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TITLE : QUALITY ASSURANCE REQUIREMENTS FOR SUPPLIERS										
Summary : <p>This document defines the Quality Assurance requirements to be followed by the Suppliers during the development, manufacturing and the release of equipment/sub-systems for the NH90 programme.</p> <p>Section 2 specifies additional Quality requirements for the development and the validation of Software.</p>										
						<u>Programme Archives</u> Page 1				
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AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

Issue	Issue date	Affected pages	CHANGE REASONS / ORIGINATORS CHANGE PROPOSAL / N°	Companies / Departments	Signatures
A	16.09.92	ALL	INITIAL ISSUE	NHI	GUIGNARD
B	26.11.92	see borders	QAT HARMONISATION	NHI	GUIGNARD
C	04.11.93	see borders	OFFICIAL COMMENTS INDUSTRY IMPROVEMENTS	NHI	GUIGNARD
D	29.04.94	see borders	INDUSTRY IMPROVEMENTS	NHI	GUIGNARD
E	23.06.97	6 to 13, 15 to 21	QAT improvements ECF inputs on SW identification	NHI	GUIGNARD

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

*** SECTION 1 *** TABLE OF CONTENTS
--

1.	General requirements
2.	Definitions
3.	Abbreviations
4.	Introduction
5.	Subcontract requirements
6.	Quality organisation requirements
7.	Quality Assurance manual
8.	Quality Assurance plan
9.	Buyer's Quality Assurance audits
10.	Design reviews
11.	Quality monitoring
11.1	Quality monitoring
11.2	Supplier's documentation
11.3	Supplier's reporting
12.	Manufacturer's part number
13.	Identification and Marking
13.1	Equipment identification
13.2	Sub-assemblies / module identification
13.3	Special identification
14.	Special documentation
14.1	Configuration statement
14.2	Engineering Log Card
14.3	Lifed item label
15.	Acceptance and delivery
15.1	General
15.2	Acceptance Test Procedure
15.3	Supplier's acceptance tests
15.4	Test equipment
15.5	Acceptance report and delivery
15.6	Non conforming products
15.7	Buyer's incoming acceptance test procedure

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

16. **Concession / production permit**
 - 16.1 Definitions
 - 16.2 Action at Supplier
 - 16.3 Classification of concessions/production permit
 - 16.4 Concession/production permit request
 - 16.5 Concession/production permit application
 - 16.6 Authorisation of concession/production permit
 - 16.7 Identification of concession/production permit
17. **Reporting and investigation of defective items**
 - 17.1 Defects at Supplier site
 - 17.2 Defect discovered by the Buyer
 - 17.3 On-Site repair
 - 17.4 Special investigation
18. **Authority of Suppliers technical representatives**
19. **Release Note/Certificate Of Conformity**
20. **Packaging, transportation, storage**
21. **Direct delivery from Subcontractors**
22. **Customer/NQAR involvement**
23. **First Article Inspection**
24. **Qualification**
25. **Configuration management**
 - 25.1 General
 - 25.2 Configuration identification
26. **Inspection**
 - 26.1 Inspection principles
 - 26.2 Production and inspection means
27. **Manufacturing and testability requirements**
 - 27.1 Items manufacturing
 - 27.2 Testability aspects
28. **Requirements due to classification of structural and mechanical parts**
 - 28.1 General requirements
 - 28.2 Substantiation file
 - 28.3 Testings
 - 28.4 Maintenance
 - 28.5 Documentation
 - 28.6 Responsibility
 - 28.7 Quality assurance
 - 28.8 Modification

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

*** SECTION 2*** TABLE OF CONTENTS

0.	Glossary of terms
1.	Scope
1.1	Identification
1.2	Area of application
1.3	Software Quality Program Plan
2.	Referenced document
2.1	Contractual standard
2.2	Applicable standards
2.3	Specific NH90 documents
2.4	Priority
3.	Organisation and management
3.1	Organisation structure
3.2	Personnel
4.	Software quality requirements
4.1	Quality involvement in the Software development
4.2	Quality procedures and methods
4.3	Quality evaluation reports
4.4	Subcontractors products
5.	Software Quality activities
5.1	Phase independent activities
5.1.1	Evaluation of plans, standards and procedures
5.1.2	Evaluation of configuration management
5.1.3	Evaluation of Software development and support tools
5.1.4	Evaluation of Software test environment
5.1.5	Evaluations of others processes used in Software development
5.1.6	Evaluation of the deliverable Software
5.2	Phase dependent activities
5.2.1	Modulation of Quality Evaluation
5.2.2	Quality activities during development phases
5.2.3	Maintenance and support for delivered Software
5.3.	Quality Assurance involvement into the Engineering process
5.4	Software Qualification
5.5.	Preparation of delivery of Software
6.	Review requirements
6.1	General
6.2	Review notification
6.3	Review meeting
6.4	Review report
7.	Note
7.1	List of abbreviations
7.2	Cross-reference

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

SECTION 1

QUALITY ASSURANCE REQUIREMENTS FOR SUPPLIERS

1. GENERAL REQUIREMENTS

The Quality Assurance requirements for the development and manufacturing of the helicopter, systems, sub-systems and equipment are defined in:

- AQAP 1 (NATO requirement for an industrial quality control system)/RAQ 1 for France,
- AQAP 13 (NATO Software quality control system requirements).

