raw materials, lower tier manufacture and processing, NDT, proprietary and standard parts. Appropriate 'release certification' from the supplier's sub-tier sources should be readily available for review as required by MAV QA.

10 **MANDATORY OCCURRENCE REPORTING**

10.1 Mandatory Occurrence Reporting is a civil aviation regulatory requirement under the Air Navigation Order. The regulations require that the CAA be advised within 72 hours of being discovered, any incident, product defect or malfunction of a hazardous or potentially hazardous nature, which could endanger aircraft, aircraft occupants, or any other person or property.



10.2 The supplier's Quality Manager shall inform the MAV Quality Manager immediately a situation is discovered which could have such an effect. Such matters will be referred to the MAV Airworthiness Board for consideration. Matters for reporting may vary but the following situations should be advised to MAV:-

10.2.1 Non Conforming/Defective Item or Material -The supplier notes a non-conformance or defect in an item or material prior to supply and it is believed a similar non-conformance may exist in items or materials previously supplied to MAV or direct to a MAV customer.

10.2.2 Repair and Overhaul - The supplier carrying out repair and overhaul identifies a defect or occurrence and considers that items containing similar defects may have been previously supplied to MAV or direct to a MAV customer.

10.2.3 Information for External Sources - The supplier has been advised that items or materials to them contain non-conformances that have remained undetected until now and these items or materials have been shipped to MAV or direct to a MAV customer.

11 DESIGN AND DEVELOPMENT (WHERE APPLICABLE)

11.1 Planning

The supplier shall plan and control design and development of product. During the planning phase the supplier shall determine and agree with MAV:

- a) The design and development stages.
- b) The review, verification and validation that is appropriate to each stage.
- c) The responsibilities and authorities.

The supplier shall manage their interface between different groups involved in the design & development to ensure effective communication and clear assignment of responsibility. Planning output shall be updated, as required as the project progresses.

11.2 Inputs

The product requirements shall be documented and they shall include the following aspects:

- a) Functional and performance requirements.
- b) Statutory and regulatory requirements.
- c) Requirements essential to product and where applicable, information derived from previous similar designs.

These inputs shall be reviewed for adequacy, completeness, and that they are unambiguous and do not conflict with each other.

11.3 Outputs

The outputs shall be provided in a form that enables verification against the inputs and shall be provided to MAV for review and approval prior to release.

The outputs shall meet the following criteria as a minimum:


- a) The input requirements.
- b) Where appropriate provide information for purchasing, production and service provision.
- c) Contain or reference product acceptance criteria.
- d) Specify characteristics of the product that are essential for its safe and proper use.

11.4 Reviews

At suitable stages systematic reviews shall be performed.

- a) To evaluate the design to ensure it meets its requirements.
- b) To identify any problems and propose necessary actions.

Participants in such reviews shall include representatives of functions concerned with the design being reviewed and representatives of MAV as required.



The records of reviews and any actions arising shall be recorded.

11.5 Verification

Verification shall be performed to ensure that the design outputs have satisfied the design inputs. Records of verification results and any actions shall be maintained.

11.6 Validation

Validation shall be performed in accordance with the agreed project plans. Validation is to ensure that the resultant product is capable of meeting the requirements for the specified application. Validation shall be completed prior to the delivery or implementation of the product.

Records of validation and any actions shall be maintained

11.7 Control of Design and Development Changes

All changes shall be identified and records maintained. The changes shall be reviewed, verified and validated and approved before implementation. The review of changes shall include impact analysis on other constituent parts.

Record of review of changes and any actions arising shall be maintained.

Details of changes effecting fit, form, function, reliability, cost or external appearance are to be passed to MAV for acceptance prior to implementation. Details of changes which do not effect these factors should be communicated to MAV for review only. All change information should be addressed to the MAV Project Management contact.

12 NONCONFORMING PRODUCT

12.1 MAV Proprietary Parts – Deviation Applications (Concessions & RFC Production Permits)

12.1.1 Parts which deviate from the requirements of a MAV supplied drawing/process, spec/test schedule etc. shall be considered “non-conforming”. Non-conforming parts shall be identified and segregated from conforming parts and quarantined. Formal agreement to accept non-conforming parts by Meggitt Avionics shall be obtained via a Deviation Application.

