SUPPLIER QUALITY MANUAL

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1. Introduction:

1.1. Preface

BAE Industries, Inc. strives to meet customers and consumers highest expectations. Therefore, it is paramount that suppliers understand and meet the expectations outlined within this document.

This Supplier Quality Manual is fundamental to our joint partnership and growth. It defines the quality requirements for development, production and verification of delivered parts and services. BAE supports and develops teamwork with its suppliers. A clear definition of requirements and the implementation of communication at all levels generate working conditions that encourage open association with ideas and product solutions.

BAE expects that all suppliers keep to the fixed guidelines, which are part of each PURCHASE agreement. Suppliers are responsible for ensuring that their sub suppliers also fulfill these specifications.

As suppliers highly influence the performance of BAE, in addition to this guideline customer requirements are applied accordingly to them. BAE expects suppliers to develop their quality management system with the goal of conformity to Technical Specification IATF 16949:2016. Third party registration to IATF 16949:2016 or at a minimum, ISO 9001:2015 is required.

1.2. Purpose and Scope

The Quality Guideline for suppliers applies to all internal and external suppliers of prototypes, serial parts and services for BAE. This guideline forms part of all inquiries and orders. Suppliers' quality management system should be adjusted to international quality standard **IATF 16949:2016** and should be developed in accordance with regional requirements of customers, laws and national standards. This guideline supports the understanding of the special requirements of BAE.

2. Supplier Qualification:

2.1. Supplier Approval & Evaluation

BAE Purchasing maintains a list of suppliers that proved their ability to meet our expectations in the past. All materials for mass production and all services are only bought from the suppliers on the Approved Supplier List.

Suppliers on the list are required to undergo an initial Supplier Assessment and audit prior to being added to the Approved Supplier List. At the sole discretion of BAE, a self-assessment may be accepted until such time as the full assessment can be arranged. In addition, review audits may be conducted to evaluate the current state of a supplier's quality system or to verify progress toward stated goals. A typical cause for a supplier review audit may be insufficient performance. The kind of audit depends upon the deficiencies observed.

New suppliers', certified according to a minimum of **ISO 9001:2015**, can enter the approved supplier's list if:

- The evaluation carried out by Purchasing is positive.
- A BAE Supplier Assessment is successfully passed. Reference Supplier Assessment **(Ref. form P06.01F08)**
- The BAE Supplier Approval-Maintenance Form has been signed and distributed internally and to the potential supplier. Reference Supplier Approval Form (Ref. form P06.01F01)
- Dependant on the amount of business being sourced, the supplier may be required to provide evidence of financial stability.

If instances require, BAE shall audit the supplier's processes. Typical reasons may be launches of new products, start of production, after engineering changes, or insufficient performance of the supplier.

The supplier grants BAE as well as its customers the right to visit the supplier's to verify that sub-contracted products, the processes, and the services conform to specified requirements.

2.2. Supplier Selection

The selection of a supplier for a certain part or program is based on the "Approved Supplier List". For every project, a document has to be prepared showing the supplier's name; the supplier's manufacturing facility and the related part. Additionally, customer specific requirements are taken into consideration.

This document is signed by the purchasing, quality, engineering departments, and relevant plant personnel.

2.3. Supplier Development

BAE develops its supply base towards the IATF 16949:2016 standard. BAE is willing to support suppliers by giving the necessary information, clearly expressing our expectations and arranging meetings for exchange of knowledge and experience.

To meet the requirements of BAE, the supplier's quality management system must be based on *prevention rather than detection* of failures. For this reason, the use of process or design features to prevent manufacturing of non-conforming products is necessary. When potential sources of nonconforming units are identified by FMEA's, capability studies and service reports, these sources shall be addressed using mistake proofing methodology during the planning of processes, facilities, equipment and tooling as well as during problem resolution (see sections 4 and 7).

The employees are considered the most important resources of the supplier. BAE therefore requires its suppliers to develop their personnel through extensive training and use of motivation systems to encourage their continuous improvement.

3. Prototype / Pre-Approved Product Requirements:

3.1. Scope and Definition

The requirement applies to all Supplier prototype and pre-production product.

A prototype is an early sample or model built to test a concept or process. A prototype is often used as part of the product design process to allow engineers and designers the ability to explore design alternatives, test theories and confirm performance prior to starting production of a new product. Suppliers of Prototype / Pre-Approved Product are required to meet all preliminary design, drawing and performance specification by means of specific technical and production intent equipment where feasible unless directed otherwise by BAE.

All suppliers of Prototype / Pre-Approved Product shall provide and submit the BAE Supplier Shipment Inspection Check Sheet (Ref. document I07.04F01) with each shipment. Suppliers must also provide evidence of conformance including:

- Ballooned Print or Roadmap with corresponding points
- 3 pc dimensional layout including all Key- Product, Critical, Significant Characteristics,
- Material certification
- Coating certification and testing results
- Heat treat certification and testing results

All Prototype / Pre-Approved product shipments must be clearly identified using the Supplier Notification of Change Label if applicable **(Ref. Document I05.03F14).**

All Prototype / Pre-Approved Product shipped by Supplier without Inspection Package or found with a Non-Conforming condition (without prior written authorization) will be rejected by BAE and subject to Supplier DMR including associated debits.

The Evaluation and Disposition of All Prototype / Pre-Approved Product are at the discretion of the responsible BAE Engineering and Quality representative.

3.2 Procedure:

3.2.1 Quotation Requirements

If Component Prints and GD&T are not available when quoting parts, the following tolerances and requirements are to be used to quote the parts:

Stampings

Holes/Slots: true position & diameter RFS or MMC 0.2 max.
Profiles: profile of a surface 0.5 max.
Forms: profile of a surface 1.5 max.
Holes/slots: diameter +/- 0.05
Trim Edges 3.00 A-B-C (shear surface only)

Rivets, Cold Head, Screw Machine (turned)

Outer diameter: +/- 0.05
Shoulder Length: +/- 0.05
True position & diameter 0.15 max.
Surface Finish – Where otherwise not called out, should be: smooth, no striations, nicks, scale, excess coating, tool marks, galling or wear marks: Per industry standard.

Fineblank, Powdered Metal, (EDM)

Holes/slots: true position & diameter 0.1 max.
Profile of a surface 0.13 max.
Hole/slots: diameter +/- 0.03
Trim Edges 1.0 A-B-C (shear surface only)

Surface Finish – Where otherwise not called out, should be: smooth, no striations, nicks, scale, excess coating, tool marks, galling or wear marks: Per industry standard.

Surface Appearance

All metal parts are to be free of burrs and sharp edges.
All plastic components are to be free of flash and short shots.

Dimensions

All dimensions are to be determined using the math data and print provided.

Plastic and Rubber Components

Plastic and rubber components are to be free of flash, shorts, contamination, etc unless otherwise indicated on the print.

Coating (A Coat, E Coat, Phos & Oil, Zinc)

Must supply evidence of coating specification and performance specification conformance as per the drawing.

Heat Treatment

Heat Treated parts must comply with AIAG CQI-09 specification as well as any other customer specific requirements (i.e. FORD WHTX) Reference AIAG **CQI-09 manual**.

Special Processing

Galvanic plating processed parts must comply with AIAG CQI-11 specification as well as any other customer specific requirements Reference AIAG **CQI-11 manual**.

Special Coating

Specialized coating systems parts must comply with AIAG CQI-12 specification as well as any other customer specific requirements Reference AIAG **CQI-12 manual**.

Welding Systems

Welding processed parts must comply with AIAG CQI-15 specification as well as any other customer specific requirements Reference AIAG **CQI-15 manual**.

3.2.2 Design Requirements

Design Requirements apply to all plans, processes, and procedures required for compliance with the Design Process.

