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## 1 Purpose

This document defines the minimum Quality Assurance requirements identified for BAE Systems Bofors AB (the Purchaser) contracts. These requirements flow down the Customer's ISO 9001 and AQAP-2110 Quality standards as well as specific project requirements to achieve our objective to launch a flawless and reliable product in the field and provide the basis for continual improvement.

## 2 Scope

This document covers general minimum Quality Assurance requirements for supplies to BAE Systems Bofors AB.
BAE SYSTEMS policy is to supply superior quality products and services that meet the Customers' requirements and expectations. BAE SYSTEMS believes that Suppliers are key elements in its processes with whom to share the responsibility for Customer satisfaction.
It is the Suppliers responsibility to review the requirements of this document and when required, contact the Purchaser for clarification and agreement.
If BAE SYSTEMS or the Design Authority of the product licensed to BAE SYSTEMS has produced specific documents covering the supply, these will take precedence over the general requirements contained herein.

If the Supplier uses Sub-Suppliers accepted by BAE SYSTEMS, the Supplier must inform the sub-Suppliers of these requirements and include them in their purchase orders. The requirements contained herein shall apply to each Sub-Supplier according to the type of goods or services supplied.
Any departure from these requirements will constitute a non-conformity, unless specifically approved following formal Request for Deviation or Waiver.

## 3 Related Documents

All standards referred to within this document are to the latest issue. It is the Supplier's responsibility to ensure that they hold, or have available the latest issue documents.

Contract specific documentation, standards, and order of precedence shall be identified in the Purchase Order.

It is the Supplier's responsibility to ensure that they have a copy of the Purchase Order and any referenced documents and/or standards at the appropriate revision.

### 3.1 References

ISO 9001 – Quality Management Systems – Requirements

The TickIT Guide

AS/EN 9102 – Quality Systems – First Article Inspection

AS/EN 9103 – Quality Management Systems – Variation Management of Key Characteristics

ISO 2859 – Sampling procedures for inspection by attributes

ISO 3951 – Sampling procedures for inspection by variables

ISO 10005 – Quality Management Systems – Guidelines for Quality Plans

AQAP-2110 – NATO Quality Assurance Requirements for Design, Development and Production

AQAP-2120 – NATO Quality Assurance Requirements for Production

AQAP-2130 – NATO Quality Assurance Requirements for Inspection and Test

AQAP2210 – NATO Supplementary Software Quality Assurance Requirements to AQAP2110.

The above NATO AQAP standards can be looked up on the following website: http://www.nato.int/docu/standard.htm. Their structure follow that of ISO 9001:2008, which is subdivided into 3 separate standards (AQAP-2110, 2120, 2130) and an additional one (AQAP-2131) limited to firms performing simple activities that can be verified by means of final inspections. There is a dedicated standard for software (AQAP-2210).

Supporting guidelines for these documents are detailed within AQAP-2009 – NATO Guidance on the use of the AQAP 2000 series.

The status of UNI/EN/ISO standards can be obtained online from:
http://www.uni.com
http://www.iso.ch

MIL standards can be obtained online from:
http://assist.daps.dla.mil/quicksearch/
http://www.fas.org/man/dod-101/sys/index.html

## 4 Definitions

AQP – Advance Quality Planning
AQAP – Allied Quality Assurance Provisions
COC – Certificate of Conformity

CTM – Critical To Manufacturing
CTQ – Critical To Quality
PRR - Production Readiness Review
IPI - In Process Inspection
FAI – First Article Inspection
FAIR – First Article Inspection Report
GQA – Government Quality Assurance
GQAR – Government Quality Assurance Representative
ISO – International Standards Organisation
NATO – North Atlantic Treaty Organisation
NDE – Non-Destructive Examination
PFMEA – Process Failure Mode and Effects Analysis
QAR – Quality Assurance Representative
RAS – Release at Source
RPN – Risk Priority Number
SPC – Statistical Process Control
WBMS – Weapons Business Management System

## 5 AQAP 2110, 2120 and 2130 Provisions

AQAP 2110: AQAP 2110 requires that all Suppliers know that: "All requirements of this contract may be subject to GQA (Government Quality Assurance).

You will be notified of any GQA activity to be performed." This implies that we and our Customer's GQAR (GQA Representative) has the right, to assess the observance and fulfillment of the agreed requirements and conditions according to this Contract/Order in your activities.

In Contracts and Orders made with your Sub-suppliers, you shall ensure agreement to our and our Customer's right accordingly.