12.1.2 Non-conforming parts shall be submitted on a MAV Deviation Application form (Annex C CAS303), obtainable from the MAV website or purchasing contact. Alternatively the suppliers own format can be submitted provided that this has been accepted by MAV Quality Engineering. Deviation Applications shall be emailed to **MAV-DeviationApplications@meggitt.com** or if email is not available shall be faxed to the purchasing contact.

12.1.3 Only one part number can be submitted on each Deviation Application.


12.1.4 The deviation application process interfacing with the supplier is detailed in Annex G.

12.1.5 Classification of Deviation Applications:

Deviation Application – Permit (prior to the event), Concession (after the event)

A document detailing deviation from drawing requirements which is isolated to a specified quantity or time period and would not lead to a permanent drawing change.

RFC Production Permit



A document detailing deviation from drawing requirements which may occur until a permanent drawing change is implemented.

12.1.6 Approval / Rejection of Deviation Applications:

Notification of approval or rejection of deviation applications shall be emailed to the supplier via Purchasing from the relevant Quality Engineer who has signed the deviation application. If the deviation is classified by MAV as a concession then CAS 303 (Annex C) shall be returned. If the deviation application is classified as a RFC Production Permit then CAS 108 (Annex F) shall be returned which will reference the provisional deviation number.

12.1.7 If the deviation is approved, the non-conforming parts or parts subject to RFC permit change shall be clearly identified with the deviation number. This number shall be recorded on release documentation (C of C) delivered to MAV. PCB assemblies shall be clearly labelled with the applicable deviation number / RFC permit number(s) as close to the part number label as possible.

12.2 Salvage

12.2.1 Parts shall not be salvaged or re-claimed by plating, welding, plugging, electronic components etc. unless authorised by an appropriate repair scheme, approved by MAV Production Engineering.

12.3 Supplier Proprietary Parts - Deviation Applications (Concessions & RFC Production Permits)

12.3.1 Unless contractually specified only Major deviations which affect Form, Fit or Function shall be submitted to MAV for acceptance.

12.4 Scrap Procedure

12.4.1 Non-conforming parts that are deemed beyond economical repair or are sentenced as scrap shall be disposed of such that they can NEVER be salvaged or re-configured as fit for purpose.

13 CORRECTIVE & PREVENTATIVE ACTION

13.1 Non-conforming parts found at MAV will be subject to a Fault Report/Rejection Notice, Annex D. Any non-conforming part returned to the supplier shall not be re-submitted without reference being made to the original rejection, together with a statement on the Rejection Notice showing the root cause of failure, the action taken to avoid recurrence and the timescale required to apply the remedy.

13.2 The Fault Report/Rejection Notice (Annex D) shall be completed by the supplier and returned with the repaired item copied to MAV Quality Assurance department within thirty (30) days, or an agreed mutually acceptable date before the expiry of the thirty days. Refer to 12.2 for rework scheme approval.

13.3 The supplier shall ensure that any remaining stocks at their facility or work in progress are not similarly affected and shall take all necessary action to avoid a recurrence.

13.4 The supplier shall maintain records and regularly analyse these to identify problems and trends, with root cause identified, and the necessary corrective action taken to prevent recurrence.

13.5 The supplier shall respond within agreed timescales to any non-conformance recorded by MAV QAS as a result of an on site audit/surveillance visit. Such non-conformances shall be documented on a MAV Corrective Action Request (CAR) form.



14 CONTROL OF QUALITY RECORDS

- 14.1 Quality Records shall be maintained to demonstrate achievement of product or service conformance and the effective operation of the BMS with regard to product supplied to MAV. These records shall include as a minimum, contract review records, materiel certificates of conformity, manufacturing planning layouts, inspection / test reports including FAI reports, calibration data, audit reports, non-conformance and corrective action data, SPC results, calibration records which include ESD special area maintenance checks, personnel training and competency records and evidence of sub-tier supplier selection and control.
- 14.2 Records shall be retained for a minimum of 10 years, although records associated with product design and certification must be held for **the flying life of the aircraft plus 2 years**. No Records pertaining to MAV proprietary products shall be destroyed without permission from MAV Quality Department.
- 14.3 If the supplier is not in a position to continue to retain these records they must be offered to MAV for retention.
- 14.4 Ensure records available for evaluation by MAV on request.