Components are to be manufactured to dimensions, tolerances and notes on the prints provided by BAE. If component prints and GD&T are not available when producing parts, the following tolerances and requirements are to be used:

Stampings

Holes/Slots: true position & diameter RFS or MMC 0.2 max.
Profiles: profile of a surface 0.5 max.
Forms: profile of a surface 1.5 max.
Holes/slots: diameter +/- 0.05
Trim Edges 3.00 A-B-C (shear surface only)

Rivets, Cold Head, Screw Machine (turned)

Outer diameter: +/- 0.05
Shoulder Length: +/- 0.05
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Welding Systems

Welding processed parts must comply with AIAG CQI-15 specification as well as any other customer specific requirements Reference AIAG **CQI-15manual**

3.2.3 Quality Requirements including Prototype

All parts received at BAE will be processed through BAE's Receiving Process and must meet all print dimensions within the allowable tolerances. Part dimensions that fall outside of these tolerances will be subject to rejection and cost recovery. Parts found to be defective will not be returned to the supplier and may be used by BAE. BAE will be allowed to be present at all part inspection activities conducted at the prototype or supplier location. Prototype suppliers will provide the necessary documentation per BAE's direction for each shipment. Any nonconformity must be detailed in the documentation and communicated to BAE prior to shipment.

3.3 Quality Requirements

Control plans for prototype material are required when deemed necessary by BAE. Please adhere to **IATF 16949:**2016 requirements – 7.3.6.2 & 7.4.1.1 and any applicable AIAG requirements.

4. Quality Planning:

Advanced Quality Planning (APQP) is the basis for the prevention of potential failures. The Advanced Quality Planning program covers the stages from development to mass production. It requires a cross functional team that includes all main departments such as Sales, Engineering, Production Engineering, Manufacturing, Purchasing, Tooling, Project Management, Material, Accounting and Quality Assurance. To support the BAE Quality Planning Process, supplier participation in PDT (Product Development Team) meetings are mandatory. The following chapters define the planning efforts to be taken by the supplier.

A plan must be developed showing the single steps, the related completion date and the responsibilities for necessary actions.

Supplier Feasibility has to be proven – a determination that a process, design, procedure or plan can be successfully accomplished in the required time frame.

Advanced Quality Planning is done in cooperation with the supplier's cross-functional team and is continuously checked for progress. In the case BAE does not participate however, the supplier is required to do this on their own and to have it approved and signed by BAE's appropriate employee in charge. The advanced quality planning may result in a quality agreement defining the most important characteristics and determining how they are to be checked and evaluated during mass production.

For details, see the AIAG Reference Manuals: Advanced Product Quality Planning (APQP) and Control Plan.

4.1. Specifications and Requirements

BAE provides the necessary information and engineering data for all inquiries to either potential or current suppliers.

The data includes this Quality Guideline, relevant BAE drawings, BAE specifications and technical terms of delivery (i.e. ***BAE Terms and Conditions***) as well as all other applicable Government regulations and standards which describe quality characteristics that must be adhered to. Such as "Key Product Characteristic", SC and or CC's.

Any additional relevant data shall be provided by the supplier.

During the Advanced Quality Planning stage, the supplier is to continuously check the engineering data with respect to completeness, relevance and correctness. The supplier is responsible for all product/engineering changes being reported to all relevant departments within the organization. These reports must correspond with all documents issued, such as instructions for manufacturing and quality. Suppliers must adhere to any current or new customer (OEM) designated pre or post-launch requirements (i.e. GP-12).

4.2. Process Flow Chart

A process flow chart is the pictorial description of the process plan from receipt of goods to production of goods and finally to their shipment. It is supplemented by short descriptions of the individual production steps, lists the manufacturing equipment and the various inspection points while showing the material flow. Process flow charts are the basis for FMEAs, inspection and Control Plans.

Important processes, automatic monitoring and inspection points must be identified, rated in the process FMEA regarding the existing risk and if necessary, safeguarded by appropriate methods specified in the Control Plan. Material labeling and material flow must be defined in such a manner that the processing of wrong materials and parts is impossible. During the pre-launch stage, a current and detailed process flow chart is to be consulted in all meetings on FMEAs, Control Plans and capability evidence must also be discussed.

All core team members' names and job title must be stated on the Process Flow Chart.

4.3. Feasibility Analysis

The feasibility analysis evaluates whether a requested part can be manufactured under mass production conditions per the descriptions and requirements in drawings and specifications.

The feasibility analysis is to be carried out by the supplier in cooperation with BAE's departments in charge where appropriate. This assessment is applicable for new products, in case of product and process changes and of major increases in volume.

In particular, the indicated tolerances have to be evaluated statistically as well as the function and use of the component. Furthermore, a statement is required as to whether the capacity of the supplier allows for

the delivery of the planned number of parts and whether the scheduled deadlines can be met. Suggestions of the supplier regarding necessary changes or supplements to drawings and specifications are expected by BAE, and will be reviewed in depth during the scheduled Design Review meetings. They will be implemented if they contribute to the continuous improvement of product quality, process capability, and economical manufacturing.

The following methods for feasibility analysis can be applied:

- FMEAs
- Process Capability Analysis
- Design of Experiments (D.O.E.)

4.4. Failure Mode and Effects Analysis (FMEA) :

The FMEA assists in the prevention of failures through a structured analysis of the potential failure modes. FMEA's must be used in both design and process planning. They are required for all new or changed products and processes. FMEA's are "living documents" which must be continuously updated with respect to design, process and usage changes throughout the product life cycle or per customer specific requirements.

- Design FMEAs are to be prepared by the department responsible for design and engineering activities.
- Process FMEAs identify possible process weaknesses and help work out corresponding measures to eliminate them. The Manufacturing Engineering Department in charge is responsible for the preparation prior to the production of tools and facilities. Design FMEA should be available before a process FMEA is prepared. If BAE, however, cannot make a design FMEA available, the supplier must proceed with the preparation of a process FMEA without delay. (For details, Reference AIAG Manual "FMEA")
- All FMEA items with an RPN value over 100 must be addressed with actions and recommendations stated.
- All core team members' names and job title must be stated on the FMEA.

Product characteristics and process parameters identified by the FMEAs as "significant" or "critical" become essential elements of the Control Plan.

The supplier shall make their process FMEA available to the BAE Supplier Quality Engineer, Supplier Quality Assurance, Product Engineer, or Advanced Product Quality Planning engineer upon request at any time. The results of the FMEA are to be implemented prior to the initial sample inspection.

4.5. Control Plans

An important phase of the process for quality planning is the development of a Control Plan. A Control Plan is a written description of the system for controlling parts and processes. A single Control Plan may apply to a group or family of products that are produced by the same process at the same source; however, if specifics need to be put in place, they have to be included (e.g. safety or critical characteristics). Sketches, as necessary, may be attached to the Control Plan for illustration purposes. In

support of a Control Plan, process monitoring instructions and inspection plans should be defined and used continually.

In effect, the “suppliers” Control Plan describes the actions that are required at each phase of the process including incoming materials, in-process, out-going, and periodic requirements to assure that all process outputs will be in a state of control. Periodic requirements may be functional, reliability, or durability tests according to engineering specifications and product audits.

The “suppliers” Control Plan shall be required throughout the product life cycle, i.e. starting in the Prototype phase. It will be required during the Prelaunch and Production phase. It remains a living document, reflecting the current methods of control and measurement systems used.

The Control Plan contains all critical and significant characteristics identified on drawings or specifications, derived from FMEA's and known from lessons learned and suppliers' experience. Approval by BAE may be required.

The following MUST be listed on all Control Plans (See visual graphic – Figure A) :

- All core team members’ names and job titles must be stated on the Control Plans
- All print dimensions must be reported along with the equipment used to measure that feature
- All gages used to measure parts in the process
- All significant and critical characteristics
- Material listed per the print specifications
- Applicable customer specific requirements

Characteristics			Special Char Class.	Methods			
No.	Product	Process		Product/Process/ Specification/ Tolerance	Evaluation/ Measurement Technique	Sample	
						Size	Freq.
WA-1	Depth of penetratio n: (nest 'B')		CC1	1.0 mm min.	Cut & Etch test	1 pc per fixture	BOR - setup
WA -2	Weld size: (nest 'B')			2.3 mm X 4.0 mm min	Caliper	1 pc per fixture	BOR/EOR

Figure A: Characteristic, print dimension, method of measurement, sample size and frequency visual

For details see IATF 16949:2016 Technical Specifications and AIAG reference manuals "Advanced Product Quality Planning and Control Plan (APQP)".