In case where AQAP 4 and AQAP 9 are more appropriate, the tailoring of the present document will be mutually agreed between the Buyer and the Supplier.

The Supplier has to prepare a Quality Assurance Plan describing how he fulfils all the requirements of this present document and AQAP rules. This plan is subject to Buyer's acceptance.

If the Supplier designs and produces Software as part of the equipment (or stand-alone) all Software Quality Assurance activities should be performed following the principles defined in section 2 of this document.

The Supplier has to ensure that its Subcontractors (if any) fulfil also these requirements.

2. DEFINITIONS

Buyer:	The company who places an order/contract to the Supplier.
Buyer's representative:	Any of the partner companies or NHIIndustries (duly authorised by the Buyer).
Customer:	End-User of the Programme (NAHEMA).
Item:	It could be an equipment, a sub-system requested by the buyer through the SOR.
Material Review Board:	A committee, which makes decision on the handling of critical defects on material or items. Members are Quality engineering, development/design, project management and product support.
Subcontractor	The company on which an order/contract is placed by the Supplier.
Supplier:	The company on which an order/contract is placed by the Buyer.

3. ABBREVIATIONS

AQAP	Allied Quality Assurance Publication
DRL	Data Requirement List
DVL	Documentation Validity List
LRU	Line Replaceable Unit
MRB	Material Review Board
NQAA	National Quality Assurance Authority
NQAR	National Quality Assurance Representative
QAP	Quality Assurance Plan

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

RAQ	Règlement sur l' Assurance de la Qualité
SOR	Schedule Of Requirement
SRU	Shop Replaceable Unit

4. INTRODUCTION

This document defines the mandatory Quality Assurance Requirements for Suppliers of System/ Equipment (Hardware and/or Software).

Any reference in this procedure to orders, contracts, pre contracts or any other document shall be interpreted to apply also to any subsequent amendments.

All enquiries regarding the contents of this document or any Quality aspects shall be addressed to the Buyer, to the attention of the Quality Assurance Department.

The Supplier shall establish appropriate Quality Assurance procedures within its organisation, in order to:

- ensure adequate quality system implementation during the development,
- ensure that these rules and procedures are correctly implemented.

The Supplier shall designate a Quality Assurance focal point.

The rules and procedures shall be referenced in the Quality Assurance Plan (refer to paragraph 8) and shall be available, on Buyer's request. They can be issued from the Supplier's in-house Quality Assurance procedures, if they are adapted to the NH90 programme requirements.

5. SUBCONTRACT REQUIREMENTS

The Supplier shall ensure that all subcontract orders reflect fully the requirements contained in this document, the terms of conditions of which must be met also by the Suppliers' Subcontractors (e.g.: Quality level, Quality Plan).

For orders of standard parts and materials, the depth of implementing these Quality Assurance requirements shall be at the discretion of the Supplier's Quality Assurance Department, unless otherwise stated by the Buyer's Quality Assurance.

6. QUALITY ORGANISATION REQUIREMENTS

The Supplier shall demonstrate to the satisfaction of the Buyer Quality Assurance department that his Quality Assurance system and organisation conforms to the principles laid down in the applicable AQAP.

7. QUALITY ASSURANCE MANUAL

The Supplier shall submit his Quality Assurance Manual to the Buyer's Quality Assurance Department. This manual shall detail the system by which the enterprise generally ensure the Quality of the products to be supplied. It shall basically satisfy the requirements of paragraph 6 of the present document or equivalent national document.

Any subsequent amendment to the quality Assurance manual shall be promptly forwarded to the Buyer Quality Assurance department.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

8. QUALITY ASSURANCE PLAN

The Supplier is required to establish a Quality Assurance Plan which describes how he intends to fulfil all Quality Assurance-requirements. This is to allow an assessment of the Supplier capability to assure a continuous Quality Assurance programme throughout the stages of design, development, manufacturing and after delivery of the items.

For the redaction of the Quality Assurance plan, it is recommended to follow the ISO 9001 structure.

If the Suppliers develops and manufactures Software "stand alone " or as part of equipment, he has to prepare and submit a Software Quality Program Plan in addition to the Quality Assurance-plan (refer to section 2 paragraph 1.3).

For system development, in case of co-operation in the framework of a consortium, it is required to provide only one Quality Assurance Plan, which has to take into account partners interfaces, per sub-system covered by an overall Quality Assurance Plan applicable to the whole system.

In case of subcontract, these plans must also describe the responsibilities and relationships between the partners for Quality Assurance matters. They shall clearly describe all specific accommodations in regard of the subcontract (acceptance of Subcontractor's products, ...).

The Quality Assurance plan(s) will have to be submitted to the Buyer for agreement.