15 MEASUREMENT ANALYSIS AND IMPROVEMENT

- 15.1 Where identified by MAV the supplier shall maintain records and provide reports to MAV relating to the quality of the product. This is to include:
 - 15.1.1 Data on product returns with the associated root cause.
 - 15.1.2 Records of in process failures and corrective actions taken to address these failures.
 - 15.1.3 Products that have been subject to multiple returns are to be identified on the corrective action.
- 15.2 SPC techniques should be used where appropriate to control manufacturing processes. All personnel who perform SPC shall be demonstrated as having completed appropriate training and are competent in SPC working practices.
- 15.3 Inspection sampling techniques shall be in accordance with BS 6000, variables or attributes or an alternative as agreed with MAV QAS.

PROCUREMENT OF RAW MATERIAL

Purchase Orders for Raw Material

Bar, sheet and tube must be ordered with the required metallurgical (including heat-treated state) condition of the material clearly stated. Orders for forgings and castings must state the requirements of the drawing and related specifications where applicable.

Where material for parts requiring “in stage” heat treatment is ordered, provision for heat treatment test pieces must be allowed for in accordance with the relevant heat treatment specification or drawing.

Sources of Supply

Raw materials may only be purchased from recognised sources of supply for aerospace applications holding approval to ISO 9001.

Sources of supply shall provide a copy of the Mill mechanical test and chemical analysis report.

Material Reports

Copies of mechanical test and chemical analysis reports relating to the melt reference allocated by the Mill shall be obtained and the constituent elements and mechanical performance checked for compliance against the material specification.

The supplier shall periodically validate the test reports for raw material, this shall be achieved by independent verification of sample raw material.

Note: Where the sub-contractor processes raw materials, copies of the material's mechanical/chemical test and analysis reports and the supplier's release certificate shall be retained and forwarded to MAV when requested, with the completed parts.

Suppliers shall not place purchase orders for forgings and castings on any source unless advised by MAV, that all sample proof inspections have been completed and are satisfactory.

Test Pieces

MAv shall identify the requirement for test pieces and the required mechanical and chemical tests. In addition the supplier may highlight the need for tests which shall be in accordance with the following criteria.

Test pieces must be identified with the following:

- Unique Material Batch number
- Material Specification and condition
- Test piece number
- Heat / melt number

Test piece records must be held which include the following information:

- Test Piece number
- Component Part number and description
- Incoming Release note number
- Goods received number
- Material Specification size and condition
- Batch quantity
- Routing / shop traveller serial number
- Grain flow or principle axis orientation

Test pieces and component parts will be processed by MAv approved sub-contractors. After processing, test pieces shall be examined and tested by a UKAS approved test house or MAv QAS approved source.

A record of the results will be retained by both the sub-contractor and his sub-tier process sub-contractor.

All test piece failures are to be referred to MAv QA for investigation. Confirmation of test piece results together with the test certificate number shall be recorded on the manufacturing documentation.

ANNEX B

PROCUREMENT OF STANDARD AND PROPRIETARY PARTS

Procurement

All standard and proprietary parts shall be supplied in accordance with the requirements of the MAv purchase order and shall comply with published specifications.

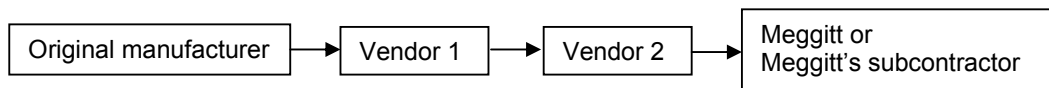
All standard and proprietary parts ordered by MAv part number shall be in accordance with the MAv drawing or specification.

Traceability

Vendors are responsible for ensuring that standard parts are demonstrably traceable to the original source of manufacture.

Parts supplied direct from the original manufacturer shall be accompanied by the manufacturer's certificate of conformity.

Parts may be procured from a source which has no more than one other vendor between themselves and the original manufacturer with the vendor's certificate of conformity making direct reference to the original manufacturer's batch number. For example:



In exceptional circumstances (such as obsolescence) MAv will consider acceptance of components which can be sourced without a trail of traceability providing that the original manufacturer has verified that the parts are genuine and fully meet the applicable specification.

Components can be sourced with a broken trail of traceability providing that they are verified by an independent UKAS accredited test house as meeting the applicable specification.

Life and storage of:

PCB bare boards

Shall be vacuum packed with desiccant and indicator and shall be no older than 2 years unless otherwise agreed.

Electronic components

Shall be stored in accordance with J-STD-033 current issue and shall have a date code which is no older than 2 years unless otherwise agreed.

