BAE SYSTEMS BOFORS AB
PURCHASING QUALITY REQUIREMENTS

BAE SYSTEMS

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Introduction

BAE Systems Bofors AB (From now on referred to as Bofors) is a high-tech Company that delivers smart munitions and weapon systems with high requirements to customers all over the world.

In order to meet these high requirements, Bofors also needs to have highly stated requirements on our suppliers and on our received parts in order to remain competitive in terms of Safety, Quality, On Time Deliveries, Price and Flexibility.

Bofors expects you, as a Supplier, to work actively with skills development, new methods and that you are innovative in terms of manufacturing within your specialist area. Safety must ALWAYS be primary and you shall contribute to a safe working environment. Quality shall be included in your everyday work where improvements and efficiencies are a big part so that you, as a Supplier, and we as a Customer will continue to be competitive.

Our Suppliers are a big part of the quality that Bofors stands for on a product. Therefore it is mandatory to work together to achieve required conditions to meet customer satisfaction.

This manual describes the expectations, requirements, formal guidelines and practices expected from you as a Supplier to BAE Systems Bofors. With this as a base, we can develop and maintain a strong, stable, long-term and successful partnership where we proactively ensure our values Safety, Quality, On Time Deliveries and Price.

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1 Purpose

This document defines the minimum Quality Assurance requirements identified for Bofors (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 our Quality Assurance requirements and expectations for supplies to Bofors.
Bofors vision is to be Europe's leading supplier of highly efficient weapon systems and intelligent ammunition on the global market. Bofors believes that Suppliers are key elements in its processes with whom to share the responsibility for Customer satisfaction.
It is the Supplier's responsibility to review the requirements of this document and when required, contact the Purchaser for clarification and agreement. If Bofors or the Design Authority of the product licensed to Bofors has produced specific documents covering the supply, these will take precedence over the general requirements contained herein.

If the Supplier uses sub-suppliers (Not applicable to standard and/or COTS-sub-suppliers), the Supplier must inform the sub-suppliers of these requirements and include them in their purchase orders.

It is the Supplier's responsibility to approve their sub-suppliers.

The requirements contained herein shall apply to each sub-suppliers (not standard and/or COTS-Suppliers) 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 issued 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 - NSO Public Website (nato.int), https://nso.nato.int/nso/home/main/home

ISO - ISO - International Organization for Standardization, https://www.iso.org/home.html

MIL - ASSIST-QuickSearch Basic Search (dla.mil), https://quicksearch.dla.mil/qsSearch.aspx

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
PPV - Product Process Verification
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

AQAP 2110: AQAP 2110 requires that all Suppliers know that: "All requirements in this standard 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.

If AQAP requirements shall be flown down in full, this will be stated in the purchase order.

6 General Supplier Quality Conditions

The following section details general clauses applicable to ALL BOFORS purchase orders.

6.1 Quality Assurance Requirements

The Supplier shall be certified to the latest ISO 9001 standard or have their Quality Management System approved by the Supplier Quality Assurance (SQA). 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 Bofors 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.

6.2 Supplier Responsibility

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

Initial acceptance by the SQA and/or 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 SQA and/or the Purchaser.

6.3 Non-conforming material

It is in the interest of both Bofors and the Supplier, to identify and address non-conforming parts as quickly as possible.
Suppliers shall take all necessary actions to respond to non-conforming products that reach Bofors' facility.
Every effort taken to investigate, analyze and document non-conformances must be notified Bofors immediately. Any questions regarding the non-conformity or quantity rejected related to a specific claim shall be addressed to responsible SQA.

All costs (sorting, handling, shipping, rework and inspection report costs) associated with addressing a non-conformance will be the Supplier's responsibility. These costs can include any secondary costs that affect Bofors resulting from a non-conformance, such as the costs associated with tear down, reassembly, re-testing, and logistics support.

Every deviation, detected at Bofors, will generate a Q2 (Supplier deviation) and affect the performance score of the Supplier negatively. Even if non-conforming material is shipped, reworked or adjusted, the Supplier will be notified and will be required to respond with a deviation report/8D-report. This also include deviation in delivery documents, same procedure will apply and affect performance score negatively.

If the responsible SQA requires a deviation report, the short-term action must be answered within 48hrs and long-term action within 20 working days. If the resolving time lasts longer than 20 days, the supplier must reach an agreement with SQA.
A copy of return order and 8D-report (completed to 3D) shall be attached the delivery.

When receiving a claim the Supplier must within two working days send an updated delivery date to responsible SQA.