4.6. Process Instructions

The Product Quality Planning Team should ensure that understandable process instructions, job instructions and operator instructions provide sufficient detail for all operating personnel who have direct responsibility for the operation of the process. These instructions should be developed from the following, but not limited to, sources:

- FMEAs
    - Control Plan(s)
    - Engineering drawings, performance specifications, material specifications, visual

standards and industry standards
- Process flow chart
- Floor plan layout
- Packaging standards
- Process parameters
- Supplier expertise and knowledge of the process and products
- Handling requirements
- Key and critical characteristics per customer specific requirements

The process instructions for standard operating procedures are to be posted in the work place and include all process relevant set-up parameters.

4.7. Planning of Tooling and Equipment

Process flow charts, Process Failure Mode and Effects Analysis (PFMEA), and Control Plans are to be inspected as to whether particular requirements imposed due to former problems have been sufficiently considered in the design of the machines, tools, gauges and facilities. Prior to the delivery of new tools/facilities, preliminary process capability studies have to be planned and carried out.

The supplier shall draw up a detailed schedule for the procurement of new or changed tools, gauges and facilities. It has to be checked periodically to what extent this schedule has been fulfilled in order to guarantee that it corresponds with the BAE schedule. Whenever the supplier's schedule does not correspond with the BAE schedule due to technical modifications, tool problems and other reasons, the BAE Purchaser in charge, the BAE Advanced Product Quality Planning Engineer responsible, and BAE Supplier Quality have to be informed immediately. Proposals for necessary actions to keep the original due date shall be submitted in writing.

4.8. Gauge Measuring and Test Equipment

The supplier is responsible for the development of suitable gauges as well as measuring and test equipment (incl. software) for satisfactory process monitoring. Furthermore, the supplier must be in compliance with the National Institute of Standards and Technology (NIST).

The supplier and BAE agree on the gauging methods and the gauging equipment to be applied. In order to ensure the production and shipment of defect free parts, all measuring and test equipment listed in the Control Plan must be certified, and capability has to be proven through the techniques described in the Reference Manual "Measuring System Analysis (MSA)".

It is exclusively the supplier's responsibility to provide standard gauging equipment. Special tests and the procurement of the corresponding necessary gauging equipment require BAE's approval. The gauging methods and equipment suggested by the supplier must be recorded in the Control Plan.

Gauging equipment certifications are also required for special gauging equipment and measurement programs using CNC-gauging-machines. The manufacturer is to develop and apply a plan, which tests the suitability of measurement systems at sufficient intervals in order to secure the system as a whole. This

plan must be documented and continuously updated.

If production tools, master parts, or similar devices are used as gauging equipment, they have to be checked and documented in the same way as any other gauging device. Their traceability conforming to National Institute of Standards and Technology (NIST) national resp. international reference standards for calibration must also be ensured in this case.

4.9. Preliminary Process Capability

Preliminary process capability studies are short-term studies conducted to obtain early information on new or revised processes in view of customer requirements.

The studies should be based on as many measurements as possible. **At least 25 measurements of a 5 piece (each piece) sample is required for all significant and critical characteristics.**

Initial data must be gathered in production sequence by sampling and used to develop preliminary control limits. These limits are necessary for the evaluation of the process stability. Once the process has proved to be stable (no inexplicable values outside the control limits or other evidence of non-random behavior), preliminary process potential (Pp) and preliminary process capability (Ppk) can be determined.

The indices Pp and Ppk are used to identify the results of preliminary process capability studies and to differentiate them from ongoing process potential and capability results indicated by the indices Cp and Cpk. The calculations of Pp and Ppk are based on the same formula as those of Cp and Cpk.

After having evaluated the preliminary process capability for a longer period of time (e.g. twenty days of production), long-term process capability studies can be performed.

Processes that do not achieve the minimum Ppk requirements (see 6.2) are inadequate for production. In this case, cross-functional teams have to be organized immediately to work out measures for process stabilization and improvement. Until the above referenced minimum is achieved, 100% check inspection (must be approved by BAE) shall be performed and if necessary, rework (method must be approved by BAE) to be performed which must be recorded in the Control Plan and the operator instructions. When the process has been improved, all pre-inspections have to be repeated to confirm the improvements are taking their affect. Accordingly, process improvements are to be documented by preliminary process capability studies. These documents, including procedures, dates and confirmation of the 100% check have to be sent to BAE. The delivered products are to be labeled appropriately

Since the analysis of attributes provides only limited information, they are not suitable for preliminary process capability studies. Attribute data obtained from production launches can only be used to prioritize process improvements and to prepare inspection charts, but never to evaluate the preliminary process capability.

4.10. Packaging Planning

The choice of packaging could have a significant effect on product quality and is therefore to be reviewed during the feasibility analysis and prior to the submission of an offer.

The supplier must provide adequate packaging considering the various transport methods and routes and avoiding quality risks such as moisture, corrosion and contamination to guarantee that all parts arrive at the BAE consumer-plants without damage or deterioration (see Appendix for checklist).

In addition, transport tests, as to whether the chosen packaging ensures consistent product quality, should be performed. Supplier visits at BAE are recommended in order to get an impression of the packaging condition after the delivery of the goods and, if necessary, to obtain suggestions for improvement. However, ultimately the packaging methodology used must ensure parts are conforming. The vendor is responsible to provide an alternative methodology to packaging if non-conformances are a result from prior packaging method.

If material requires special shipping/handling instructions, it must be noted on the container. Examples may include items such as:

- Do not stack
- Do not drop
- Do not double-stack

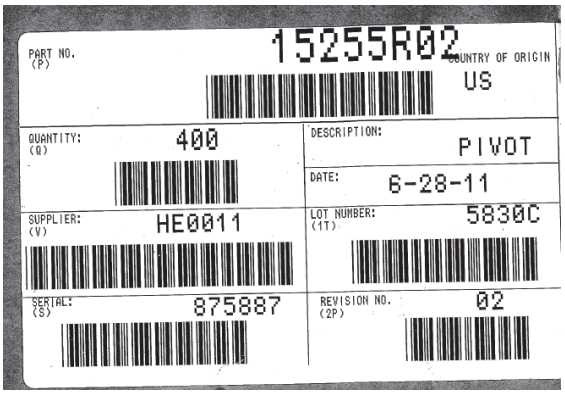
*This information should be determined during the purchasing negotiation(s).
**If you have questions concerning packaging, please refer to the related BAE department.*

4.10.1 Labeling

Suppliers must label each container with TWO 4" X 6" or ONE 4" X 13" wrap around AIAG labels. Reference photos below.

4" X 6" single or 4" X 13" wrap around (see sample label)

- Top Line – Full BAE part number including the revision level (Example: 15255R02)
- Second Line – Quantity with **scannable** bar code, Part description, and date.
- Third Line – Your BAE assigned Supplier number with **scannable** bar code, Lot number with bar code
- **Fourth** Line – Serial number with **scannable** bar code, Revision number with bar code.



4.10.2 Shipment Documents

The shipment documents must indicate the following

- Full BAE part number including the revision level (Example: 16110R09)
- Lot number(s) with quantity of boxes or containers shipped per lot number. (Example: 10 containers of lot number 123456 / 10 containers of lot number 98765)
- Part description as indicated on the purchase order
- PO number(s) associated with part(s)
- Back order for given shipment and line item: Quantity of each part shipped, quantity of parts back ordered
- Total number of boxes, containers and or skids
- Your BAE assigned supplier number
- Shipment weight breakdown per part, include net and tare weights.

Supply partners not conforming are subject to DMR corrective action request, **a minimum of $250.00** debit per **issue**, and negative supplier score card rating.

4.10.3 Special Packing Labels

Putting a PPAP submission package on the shipment is in no way, shape, or form a means of identification for a new revision level.

Please identify the entire first shipment containing a new revision level, engineering sample, rework, or other designated with the **Orange** 8.5"x11" BAE form I05.03F06 located on all four sides of the container(s)/pallet(s) *[If the pallet contains multiple boxes, make sure the label is affixed and secure to one box on all four sides of the pallet]* with the following criteria clearly stated:

1. Part Number
2. New Revision Level
3. Change(s) made to component (Description)
4. Attention: Materials Supervisor**/PPAP Coordinator**

*The aforementioned piece of orange paper with the appropriate criteria will be the new standard label for new revision levels.

4.1.1. Quality Assurance of Sub-contracted Parts

It is the suppliers' responsibility that their sub-contractors adhere to all BAE requirements applicable to their part. The supplier must transfer the necessary information to its sub-suppliers.