## 6 General Supplier Quality Conditions

The following section details general clauses applicable to **ALL** BAE SYSTEMS purchase orders.

### 6.1 Quality Assurance Requirements

The Supplier shall be certified to the latest ISO 9001 standard with a scope of registration appropriate to the order requirements, or have their Quality Management System approved by the Purchaser. The Supplier shall maintain the certification status to the ISO standard for the duration of the order.

The Supplier shall determine, provide and maintain a work environment conducive to achieving product Quality requirements.

The Supplier will be subject to periodic audits by BAE SYSTEMS Quality (and by its Customers or their Representatives when required) of its Quality System. The Supplier must implement any corrective actions as and when required.

Before starting production (in the act of accepting the order), with the aim to take a view and control of the manufacturing process to introduce possible corrections and integrations thus reducing non conformity or delay risks; typically the documents relevant to this phase are:

- Quality Plan
- Configuration Management Plan
- Manufacturing and Control Plan
- Acceptance Test Procedure

The documents listed above require BAE SYSTEMS approval.

The Supplier shall during production, conduct continuous improvement activities aimed at:-

Reducing variation;
Optimising process performance & reliability;

Where Quality failures have occurred, effective corrective and preventative actions shall be part of this process.

## 6.2 Supplier Responsibility

The Purchaser's acceptance of the Supplier's Quality Management System will not absolve the Supplier from their responsibility for order compliance.

Initial acceptance by the Purchaser, does not exclude rejection at a later date if deviations attributable to the Supplier are subsequently found.

Any questions regarding the interpretation of these Supplier Quality Conditions shall be referred to the Purchaser.

## 6.3 Subcontracting

No part of the purchase order may be further subcontracted without notifying the Purchaser.

The Supplier is responsible for demonstrating the effective management of their subcontractors and the subsequent transfer of all the purchaser's supplier quality conditions to their subcontractors and for the quality of all work carried out by their subcontractors. A certificate of conformity shall be obtained for all subcontracted work; the certificate shall meet all the requirements detailed within condition General Supplier Quality Conditions 6.11 – Certificate of Conformity.

## 6.4 PRR (Production Readiness Review

PRR is a proactive quality tool to ensure that all requirements are taken care of and that all quality and delivery risks are eliminated. PRR will be initiated by BAE SYSTEMS on articles where PRR is considered needed.
BAE SYSTEMS is responsible for filling out the PRR document with key personnel from the Supplier and the Supplier is responsible for any corrective actions as and when required. Output from PRR is a manufacturing/operations plan where IPI (In Process Inspection) is decided and generates a follow up plan

## 6.5 Quality Plans

A Quality Plan acceptable to the QAR is required. The Quality Plan shall be submitted to the QAR within 30 days of contract award, prior to commencement of manufacture.

Acceptance will only be granted upon delivery of satisfactory production samples (see condition 6.8 – Inspection Requirements).

When a Quality Plan is required as part of Bid work Assessment phase and Design & Development phase, the requirement shall be defined by the Purchaser.

The Quality Plan shall indicate the manufacturing route; levels of inspection and other controls proposed by the Supplier and shall demonstrate that all contractual requirements have been recognized.

Once accepted, the Quality Plan shall become a contractual document and shall be subject to review on a periodic basis. Guidance on the creation of a Quality Plan may be obtained from, AQAP 2105 & ISO 10005.

Changes to agreed processes, shall be discussed with and approved by the Purchaser.

Approval of Quality Plans shall not signify acceptance of liability for accuracy, suitability or applicability, but signifies only acknowledgement of the Suppliers intention to implement the Quality plan's provisions.

Software Quality Plan / Software Development Plan / Software Maintenance Plan

A Software Plan dedicated to the design and development, production and / or Maintenance of software is required. This shall be written in accordance with the requirements of this purchase order, AQAP 2210 and subject to approval by the Purchaser.

Sub-contract Quality Plans

The Supplier shall ensure that a Quality Plan is requested for Major or Critical Subcontracted work. These plans shall also comply with AQAP 2105, AQAP 2210 & ISO 10005. All Subcontract Quality Plans shall be made available to the Purchaser on request and may be used by the Purchaser as the basis against which to carry out surveillance. This in no way relieves the Supplier of the responsibility for management of their suppliers. It is the responsibility of the Supplier for approval and control of these plans.

## 6.6 Manufacturing Plan

The Supplier is required to produce a Manufacturing Process Plan, which indicates, in chronological order, the processes that are undertaken to transform raw materials and bought out parts into the assembly, which will be delivered to the Purchaser. This process plan can be a worded document or a flowchart (which may form part of the deliverable Quality Plan, use ISO 10005 Section A.2.3 Example 3 as guidance), but must describe the processes undertaken.