Suppliers shall be prepared to take any or all of the following actions after non-conforming material are identified at Bofors' facility:

- Expedited replacement of non-conforming material
- Provide resources to perform required sorting or rework
- Provide instructions and acceptance criteria required to support inspection, sorting, or rework
- Provide product specific gauging
- Expedited rework or adjustment of non-conforming materials

6.4 Waiver non-conforming material

If the ordered material is not in accordance with the technical specifications/requirements regardless of whether it is due to faulty manufacturing or that the technical specifications does not correspond to desired quality and is considered to have a significant impact to lead time and/or price, a waiver request can be sent to responsible SQA.

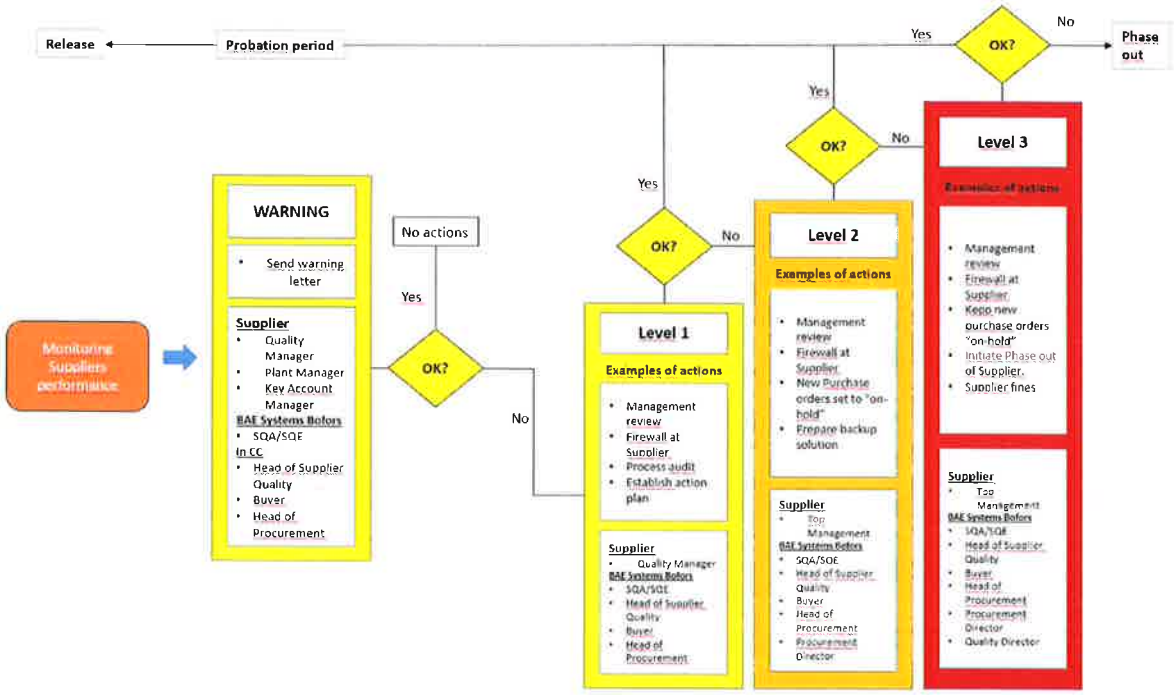
You, as a Supplier, are responsible for notifying SQA a description of cause, short-term action and long-term action and you shall not proceed until you get a decision from Bofors if it is accepted or not.

If the waiver request is accepted by Bofors and approves that, the material is delivered without conforming to the technical specifications, you shall ***NOT*** deliver without a copy of the waiver.

Parts that are delivered to Bofors with a waiver shall be marked with the waiver number.

Bofors has the right to charge the administration cost inflicted by a waiver proved to be the Suppliers' responsibility due to faulty manufacturing. The minimum administration cost is 5000.

Escalation Process



6.5 Subcontracting

No part of the purchase order, relating to further processing, shall 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 8.1 – Certificate of Conformity.

7 Production Readiness Review (PRR)

PRR is a proactive quality tool to ensure that all requirements are taken care of and that all quality and delivery risks are eliminated. Bofors initiate PRR on articles where PRR is considered needed.

When PRR considered needed, it will be stated as a requirement in the purchase order.

Bofors 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.

PRR will be performed 3-5 weeks after accepting the purchase order or on a later date agreed with responsible SQA. Bofors shall inform the Supplier at least 5 days before PRR will be performed.
The Supplier is responsible for

- Quality Plan
- Configuration Management Plan - When required
- Manufacturing and Control Plan
- Acceptance Test Procedure - When required
- PFMEA – When required

The documents listed above require Bofors approval.