The supplier has to assure the effectiveness of the sub-contractors quality management system in accordance with the principles and rules of IATF 16949:2016 and ISO 9001:2015. For any deficiencies, a development program has to be established.

The supplier is further responsible that the sub-contractors monitor the quality of his products by taking the following measures:

- Implementation of Control Plans, DFMEAs and PFMEAs
- Assuring that all products applied and services rendered conform to the applicable specifications and that the traceability is guaranteed.
- Initiating corrective action (by utilizing the eight-discipline approach) on non-conforming products and having corresponding records available.
- Initial samples have to be delivered in serial packaging.

If new sub-contractors are commissioned after the initial sample approval, new initial samples must be submitted and approved. The supplier is further required to regularly conduct product, process and system audits with the sub-contractor. The supplier must obtain permission from BAE for transferring tools ordered by BAE to the sub-contractors as well as for placing orders with them. BAE is authorized to visit sub-contractors at any time following prior arrangements with the supplier to verify the quality of product and processes.

5. Parts Approval & Initial Samples:

5.1. Definitions

Prelaunch or special sample parts are parts which, unlike prototype parts, are produced from production tools. Certain rework operations may be acceptable (BAE must approve) to meet drawing requirements as long as they are disclosed on the sample documentation. The inspection of these parts is based on a special sampling report. In this respect, parts must be numbered consecutively from 1 to 6 in process sequence and need to be measured 100%.

Special samples and deliveries are to be clearly indicated by tags and tapes according to agreement.

Initial sample parts are manufactured by the production staff at the final production site using production tools, production processes, materials, feeds, speeds and cycle times. Initial sample inspection is decisive for the acceptance of production methods and facilities, dimensional testing, materials testing, and statistical analysis. With initial sample inspection, the supplier confirms with his signature that the initial samples are in accordance with all requirements determined in drawings and specifications.

5.2. Procedure

All parts, material, etc., delivered to BAE, which fall under the following categories shall be subject to the quality evaluations noted below under. Reference Section 5.3 requirements

Unapproved products that are received at BAE shall be handled as rejected material and will be returned to the supplier at the supplier's cost through Purchasing or scraped on site if agreed on by the supplier.

5.2.1. Production Trial Run

The validation of the effectiveness of the manufacturing process begins with the Production Trial Run. It must be conducted using the same production conditions as defined under "Initial Samples". In fact it can be used to produce the initial samples. The minimum quantity is usually 300, but can be agreed upon during the APQP-Process. The approval of the Production Trial Run at the suppliers' premises may be required by BAE. The output of the Production Trial Run is used for:

- Preliminary process capability study
- Measurement systems evaluation
- Final feasibility
- Production validation testing
- Production part approval
- Packaging evaluation

5.2.2. Identification of Initial Samples

Deliveries of initial samples must meet the following requirements:

- The initial samples must be provided with an "initial sample" label.
- The purchase order number of the initial sample must be indicated on the delivery papers.
- The initial sample inspection report must be completely filled out and a marked up part drawing (i.e. numbered) must be attached to the initial samples.
- The identification number, the volume and the engineering change index, must be indicated on the delivery papers.

Incomplete initial sample deliveries, (i.e. deliveries which do not meet above mentioned requirements) will not be accepted and considered as not yet delivered.

As to product launches and changes in usage, the first three volume deliveries following the initial sample approval must be labeled with our orange label with "Changed parts" called out.

5.3. Production Part Approval Process (PPAP)

All production suppliers to BAE are required to submit a Level 3 PPAP **per the latest AIAG PPAP Manual & BAE Supplier PPAP requirements in the following instances:**

- New or changing product or production process (refer to latest AIAG PPAP Manual)
- **New revision levels**
- **New supplier or sub-supplier**

- BAE Annual Supplier PPAP Schedule **with or without notification from BAE**

5.3.1 Requirements

All Annual PPAP documentation **must be within 1 year old, submitted to a level 4 , and sent to the email address certs@baeind.com**. An **annual** PPAP validation is required and is based on the warrant approval date. All **Initial** PPAP packages must be submitted with the following documentation (per the Supplier PPAP Worksheet);

- Sample Parts-**6 piece sample measured, numbered and labeled with P/N, name, rev level**
- 300 pc PPAP sample (if required per PO)Appearance approval report (if applicable)
- **TOOLING INFORMATION FORM (if required from PO)**
- Appearance Approval Report (if applicable)
- Production Part Submission Warrant (on AIAG PSW format only)
- Marked print corresponding to layout with appropriate authorizations **with all dimensions (including notes) ballooned to match the dimensional layout submitted**
- 6 piece dimensional layout revision corresponding to print -**parts sent with package**
- Facility Certification & Lab Scope
- Material specifications with test results listed (AIAG material result sheet only)
- Copy of Material test result certification
- Performance specifications with test results listed (AIAG performance sheet only)
- Copy of Performance test result certification **performed by an A2LA or certified/ accredited lab**
- Full batch run for heat treat parts (300 piece run not acceptable)
- Copy of Heat Treat test results certification
- Quality Management System accreditations for all suppliers and sub-suppliers (IATF 16949:2016, ISO-9001:2015)
- Lab Scope **and Certificate of Registration** (for **all** suppliers performing test which may include chemical, metallurgical, dimensional, physical, electrical, reliability testing or test validation)
- Process capability studies using 100 pc sample from a minimum of 300 consecutive pieces (with min CpK **1.33** or PpK of 1.67)
- Process Flow Chart **with process steps matching the Control Plan and PFMEA**
- Process FMEA (Must comply with the AIAG 3rd Edition PFMEA manual); **all core team members names and job titles reported; all RPN values over 100 must be addressed with actions and recommendations, process steps matching the Control Plan and Process Flow**
- Pre-launch control plans (for initial submissions only); **all core team members names and job titles reported, process steps matching the PFMEA and Process Flow**
- Production control plans; **all core team members names and job titles reported, process steps matching the PFMEA and Process Flow**
- Measurement Systems Analysis studies for each type of measurement system referenced on the control plans.
- IMDS must be submitted and approved prior to PPAP submission **(per the IMDS website: http://www.mdsystem.com/imdsnt/startpage/index.jsp)**
- Conflict minerals report for all supplier and sub-supplier's components
- **CQI-9 / CQI-11 / CQI-12 / CQI-15 must be submitted with each submission (if applicable)**

5.3.2 Expectations of Launch Readiness

- All components must go through a print and issue review prior to launch with BAE SQA.(30-45 days before launch)
- All launch production runs must be supported by supplier representative for first 3 production runs at BAE production location upon request.
- All components must go thru GP-12 sorting and be clearly identified prior to shipment to BAE.
- All suppliers must strive toward automated sorting prior to launch. If defects are found at BAE launch, then this sorting will be required until supplier has fully automated error-proofing for defect at supplier facility.

Any PPAP submitted to BAE without the required information will result in a rejection and reported on the monthly scorecard.

Any PPAP submitted late based on requirement date without notice and acceptance from BAE will result in corrective action and reported on the monthly scorecard.

Deviations from these requirements have to be agreed upon by both parties in writing before submitting the samples.

The production process including equipment, machinery, tools, dies and process parameters, has to be documented and kept in the suppliers' file together with the related PFMEA and made available for evaluation by BAE upon request. Part Submission Warrant (PSW) can only be submitted if all necessary steps (corrective actions and drawing revisions) concerning deviations have been defined and were agreed on by the responsible designer and APQP Engineer. These steps have to be documented in the initial sample report. These measures must include actions, responsibilities and completion dates. This procedure is only applicable if the drawing changed by hand and signed by the responsible Product Engineer. This drawing then needs to be attached to the initial sample inspection report.

Deviations from the above mentioned procedures are not acceptable unless otherwise agreed upon by both parties in writing during the APQP process. In cases of non-conformances, the supplier must apply for a deviation allowing the shipment of parts for a limited time or quantity only.

5.4. Approval:

Approval of Initial Samples shall be given when the following requirements are fulfilled:

- APQP is completed.
- All dimensional, material analysis related and functional as well as reliability requirements conform to drawings.
- All required paperwork is received by BAE

In case the functional approval cannot be completed, a deviation issued by BAE is required before production volume delivery is due.