The frequency of any inspection undertaken; and the specification, method, record, standard or criteria against which the inspection is performed; shall be defined within the Manufacturing Process Plan.

This process document will become a part of the Contract between the Purchaser and the Supplier.

Whenever a change occurs in the manufacturing facility, place of performance, manufacturing process, material used, drawing, specification, manufacturing sequence or source of supply, the Supplier shall update the Manufacturing Process Plan and notify the Purchaser of the change.

## 6.7 Identification and Traceability

The supplier is responsible for maintaining source traceability of all materiel used on the purchase order. Such traceability shall form part of the Supplier’s quality record system.

This requirement extends to the controlled use of any 'free issue' material provided on behalf of the Purchaser.

The Supplier shall contact the Purchaser for advice concerning the requirements for lotting, batching and the application of serial / identification numbers.

### 6.7.1 Identification

By identification is meant a system which, with suitable means (markings, punching, plates, tags, transport documents), allows identification of the type and denomination of the various products throughout the production process. Identification is assured by correlation between the physical products and the identification data shown on the markings. The Supplier is responsible for providing identification means for supplied product.

All material and equipment shall be identified in accordance with Drawing and Purchase Order requirements.

### 6.7.2 Traceability

By traceability is meant a system that allows each product or batch of products to be recognized and distinguished from other identical ones but made separately and under different conditions and at different times, and to be correlated with the documentation recording the processes, inspections and tests undergone by the system.

The Supplier agrees to maintain throughout the production cycle adequate identification of the materials, components and anything else received for subcontracted work, and to ensure proper correspondence as explained in the preceding paragraph.

#### 6.7.2.1 Minimum Requirements

The system shall identify, at least, part origin, manufacturing date, lot and evidence of acceptance.

#### 6.7.2.2 Identification Methods

For those items for which it is required the identification number shall be univocal. When traceability is required items and material lots shall contain univocal identification such as serial number, lot number and date codes. Methods and marking position shall be indicated in technical documents.

#### 6.7.2.3 Data retrieval

Item records, material, processes and controls shall be identified to ease their retrieval.

#### 6.7.2.4 Traceability Plan

When applicable the Supplier shall prepare a traceability plan listing items and materials requiring serialization and/or lot control explaining methods to assure an effective traceability. This may be included as a subset of the Quality Plan.

### 6.8 Inspection Requirements

The Supplier shall demonstrate control of the Manufacturing Processes using one or more of the following methods:

- Initially all batches shall be subject to 100% inspection with documented variable and attribute data;
- The Supplier shall conduct a process capability assessment on all Critical to Quality / Manufacture characteristics and Manufacturing Processes, using techniques and sample sizes approved by the QAR.

Once Process Capability has been established, the Purchaser may approve use of the following Sampling Inspection Techniques:

- Sampling to ISO 2859; ISO 3951 or equivalent;
- Any other approved statistically based sampling method.

Process capability studies shall be carried out on all Critical to Quality / Manufacture characteristics following significant product or process changes.

The Inspection reports shall be required to detail any changes as a minimum, changes to the agreed processes shall need to be approved by the Purchaser.

### 6.9 Nonconformity

Suppliers have **NO** delegated authority regarding the acceptance of non-conformity. Non-conforming materiel shall **NOT** be delivered without an authorized concession from the Purchaser.

Concession applications granted by the Purchaser may not absolve the Supplier from responsibility in the event of subsequent failures in-service, depending on the circumstances. Concessions granted shall be referenced on the applicable Certificate of Conformity.

The Supplier on receipt of a non-conformance report will give a containment response within 5 working days of receipt of the form; this will be followed by a detailed corrective action statement along with a long term validation and preventative action

statement within 15 working days. Where a supplier cannot meet the requirements he is to inform the Purchaser for agreement of any revised dates. This metric will form part of the supplier performance metric.

### 6.10 Records

The supplier is responsible for maintaining complete records related to the work undertaken on the purchase order, as a minimum these shall include build records, inspection/test records; material and treatment certification.

Unless otherwise directed in the order requirements, the Supplier shall retain the records for a period of 13 years from completion of all work in aid of the purchase order and shall make them available on request. The Supplier, or their successors, must obtain written permission from the purchaser QAR prior to disposal of the records. At this time, the Purchaser may wish to retain these records in their own archive.