ANNEX C

DEVIATION APPLICATION (side 1 shown for example)

Meggitt Avionics

MEGGITT AVIONICS LTD BARNES WALLIS RD, FAREHAM HANTS PO15 5TT DEVIATION APPLICATION (COMPLETE CONCESSION OR PRODUCTION PERMIT SECTIONS BELOW AS APPROPRIATE)	Serial No:			Page 1 of 2
	Customer Deviation Ref: (attach evidence)			
	Customer Name			
	Raised By:			
	Date:			
	Supplier Deviation Ref:			
Part No:	Description			
Drawing Issue:	Structure Issue:			
End Product Part No:	Drawing Issue:		Structure Issue:	
CONCESSION		PRODUCTION PERMIT		
Reject Note No:		RFC No:		
Quantity	Batch Size	Expiry Date:	Batch No: or Serial No's	
DESCRIPTION OF DEVIATION				

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ANNEX D

SUPPLIER REJECT NOTE

<u>FAULT REPORT / REJECTION NOTICE</u>			
Parts 1 and 2 to be completed by the supplier and returned with the goods within 30 days. (Attach additional sheets if required)			
Supplier.	Rejection Notice No.	DATE	
PURCHASE ORDER	GOODS RECEIVED NOTE	SUPPLIERS C OF C / ADVICE	
DRAWING No. / SPEC.	DESCRIPTION	QTY. DELIVERED	QTY. REJECTED
REJECTION CATEGORY :		BUYER :	
REASON FOR REJECTION :			
<u>PART 1</u> CORRECTIVE ACTION (TO CORRECT PROBLEM).			
<u>PART 2</u> ROOT CAUSE PREVENTATIVE ACTION (TO PREVENT RECURRENCE).			
ACTION FOR NON-CONFORMING MATERIAL		QUANTITY	LIABILITY:
RETURNED			ACTIONED BY
RETAINED		<input type="checkbox"/>	REPLACEMENTS NOT REQUIRED
		<input type="checkbox"/>	REPLACEMENTS ARE REQUIRED PLEASE ISSUE A PRICED CREDIT NOTE QUOTING THE NUMBER OF THIS REJECT



ANNEX E

SUPPLIER FIRST ARTICLE INSPECTION COMPLETENESS CHECKLIST

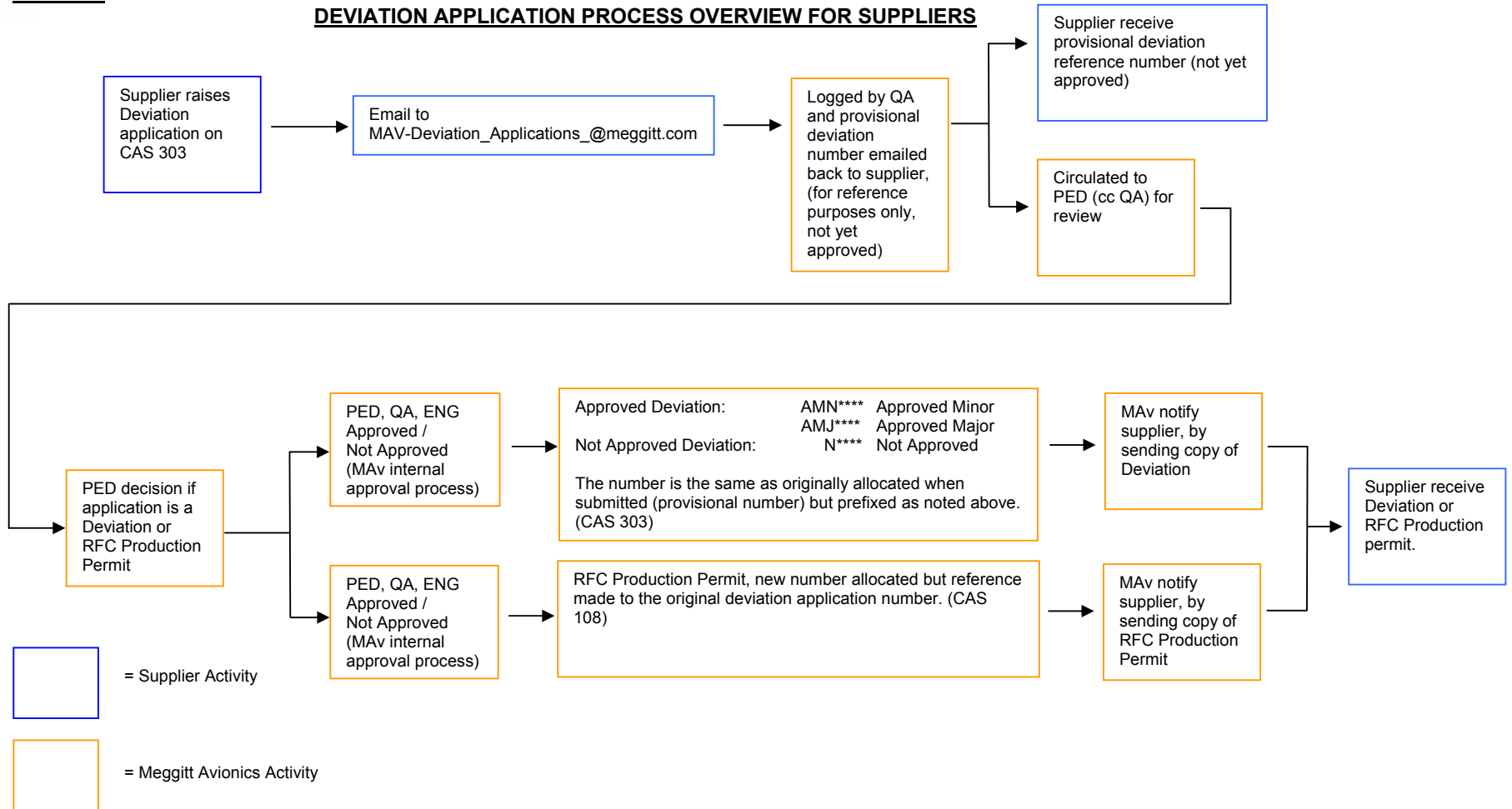
Ensure that all elements of this checklist are complete and the associated documentation is compiled to fulfil a First Article Inspection Report (FAIR) prior to submitting to MAV for approval. AS9102 FAI forms are preferred but a supplier may use their own forms as an alternative providing that they contain the same details. MAV AS9102 forms are available for use by the supplier upon request.