Approval of Production Trial Run shall be given when Initial Samples are approved and the targets for the production trial run are achieved.

5.5 Tooling Invoices:

The following is required from all BAE suppliers before payment will be made on all tooling purchase orders:

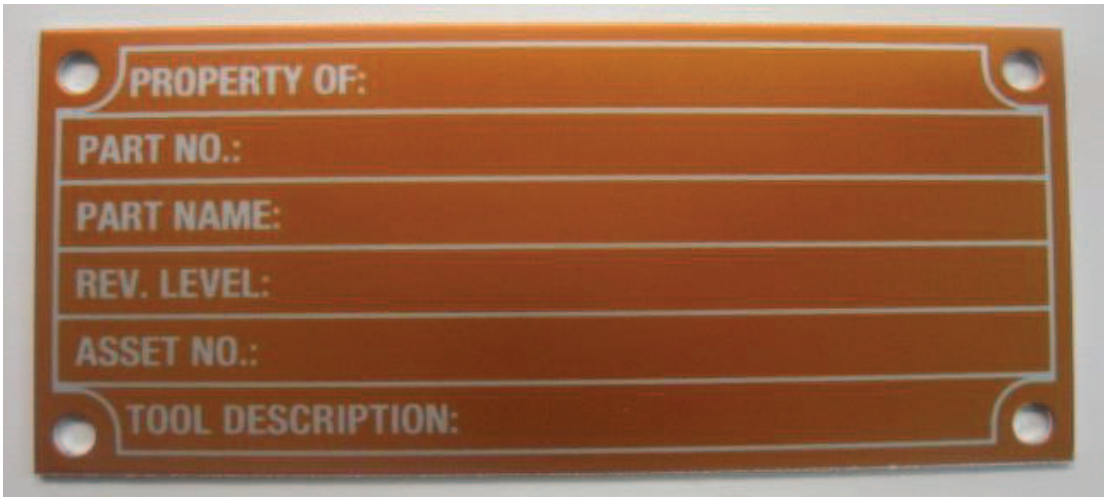
- Copy of approved PPAP
- Tool and part picture
- Updated tool and capacity tool information from original invoice

Contact the BAE Purchasing department to obtain the proper documentation and instructions that are required for payment approval.

5.6 Tooling Identification:

BAE owned or BAE Customer owned tooling must be identified with the following template information and any other customer specific information. A visual of the identification must be submitted in conjunction with the PPAP package.

5.6.1 Tool Identification Template



Use the following table as a guide:

1	PROPERTY OF:	**BAE Ind. Inc.** or **I.C.O. BAE Ind. Inc. (In care of)**
2	PART NO.:	**BAE part number**
3	PART NAME:	**BAE part name**

4	REV. LEVEL:	**PPAP submission level**
5	ASSET NO.:	**Use BAE part number unless otherwise specified**
6	TOOL DESCRIPTION:	**Use industrial name**

YOU MUST AFFIX TOOL ID TO:

1. **EACH BAE OWNED TOOL**
2. **BAE CUSTOMER OWNED TOOL**

6. Product & Process Quality Requirements:

6.1. Suppliers Responsibility

After the supplier has gained PSW approval and has received the release to ship products, systems must be in place to be sure that quality parts will continue to be received by BAE. The supplier is responsible that all actions defined for these purposes in FMEAs, the Control Plan, etc. are maintained throughout the supply chain. This includes sub-contractors, in house processes, and packaging.

Receiving, in process, and final inspection shall be conducted in concurrence with Control Plans and inspection instructions. The extent of inspection and control over the suppliers' processes shall be based on their stability. To minimize inspection efforts and to maximize the confidence level that all specified requirements are met, all supplier activities should be directed towards defect prevention methods such as statistical process control (SPC) and error proofing rather than defect detection. For this reason, preferably, SPC charts such as Xbar and R charts based on preliminary capability studies shall be used to monitor process performance and product characteristics, particularly significant and critical characteristics. Process capability shall be calculated on a regular basis as defined by BAE.

In cases where variable data cannot be obtained, the acceptance criteria for attribute data sampling plans shall be 0 defects. Acceptance criteria for visual standards are described in section 6.4. For the control of significant characteristics by attribute data, 100% inspection is expected, unless otherwise noted.

SPECIAL NOTE: Suppliers of the following products and/or processes must have a technical representative available upon request for sorting, containment or any other quality concerns:

- **Coatings (Decorative and industrial)**
- **Heat Treated**
- **Patented**
- **Proprietary**
- **Rubber based products**

- **Safety Critical**
- **Tempered**

ALL outside processing, safety items, flammability testing certificates MUST be sent with each shipment:

- **Heat treat**
- **Post Hardened**
- **FVMSS 302 Flammability**
- **FVMSS 202a Flammability**
- **Customer specific Flammability (ex. NES M0094)**

6.2. Process Capability Requirements

The control of processes by SPC requires that these processes be carried out under controlled conditions. This means that they are not influenced by any systematic fluctuations. Process stability must be studied before production begins and checks must be made to ensure that the results of these studies are continuously utilized during the production stages. (For background see Reference Manual "Statistical Process Control").

For new products produced by new tooling and equipment, the following capability factors are required by BAE:

Ppk ≥ 1.67
Cpk ≥ 1.33

For existing processes and products, the values in the table below apply:

Ongoing Process and Product Monitoring

The MOST RECENT POINT on the control chart	ACTIONS ON THE PROCESS OUTPUT Historical Process Capability (Cpk)		
Indicates that the process is in control	< 1.33 100% inspect	1.33 – 1.67 Accept product - continue to reduce process variation	> 1.67

Identify and correct special cause

...process has gone out of control in an adverse direction. All individuals in the sample are within	100% inspect	inspect 100% since last in-control point	Accept product - Continue to reduce process variation

specification			

Identify and correct special cause

...process has gone out of control. One or more individuals in the sample are outside specification.	100% inspect	100% inspect product produced since the last in-control sample

The supplier is responsible for monitoring the processes and keeping the SPC data on file for the duration of part life. The supplier will disseminate this data to BAE upon request by any BAE employee, or according to the quality agreement, if applicable.

6.3. Traceability

Proof of traceability is required at PSW time for all parts and characteristics affecting safety or governmental regulations, such as Federal Motor Vehicle Safety Standards (FMVSS), e.g., flammable parts and steel chemical compositions. In addition, it is required that all parts supplied to BAE have a method to track backwards to the specific production lot number, heat lot number, date, etc. The supplier is required to improve and stabilize quality and facilitate quick segregation of defects by traceability. An effective traceability system will minimize costs incurred should a recall situation occur. All lot numbers must be present and clearly visible on the label of the container which houses the material.

The lot traceability system must include the following:

- Production lots must be traceable back to their production line, shift, date of manufacturing, and inspection records.
- The lot numbers/date codes must be indicated on each part or part container.
- No more than (2) two single lot number/date code per shipping unit.
- Production lot numbers/date codes must be delivered in order of production. First In - First Out (FIFO) parts to be observed for all stocks/warehouses.

Parts received at BAE without proper traceability labeling is subject to rejection and will result in a supplier nonconformance subject to a debit memo at BAE's discretion.

6.4. Boundary Samples:

Boundary Samples define the quality of non-measurable characteristics by establishing a visual acceptance standard. The characteristics to be controlled by boundary samples will be established in the Control Plan. Requirements may also be generated from Pre-production evaluation or mass production line trials.

The supplier is responsible to select components for consideration as boundary samples. The samples must be representative of production capability and should be selected from line trial production. Samples must be submitted to BAE's responsible Quality Engineer with the quality characteristic clearly indicated on the component. Each sample should be clearly marked, "boundary sample" with date and a signature where possible. The minimum number of samples required is two (2); a higher quantity may be required for the use of BAE's customer or the supplier's sub-contractor.

BAE's Quality Engineer will assess all boundary samples, sign the sample tags, and where applicable, sign the boundary samples for approval if approved. BAE maintains the authority to override the supplier's boundary samples with boundary samples BAE approved. The supplier is responsible to create an internal control system to monitor the issue, use and periodic inspection of boundary samples. The system should demonstrate the ability to monitor and withdraw temporary standards to prevent out of date standards remaining in use. The supplier is also responsible to ensure that sub-contractors operate similar control procedures.