### 6.11 Certificate of Conformity

A CoC (Certificate of Conformity) signed by a duly authorised representative of the Supplier is required with every consignment delivered against the purchase order. Unless otherwise stipulated by the Purchase Order, the CoC **must** contain the following statement:

**"CERTIFIED THAT THE WHOLE OF THE SUPPLIES DETAILED HEREON HAVE BEEN INSPECTED, TESTED AND UNLESS OTHERWISE STATED HEREIN, CONFORM IN ALL RESPECTS WITH THE REQUIREMENTS OF THE PURCHASE ORDER",**

The CoC must display clear and accurate information about individual items with specific reference to purchase order number, BAE SYSTEMS part numbers. Lots, batches, specifications, test results, concessions, etc.

On the CoC the Supplier must specify the size of the Manufacturing lot delivered, even when it does not cover the entire quantity specified on the Order.

A copy of the CoC shall be forwarded as part of the release documentation pack to the Purchaser with every consignment. Failure to comply may result in payment being delayed and will affect your Supplier Grading.

### 6.12 Design Changes

Where Supplier designed items are being supplied, the Supplier shall give sufficient information on the Certificate of Conformity to fully describe the items for configuration control / and replacement purposes.

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Following the initial delivery, the Suppliers shall provide adequate advance notice of impending design changes, which may affect fit, form or function of items supplied to the Purchaser for engineering consideration prior to any further deliveries.

Major design changes shall invoke the requirement to repeat First Article Inspection in accordance with condition 6.15 – First Article Inspection / Approval (as detailed in AS/EN 9102).

## 6.13 Packing

Unless otherwise specified all items should be packed to commercial standard, commensurate with preserving the Quality of items during shipment and short term storage.

For software deliverables additional clauses are required:

- Immediately prior to despatch the Supplier is to alert the Purchaser by facsimile;
- Delivery to the Purchaser is to be via a courier, e.g. Data post;
- The package is to be marked for the attention of the Purchaser;
- The outer-package is to carry the warning:

**“CAUTION: SOFTWARE MEDIA HANDLE WITH CARE**
**DO NOT X-RAY”**

All delivery documentation (Certificate of Conformity etc.) is to be enclosed within the package (not affixed to the outside). Where the delivered software media is in the form of firmware, e.g. EPROMs, it is to be enclosed within a `Local-Handling Package', e.g. transparent container containing conductive foam, so that inspection may be performed away from a `static-safe workbench. All software media is to be marked /labelled to enable identification, e.g. NATO Stock Number and/or Programmable Item Marking.

Materials and components sensitive to Electrostatic Discharge (ESD) must be kept and delivered in suitably-identified protective packaging and must be stored in suitable containers, in such a way as to safeguard their integrity

## 6.14 Release at Source (RAS) by the Purchaser or Nominated Third Party.

Consideration will be given for those Suppliers not qualified to deliver to stock, for Release at Source to be conducted by BAE SYSTEMS personnel, acting on behalf of the site Quality / IPT Leader.

By exception, 'critical path', or complex items/assemblies, requiring inspections or tests, best conducted at source may also be cleared in this manner. The requirement will be defined in the Purchase Order.

The Supplier shall contact the purchaser at a minimum of 14 days prior to shipping of the first consignments to agree the requirements and arrangements for RAS.

Suppliers must ensure that the Purchaser or Third Party has approved all consignments, subject to RAS, prior to delivery.

Accepted batches will be shipped under cover of the Supplier's Certificate of Conformity and a Release at Source report.

Where the acceptance includes quantities greater than the scheduled release requirements, the site recipient will ensure the records are endorsed in such a manner as to permit follow-on deliveries to be routed directly to stock, following routine checks for condition, up to the RAS accepted quantity.

There is an equal responsibility on the part of the supplier to monitor release quantities to ensure the accepted quantities are not exceeded.

### 6.15 First Article Inspection / Approval

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

FAI will be initiated on articles that considered needed by BAE SYSTEMS and will be communicated via purchase order.

The first batch delivery shall include a labelled 'first off item', accompanied with a 100% inspection report for the item, as part of the delivery documentation pack.

### 6.16 Specific Requirements for Software Development

ISO 9001 TickIT registration shall be required by those engaged in the provision of software product in all cases where:

- Software development is undertaken;
- Non-deliverable software is developed or employed under the contract;
- Software maintenance is part of the contract, in order to avoid uncontrolled, hidden development activities, which could have unforeseeable or detrimental consequences on the Quality of the software product;

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- Off-the-shelf software is to be delivered;
- All cases relating to the development of the software element of firmware.