Output from PRR is a manufacturing/operations plan where IPI (In Process Inspection) is decided and generates a follow up plan.

7.1 Quality Plans

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

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 how the Supplier's processes are correlating with each other and how the Quality Management System interacts with the organization and Bofors requirements. 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 SQA and/or 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.

7.1.1 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 the purchase order, AQAP 2210 and subject to approval by the Purchaser.

7.1.2 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 SQA and/or the Purchaser on request and may be used by the SQA and/or 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 Supplier's responsibility to approve and control these plans.

7.2 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. The Manufacturing Plan shall be delivered to SQA and 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.

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 SQA and the Purchaser of the change. Change in process always needs to be agreed with the SQA and/or the Purchaser.

7.3 PFMEA & Control Plan

A risk analysis assessment performed on the entire production process, together with action plans for the major risk modes, PFMEA and control plan shall be performed in accordance with AS13004.

The purpose is to identify and work pro-actively with the major risks of failure at each process step (even potential quality defects as a result of material handling, storage, inspection, etc.) This allows the possibilities for early process modifications and identifies improvement areas and parameters for SPC.

- Focusing on potential product Failure Modes caused by manufacturing or assembly process problems.
- Aiding in development of thorough manufacturing or assembly control plans.
- Confirming the need for Special Controls in manufacturing.

The PFMEA should address each production process from incoming inspection to shipping and identify material handling between each process step. Please note that suppliers using sub-suppliers for both partial and complete components delivered to Bofors should make sure that failure modes with the corresponding action plans from their sub-supplier's processes must be identified.

Control Plan is a written description of the system for controlling parts and processes. A process flow is a schematic presentation of the current or proposed process flow.

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 Control Plan.

The Control Plan shall support manufacturing of products, meeting Bofors' requirements.

The Control Plan shall be used as a living document and be updated in conjunction with relation to other areas (e.g. changes of specification, capabilities, failures, process changes). In effect, the Control Plan describes the actions that are required at each phase of the process, including receiving, in-process and outgoing, periodic requirements, to assure that all processes will be in state of control.

8 Delivery documents

All required delivery documents that are requested in the purchase order shall be uploaded to Bofors' supplier portal (TLC) or in case where it isn't applicable, be included with the delivered item in paper form. It is the suppliers' responsibility to ensure that all documents, stated in the purchase order, are included before shipping to Bofors. If the delivery documents is not complete, it will be regarded as a deviation and will have an effect to the performance score of the supplier. All documents shall be inspected by the Supplier and if you, as a Supplier, are unsure about the content you shall contact responsible SQA before delivery

The delivery documents must be delivered in an understandable and clear manner which means that it shall be delivered with a front page that describes all of the documents, which documents that are included in the delivery and that all of the documents have been inspected by you as a Supplier in accordance with Bofors' requirements.

8.1 Certificate of Conformity

A CoC (Certificate of Conformity) signed by a duly authorized representative of the Supplier is required with every delivery against the Purchase Order, unless otherwise stipulated by the Purchase Order.

The CoC must display clear and accurate information about individual items and contain minimum;

- purchase order number
- Bofors part numbers including revision number
- batches (if applicable)
- test results (Document number)
- Waiver number (If applicable)
- s/n, individual number.
- Quantity

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

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

If the delivery contains parts with approved waiver, it is mandatory to highlight this in the CoC with the following information;

- Waiver number
- s/n of the parts that is included in the actual waiver

A copy of the waiver shall be a part of the delivery documents.

9 First Article Inspection (FAI) / Factory Acceptance Test (FAT)

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 by Bofors on specified articles 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.

FAI shall be performed according to SS-EN/AS 9102B and it is the Supplier's responsibility to plan, evaluate and document the FAI-activity according to below;

- Plan the FAI-activity in accordance with AS9102B, chapter 4.2 a-c.
  - The plan has to be agreed by responsible SQA at Bofors.
  - If a requirement for PRR is initiated on the same order item, the plan is reviewed on the PRR, otherwise it is done in a stand-alone meeting.
- The Supplier performs the activities in the FAI-plan in accordance with AS9102B, chapter 4.5 a-i
- The Supplier documents the FAI in accordance with AS9102B, chapter 9.7
- The Supplier shall send the results to responsible SQA at Bofors for acceptance

10 Identification and Traceability

The supplier is responsible for maintaining source traceability of all materiel used for 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.

10.1 Identification

By identification means a system which, with suitable methods (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 products.

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

10.2 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.

10.3 Minimum Requirements

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

10.4 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.

11 Packing

Unless otherwise specified all items should be packed according to document 04234846.