7. Non-Conformances & Corrective Actions:

7.1. General

By the use of advanced quality planning, prototype, production part approval, and the suppliers system for process and production control the prerequisites to meet BAE's quality requirements defined in drawings and specifications are given. Thus, BAE expects the supplier to deliver only parts that are in full compliance with these requirements. If the supplier is uncertain about the standard required, they shall immediately contact the quality department of BAE. BAE also expects immediate notification if the supplier detects that non-conforming or suspect material may be delivered. In exceptional circumstances, where BAE quality standards cannot be met, the supplier may request a deviation. The validity of a deviation is restricted to a limited time or quantity of parts. During this time, the supplier has to work on the problem solving approach. And, if deemed necessary by BAE, stay in close contact with the affected BAE locations. The deviation procedure must be specified in the suppliers' quality system documentation.

In case of eventual supply shortages, the Materials Department of BAE is to be notified immediately. BAE reserves the right to charge the supplier for additional expenses incurred.

7.2. Treatment of Non-Conforming Supplied Parts at BAE

All supplied parts identified as being defective or suspect of defect at the BAE consumer plant are rejected by immediately notifying the responsible supplier. This will be done through the issue of a WW (Written Warning) or DMR (Discrepant Material Report). In order to avoid a shutdown of BAE's production lines, the flow of defect free parts to the lines must have priority for the supplier. For this reason, containment actions such as sorting, rework, etc. are required within one hour unless waived by BAE. Scrap/removal and/or replacement of all discrepant material are required within 24 hours. If the supplier cannot achieve either of these conditions, BAE will start the necessary work at the supplier's expense.

*Please note material will not be sent back to the supplier, but rather scrapped/ removed at BAE unless otherwise agreed upon to release by BAE.

Once notified via a WW or DMR the following actions and timing apply:

DOCUMENTED Containment Actions – Within 24 Hours

- Identification and separation of non-conforming material (suppliers stock, in transit and outside processes).
- Identification of the first three deliveries with good parts or all shipments within 30 days (at BAE's discretion) and of all rework parts with an appropriate pre-determined label on every container / rack.
- An 8-D report or another comparable documentation indicating actions taken to contain and prevent future shipments of non-conforming product.

Immediate corrective actions are expected. A documented final 8D (problem resolution) including supporting documentation (Control Plan, FMEA, Flow updates) are expected within 15 days of the original communication. BAE reserves the right to verify the corrective actions with request for documented evidence and / or on site visits.

The supplier will be charged for the cost of necessary actions at the BAE consumer plant including the sorting, rework, or replacement of products already delivered to customers at the actual labor rate.

7.3. Non-Conforming Product (does not meet Print / PPAP Specification), and Problem Solving

Any rework of parts supplied to BAE must be authorized and approved by the Quality Department of the BAE consumer plant and if applicable, by Engineering in writing, prior to shipment of these parts. They have to be identified appropriately and be delivered as separate shipments. The supplier must ensure that the rework parts are inspected for full compliance to the agreed upon rework standards by the supplier's Quality Department prior to shipment. Related documentation must be made available to BAE upon request.

Should material not meet all print / PPAP specifications, the supplier may in exceptional cases apply for a deviation to ship. Charges will apply depending on the level of the deviation request. Deviation request must be in writing and accompanied with a clear corrective action plan. Approval of the deviation request must be in writing and accompany each deviated shipment.

- Level One Change Request – A change requested for minor tolerance relief or specification changes on non-critical areas will be charged a $5000.00 minimum charge.
- Level Two Change – Any change requested for tolerance relief or specification changes on the critical areas or specifications will be charged a $10,000 minimum Charge.
- Level Three Change – Any change requested that requires BAE to validate a change at the system level will be charged a $15,000 minimum charge.

For the three changes above a formal request must be sent to your BAE SQA representative using a

deviation request form (Reference BAE form P05.02F06) and provide a corrective action plan.

8. Supplier Performance Rating:

Supplier performance is monitored on a monthly basis to aid in supplier development and continued improvement. Ongoing purchase decisions are generated from overall commodity trend performance quality ratings. The goal is to provide a continued supply of defect free products to BAE. The performance of the suppliers is therefore continuously monitored and evaluated by the BAE Supplier Quality Department. This review will be communicated through a monthly supplier scorecard issued to all suppliers on or about the 15th of each month covering all activity of the previous month. Suppliers will be given a monthly score of 0 to 100 points each month. In addition, a year to date score will be given derived from the average monthly scores in each section. Sections covered in the report card are detailed below.

8.1 Scorecard Sections

8.1.1 Quality Rating (100 to 0 pts.)

A supplier status is directly related to the supplier overall score.

GREEN - 100 – 85 – Approved

YELLOW – 84 – 70 – Under Evaluation

RED – 69 – Below – Suspect Supplier

A primary indicator of quality performance of the supplier is PPM (defective parts per million). This monthly calculation takes into account the quantity of defective parts related to the quantity of delivered parts per month. The suppliers' quality level is indicated as both a monthly score and an average year to date calculation.

The following targets are used for the continuous improvement process and do not change the general zero-defect-goal.

- 0 – 50 PPM is Green Status
- 51 – 100 PPM is Yellow Status
- 101 or above PPM is Red Status

8.1.2 Written Complaints (0 to 15 pts.)

In the event that BAE receives a non-conformance or a shipment deviation a complaint is written in the form of a Discrepant Material Report (DMR). The number of written complaints in any given month, as well as their severity, will affect the score in this section.

8.1.3 SOP - Disruption Score (0 to 15 pts.)

When quality issues cause Line Disruption, Line Shutdown or have end Customer Affect.

8.1.4 Supplier Responsiveness / Communication (0 to 15 pts.)

The supplier performance as to meeting the agreed upon communication deadlines established with BAE whether involving PPAP submission, 8-D completion, or engineering change requests, among others, will be evaluated within this section.

8.1.5 Delivery Performance (0 to 15 pts.)

All purchased material must be delivered 100% on time in the quantities requested on BAE's weekly release documents. Failure to do so will result in a negative impact on this section whether the shipment is late, early, expedited, or damaged. Furthermore, any gross deviation from the release quantity, over or under, will be considered in violation. Scheduled material should arrive during your appointed delivery window on the agreed upon day of receipt.

8.1.6 RPPM (0 to 30 pts.)

Returned parts per million is calculated monthly based on the number of parts received and the number of parts returned or scrapped.

8.1.7 Competitiveness (0 to 10 pts.)

This section is broken down into three parts. The first deals with any LTA agreements established during contract negotiation and represents a maximum of 10 points. Points are awarded based upon the length of the agreement and the percentage of price reduction. The second deals with diversity purchases and will result in a score of up to 5 points based on the percentage of total purchases from diversity suppliers. The final section deals with S.A.V.E or V.A.V.E suggestions. A maximum of 5 points can be awarded in this section.

BAE industries, inc. A MARISA Company

Supplier Scorecard

MARISA INDUSTRIES

1426 Pacific Blvd., Auburn Hills, MI 48326 — 26020 Sherwood, Warren, MI 48091

Supplier Status Table
GREEN (100 - 85 Points)
YELLOW (84 - 70 Points)
RED (69 - Below Points)

Supplier Code
Supplier Name

Month	JAN	FEB	MAR	APR	MAY	JN	JUL	AUG	SEP	OCT	NOV	DEC	Y.T.D Avg.	Maximum Available Points
TotalScore	0	0	0	0	0	0	0	0	0	0	0	0	0	100
Written Complaints Score														15
SOP Line Disruption														5
SOP Line Shutdown														5
SOP End Customer Affect														5
Supplier Responsiveness Score														15
DELIVERY - Expedited Freight														10
DELIVERY - Mis Ship (Short / Over)														3
DELIVERY - Late Shipment														2
RPPM Points Score														30
Market Competitiveness Score														10
Actual RPPM														
DMR Reference Numbers														

Comments

8.2 IQ Meetings

If a supplier fails to meet the above-mentioned targets, their management is required to establish a corrective action plan and present it to BAE. This will be done during a scheduled formal meeting between representatives of BAE's quality and purchasing departments and the supplier's leadership. The quality of this action plan determines whether the supplier is set on new business hold and determines the length of time of that restriction. In addition, in order for the supplier to be removed from this status, all action items established at this meeting must be met and no new quality or delivery issues received within the next 30 days.