FAIR Elements	Completion check box
Release Sheet FAI summary contents list	
Form 1 <u>Part number accountability</u> List of all sub level drawn parts requiring FAI.	
Form 2 <u>Product accountability, raw material, special processes, functional testing.</u> Any specifications/processes or materials detailed on the drawing require mentioning.	
Form 3 <u>Characteristic accountability verification and compatibility evaluation</u> Record tolerances from the drawing in the requirements column. Including the measured results. All notes and dimensions must be referenced and validated. All measuring equipment must be recorded along with calibration expiry dates.	
Certificate of Conformity A copy of the release document / C of C confirming compliance against the MAV purchase order	
Material or Treatments C of C A copy of the sub-tier supplier release document / C of C	
Ballooned / marked up drawing All features on the drawing are to be captured on Form 3	
Parts List Structure / Bill of Materials	
Batch Route Card Completed manufacturing process document, operation sheet	
Test Reports Certificates or result sheets	
Deviations / Change Notes Concessions, Production Permits or RFC (request for change) permits	
Purchase order A copy of the relevant MAV purchase order	
MAV internal note A copy of the goods received document and C of C should be added to the FAI on receipt at MAV.	



ANNEX F

DEVIATION APPLICATION PROCESS OVERVIEW FOR SUPPLIERS



ANNEX G

RFC (Request for Change, side 1 shown for example)

MEGGITT

Meggitt Avionics

Sheet 1 of 4	REQUEST FOR CHANGE		No:	112687
Date:	Instrument Used on:		Customer Change Procedure to be followed	
03/08/2011	299472-0100		YES / NO	
Originator:			Customer:	
Mike Laws				
Cost Code:				
X				
Production Permit:	Instrument Description		Customer Approval	
YES	Cockpit Control Panel		Reference	Date
Part Number:	FROM	TO		
PTS299472-0100 Test Spec	Issue 1	Amend as per Marked up print		
Example				
REASON FOR CHANGE (Continue on separate sheet if necessary)				
<i>To bring test spec into line with production and correct errors in spec</i>				
Reason for Change Codes:				
A Production Easement	1 Supplier Request	4 Development Update (Certification Authority)	A2	
B Design Error	2 Production Request	5 Alternative Part		
C Design Improvement	3 Development Update (Commissioning)	6 Obsolete Part		
D Obsolete Process		7 Customer Request		
E Initial Issue				
Inc PR References:-	Enter PR References Here			
Attached MUP Files	MUP112687			

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