8.3 New Business Hold

The supplier may be in jeopardy of being placed on a new business hold if the supplier's score drops to 70 or below for three consecutive months, or has repeat issues in that timeframe. A cross functional team at BAE will review the supplier and said supplier will be notified of being placed on a new business hold by the SQA or Purchasing Director.

8.4 External Production Supplier Controlled Shipping Status

When a supplier is issued a DMR and a greater level of containment is required, BAE may require a supplier to ship parts under a Controlled Shipping Status, Level 1, Level 2 or Level 3.

8.4.1 Controlled Shipping, Level 1 (CS1)

CS1 is required when extraordinary inspections are mandated due to quality or delivery issues which have been detected by BAE or major discrepancies have been identified during a product or process audit conducted by BAE.

The Supplier must:

- Verify that the actions taken meet all BAE requirements. Inspections and methods must be approved by the receiving BAE facility. All containment actions must be documented according to BAE's requirements.
- Immediately establish a containment process at its location. Containment can be placed in line after Final Inspection or may be located off line in a separated area.
- Ensure an understanding of the nonconformance with instructions for sorting at point of inspection.
- Purge the pipeline of all suspect material.
- Commence the sort activities and display the results in a public and visible location.
- Track the clean point of non-conforming and conforming material, e.g. material in transit, storage, at a BAE production facility, etc.
- Notify all BAE facilities or affected Sub-Supplier facilities of the nonconformance and provide containment activities as required.
- Mark all parts, material and containers as agreed with the BAE production facility to identify parts certified for production.
- Perform corrective actions including all steps of the 8D process.
- Review corrective actions for effectiveness and take further actions if required to eliminate issue long term.
- Report results and findings to the BAE receiving plant(s) on a daily basis.
- Meet defined exit criteria as agreed by the BAE production facility

8.4.2 Controlled Shipping, Level 2 (CS2)

CS2 requires the supplier to contract a third party to inspect all suspect parts in an area separate from their normal production process (unless otherwise specified by BAE) prior to shipment to BAE. The third party inspection source and contact details must be included in the initial response and be approved by the responsible BAE Quality Engineer.

CS2 may be initiated if:

- The supplier has failed to contain non-conforming products in Launch Containment and/or CS1,
- There is safety-related, FMVSS or local regulation issues,
- There is a risk in the field with a Customer, and or
- There are other issues deemed by BAE to require heightened containment.

The supplier must verify that all actions taken meet all BAE requirements. Inspections and methods must be approved by the receiving BAE production facility. All containment actions must be documented in DMR and 8D response.

In addition to maintaining the requirements of CS1 activities, the supplier is immediately required to:

- Contact a third party inspection source for the controlled shipping inspection.
- Issue a purchase order to the controlled shipping third party inspection source within 24 hours of receiving the CS2 notification and attach to the QN.
- Provide adequate trained resources to continue with CS1 inspections.
- If requested by BAE, the supplier must submit corrective action plans to its Quality Registrar for review and/or assessment and authorize its registrar to submit the review and/or assessment findings to the customer.

To protect the supply of conforming material, BAE may contract a third party resource and charge-back the actual costs and management fees.

8.4.3 Controlled Shipping, Level 3 (CS3)

CS3 requires the supplier to hire a third-party quality engineer/consultant approved by BAE to provide 6 weeks of continuous support (review issues at production line, develop an action plan and attend weekly meetings with BAE)

CS3 may be initiated if:

- The supplier has failed to contain non-conforming products under CS1 and CS2 and
- Supplier and/or product is critical or high risk

All additional actions and the plan must be documented in DMR 8D response.
In addition to maintaining the requirements of CS1 and CS2 activities, the supplier is immediately required to:

- Nominate a third party quality engineer/consultant approved by BAE and notify BAE of the implementation details.
- With the help of the third party quality engineer continue with CS1 and CS2 inspections
- Implement weekly meetings between suppler, third party and BAE to review the current action plan.

Exit Criteria for CS1, 2&3

- The Exit Criteria is based on success of long-term corrective actions and results by the supplier. . All numbers, data and facts must be in accordance with the corrective actions before exiting.
- Exit from CS1, 2&3 must be in writing, the request must be clearly defined and approved by the BAE production facility and if necessary the OEM prior to Exit.

9. Continuous Improvement:

9.1. General

Continuous improvement is one of the basic principles of BAE's quality policy. It is essential to keep and extend our position in the market through the consistent delivery of high quality product. The high impact that our suppliers have on BAE's performance as to products and services require the extension of the continuous improvement philosophy throughout our suppliers' organization. Continuous improvement of

our suppliers must include: quality of parts, service (e.g., timing, delivery, engineering capabilities and cooperation), and price. This requirement does not replace the need for innovative improvements.

The supplier should develop specific action plans for continuous improvement in processes that are most important to the customer once those processes have demonstrated stability and acceptable capability. These processes can be selected and monitored using the quality operating system (QOS).

The expectation is that the continuous improvement philosophy is extended to all business processes. Identify and measure goals with expected targets for the performance of those processes. This includes characteristics that can only be evaluated using attributes data. Improve your process methods through the use of realistic, attainable, and measurable target steps.

To effectively use the continuous improvement process, the supplier shall demonstrate knowledge of the known measures and methodologies for process analysis, monitoring, and rating.

9.2. Continuous Improvement of Processes

Regardless of the capability requirement for the demonstrated process capability, continuous improvement is required with the highest priority on significant and critical characteristics. The supplier shall identify opportunities for quality and productivity improvements and implement appropriate improvement projects.

Examples are the following points:

- Machine downtime, machine set up, die change, machine change overtime
- Excessive cycle time
- Scrap, rework, and repair
- Non-value added use of floor space
- Excessive or unexplained variation
- Waste of labor and materials
- Excessive cost of non-quality
- Difficult assembly or installation of the product
- Excessive handling and storage
- Marginal measurement system capabilities
- Customer dissatisfaction

10. Conflict Minerals Statement:

We support ending the violence and human rights violations in the mining of certain minerals from a location described as the “Conflict Region”, which is situated in the eastern portion of the Democratic Republic of the Congo (DRC) and surrounding countries. As a result the U.S. Securities and Exchange commission (“SEC”) adopted final rules to implement reporting and disclosure requirements related to “conflict minerals,” as directed by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. The rules require manufacturers who file certain reports with the SEC to disclose whether the products they manufacture or contract to manufacture contain “conflict minerals” that are “necessary to the functionality or production” of those products.

The definition of "conflict minerals" refers to gold, as well as tin, tantalum, and tungsten, the derivatives of cassiterite, columbite-tantlite, and wolframite, regardless of where they are sourced, processed or sold. The U.S. Secretary of State may designate other minerals in the future. We support these requirements to further the humanitarian goal of ending violent conflict in the Democratic Republic of the Congo (DRC) and in surrounding countries, which has been partially financed by the exploitation and trade of "conflict minerals".

Suppliers and sub-suppliers must submit reports to the latest version of CFSI_CMRT4-01. All smelters must be reported and be on the list of currently Active or Compliant within the Conflict-Free Smelter Program. Please refer to the CFSI web site www.conflictfreesourcing.org for the most current and accurate list of standard smelter names that are Active or Compliant.

OUR COMMITMENT:

Support the aims and objectives of the U.S. legislation on the supply of "conflict minerals":

- Do not knowingly procure specified metals that originate from facilities in the "Conflict Region" that are not certified as "conflict free".
- Ensure compliance with these requirements, and require our suppliers to undertake reasonable due diligence with their supply chains to assure that specified metals are being sourced only from: Mines and smelters outside the "Conflict Region" or Mines and smelters which have been certified by an independent third party as "conflict free" if sourced within the "Conflict Region".

This due diligence includes having our suppliers provide written evidence documenting that raw materials used to produce gold, tin, and tungsten, used in the materials to manufacture components and products supplied to BAE Industries Inc. that originate from outside the "Conflict Region" or if they originate from within the "conflict Region", that the mines or smelters be certified as "conflict free" by an independent third party. The aim is to ensure that only "conflict free" materials and components are used in products that we procure.

If we discover the use of these minerals produced in facilities that are considered to be "non-conflict free", in any material, parts or components we procure, we will take appropriate actions to transition product to be "conflict free".

11. Appendix:

11.1. Glossary

8D: Eight Discipline Approach	Team oriented problem-solving TOPS; a systematic team oriented approach to problem-solving in 8 disciplines.

Supplier Assessment	An evaluation process including a document review, an on-site audit and an analysis and report. Suppliers may also include a self-assessment, internal audit results, and other materials in the assessment.
Audit	An onsite verification activity used to determine the effective implementation of a supplier's documented quality system or corrective action.
Capability	Capability is the total range of inherent variation in a stable process. It is determined using data from control charts. The control charts shall indicate stability before capability calculations can be made. Histograms are to be used to examine the distribution pattern of individual values and verify a normal distribution. When analysis indicates a stable process and a normal distribution, the indices Cp and Cpk can be calculated. If analysis indicates a non-normal distribution, advanced statistical tools' such as PPM analysis, will be required to determine capability. If control charts show the process to be non-stable, the index Ppk can be calculated (see IATF 16949:2016 reference manual “Statistical Process Control“).
Characteristic	Characteristics identify or differentiate units. There are variables and attributes.
Control Plan	Written descriptions of the system for continuously controlling processes. Producers must establish Control Plans for all new products and must dress all significant and critical design characteristics, process parameters and tests according to Engineering Specifications. See IATF 16949:2016.
Critical Characteristic	Product requirements (dimensions, specifications, tests) or process parameters, which can affect compliance with government regulations or safe product function. They require specific producer, assembly, shipping, or monitoring actions and must be included in Control Plans. Critical characteristics are identified with the inverted delta or CC.
Failure detection	A past-oriented strategy that attempts to identify failures on finished parts and to separate them from the good parts.

Failure Mode and Effects Analysis	An analytical technique used by the responsible team as a means to assure that potential failure modes and their associated causes/mechanism have been considered and addressed (see AIAG reference manual “Failure Mode and Effects Analysis“).
Failure Prevention	A management system, which improves quality by using the “plan-do-check-act” method to eliminate failure modes and causes of instable processes; principle of continual improvement.
Feasibility	A determination that a process, design, procedure or plan can be successfully accomplished in the required time frame.
Job Instructions	Describes work conducted in one function in a company (e.g. set-up, inspection, rework operator) and considered to be level three (3) quality system documentation.
Lot Traceability	A system for tracking and identifying a certain quantity of raw material or parts through all manufacturing steps including the identification of the final product when shipped to the customer.
Nonconformity	Nonconformity is product or material, which does not conform to a quality system requirement.
PPM	Parts Per Million; 5,000 ppm = 0.5 % Goal of the PPM philosophy is to reduce the failure rate to PPM values through a close cooperation between BAE and the supplier. PPM measures the failure amount in defective parts per one million produced parts.
Procedures	Documented processes that are used when work affects more than one function or department of an organization. Procedures are considered to be level two (2) quality system documentation.
Process Control	The gathering of data from a process and the use of statistical methods of establish a feedback loop to maintain stability and prevent the production of non-conforming parts.

Process Parameter	Those measurable and/or controllable factors, which affect the process output by their interactions (e. g. temperature, feed, cycle time, pressure etc.)
Production Trial Run	A production run to validate manufacturing processes using all production tools, processes, equipment, environment, facility and cycle time.
Quality Management System	The structuring of operations and the organizational structure in a company with respect to quality assurance and the required means.
Quality Operating System (QOS)	Gathering and analyzing of existing data on significant, measurable characteristics. These data are evaluated and analyzed in cross-functional teams and presented in a comprehensible way. Goal of the QOS is to maximize external and internal customer satisfaction.
Quality Planning	Quality Planning is a structured process for defining the methods (i. e., measurements, tests) that will be used in the production of a specific product or family of products (i. e. parts, materials). Quality Planning embodies the concepts of defect prevention and continuous improvement as contrasted with defect detection (see QS 9000 reference manual “Advanced Product Quality Planning and Control Plan“)
Repeatability	Measurement variations obtained when one person measures the same characteristic in one part several times with the same gage or test equipment.
Reproducibility	Difference between the measurement means obtained when more than one person measures the same characteristic of one part using the same measuring instrument or when the measuring is conducted at different locations.
Rework	Action taken on nonconforming product so that it will meet the specified requirements.
Specification	Determination of a product’s characteristics

11.2. Acronyms

Acronym	Explanation
APQP	Advanced Product Quality Planning and Control Plan
CC	Critical Characteristic
CNC	Computerized Numerical Control
Cpk	Critical Process Capability
DOE	Design of Experiments
EC	European Community
FIFO	First In - First Out parts
FMEA	Failure Mode and Effects Analysis
FMVSS	Federal Motor Vehicle Safety Standards
IMDS	International Material Data System
ISO	International Standards Organization
MDB	Material Data Sheet (Material Daten Blatt - German)
MSA	Measurement Systems Analysis
OEM	Original Equipment Manufacture
PIPC	Percentage of Inspection points that are Process Capable
PIST	Percentage of Inspection points that Satisfy Tolerance
PPAP	Production Part Approval Process
Ppk	Preliminary Process Capability
ppm	Parts per Million
PSW	Part Submission Warrant
QOS	Quality Operation System
QSA	Quality System Assessment
SC	Significant Characteristics
SPC	Critical Characteristics
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11.3 Change Record

ORIGINATOR OF CHANGE	REVISION LEVEL	DATE OF CHANGE	DESCRIPTION OF CHANGE
Dan Davidson	Release	02/2006	1st Edition
Adam Bruck	1	06/2008	2nd Edition
Quality Team	2	12/2011	3rd Edition -Update PPAP (Annual re-Val. Required), Tool I.D. Expectation/shipment and CQI 9 Heat Treat Requirements
Cherie Elbrader	3	2/13/13	Assigned Control Number
Cherie Elbrader	4	6/14/13	(Was SQ-P01) – no change to document content. Control number revised for new systemic numbering system
William Brown	5	10/16/13	Conflict Minerals Statement - Section 10 / Added visual of updated score card, updated score card measures, and verbiage regarding prototype requirements.
Mark Doetsch	6	10/29/13	Updated with launch information upon request
William Brown	7	12/12/13	Add BAE to Conflict Materials Statement
William Brown	8	7/28/14	Correct typo
Cherie Elbrader	9	8/18/14	Remove reference to form I05.03F04 from section 3.1
Robin Parkinson	10	5/6/15	Add notes to FMEA, Control Plan, FLOW, Conflict Minerals requirements

Robin Parkinson	11	8/26/15	Revised text to : Add notes to FMEA, Control Plan, FLOW, Conflict Minerals requirements to update verbiage for better supplier understanding. Updated Table of Contents, adjusted spacing and font of text.
Robin Parkinson	12	10/10/16	Replaced all references to QS9000 with TS16949. Changed text font for easier reading. All forms put in bold and parenthesis. Added Heat treat to section 3.1. Combined two repetitive paragraphs ins section 3.1 and added more definition to the requirements, also added quality. Adjusted section 3.3 to the correct formatting. Added the word “APQP” and the following departments to section 4: Tooling, Project Management, Material, and Accounting. GP 11 removed from section 4.1. Added 4.10.2, 4.10.3, 5.3.2, to the table of contents. Added statement about labeling requirements section 4.10.1. Add supplier’s responsibility in respect to special processes - section 6.1
Roger Hazlewood	13	11/29/16	Added sections: 8.4, 8.4.1, 8.4.2 and 8.4.3
Heather Hazlewood Robin Parkinson	14	3/1/19	Changed the TS references to IATF. Updated ISO 9001 verbiage. Updated PPAP requirements verbiage specifying annual and initial submissions: Section 5.3.1.

12. Supplier Signature Page

To ensure that our suppliers have read our manual, we have included this signature page for verification. Please read the manual and send back a copy of the signature page to the PPAP Coordinator, the Director of Purchasing, and/or the Supplier Quality Representative.

The supplier has read, understands and agrees to the term and conditions within this manual as set forth by BAE Industries. The supplier accepts and acknowledges the Supplier Quality Manual.

_____

Supplier (Company) Name and Date

_____

Supplier Reviewer and Job Title (Printed)

_____

Supplier Reviewer Signature