9. BUYER'S QUALITY ASSURANCE AUDITS

The Supplier shall permit access, at all reasonable times to premises, design procedures, processes, manufacturing operations, assembly operations, Quality Assurance activities, inspection and test operations, and all related documentation used to produce items for the Buyer, shall be open for reviews and audits by the Quality Assurance departments of the Buyer, providing that the National rules and in particular the security rules are applied. Where proprietary information is involved the extent of these audits will be mutually agreed by the Buyer and Supplier. This requirement is restricted to the related contract activities.

The Buyer reserves the right to send a representative of his Quality Assurance department for a permanent or prolonged stay at the Supplier facilities. The Supplier will be required to provide adequate accommodation from which the representative can conduct his business.

The Supplier shall clearly identify to such representatives any information of a proprietary nature which is made available. Such representatives shall then be liable to the Supplier for the unauthorised disclosure of such information.

When inspection and tests are performed or witnessed at the premises by representatives of the Buyer, then the Supplier must make available for use by such representatives all personnel, documentation, instrumentation, gauges and test media which may be necessary. Inspections carried out by such representatives, however, shall not relieve the Supplier of his contractual obligations. The Supplier will be notified when and at which point any inspection of the supplies before delivery will be performed. These arrangements will be made to avoid delay in the Supplier's delivery schedules and programme, and in this connection Supplier is required to advise the Buyer's Quality Assurance in advance of "key points".

10. DESIGN REVIEWS

The Supplier shall perform Design Reviews throughout the product's development phase. These reviews shall be considered as steps of the development process of the items.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

At least, three reviews will be performed:

- a Preliminary Design Review (PDR) during the beginning of the development of the product after completion of the general design and concept testing,
- a Critical Design Review (CDR) when detail design is essentially complete, at least before qualification tests,
- a Qualification Review (QR) at the end of the qualification process.

These Reviews shall be organised according to requirements stated in the SOW. The Quality Assurance of the Supplier shall monitor the preparation process by approving the Review Readiness Report and the Review Notification. Quality Assurance shall be member of the Review Committee. Quality Assurance activities shall be presented during the Review. Quality Assurance shall witness the Review Summary Report and Review Completion Notice in order to assess of the completion of the Review.

This normal procedure could be modified with the Buyer agreement.

11. QUALITY MONITORING

11.1 Quality monitoring

Quality monitoring shall be performed in accordance with the Quality Assurance-plan.

The Supplier must be able to provide:

- evidence of incoming inspection of all supplied items,
- identification of material,
- traceability of storage conditions (when applicable),
- evidence of reviews, interstage inspections, final inspections and tests and the identification of the related inspectors,
- evidence of release documentation for delivered products,
- evidence of all Qualification substantiations and tests results,
- identification of each Defect Report, non conformity and evolution of the configuration/definition of the items,
- the Quality level of products measured by the means of Quality indicators (for example : percentage of defective items during the manufacturing phase, rate of failures during tests,..) to be specified on request,
- evidence of traceability (item against definition files, means...),
- records of incoming and outgoing equipment shall be available on Buyer's or Customer's request.

These records shall be retained according to national legal regulations and shall not in any case be destroyed without prior permission of the Buyer.

11.2 Supplier's documentation

Deliverable documents must be provided by the Supplier according to the Data Requirement List.

In order to monitor the development status in an easy way, the Supplier will have to establish the current status relative to these requirements during the development phase.

This current documentation status will be presented using an array taking into account all the required documents, the references of documents the Supplier has already released and their status (either in progress, preliminary, accepted by the Buyer,...).

The current documentation status shall be distributed to the Buyer according to the DRL.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

11.3 Supplier's reporting

The Supplier shall produce status reports, according to the DRL and SOW. Quality Assurance aspects shall be included.

12. MANUFACTURER'S PART NUMBER

In addition to the Supplier part number, the Buyer requests the use of his own identification part number.

If a Software is produced as part of the equipment, a specific Software part number will be used by the Supplier.

13. IDENTIFICATION AND MARKING

13.1 Equipment identification

The equipment shall be correctly identified with an identification plate or with indelible ink, when more appropriate. The following information shall be mentioned:

- name of the Supplier,
- NATO code number of the Supplier,
- Supplier's part number,
- serial number,
- modification status,
- concession/production permit number if any (refer to § 16.7),
- Buyer's part number (refer to § 12),
- date of manufacturing,
- Supplier's Quality Assurance stamp.

The plate shall permit to update easily the amendments when necessary and shall be sufficiently strongly fixed on the equipment in order to prevent loss.

In case of embedded Software, the identification number and version number shall be also part of the MIL-BUS message (see also information on log card § 14.2).

In addition, any cautions/warnings concerning human safety and/or equipment protection shall be indicated on the equipment, as well as any necessary adjustment to be known by the user.

13.2 Sub-assemblies/module identification

Each sub-assembly/module shall be correctly identified with:

- a part number,
- a serial number,
- a modification status.

In case of a module with embedded Software, the module part number shall take into account the Software version and release.

13.3 Special identification

Helicopter items supplied with "ground use only" limitations will be subjected to the following mandatory requirements:

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

- the items shall be identified by a painted bright red band approximately 20mm wide or as wide as is practicable for the size of the item,
- the Release Note shall be clearly endorsed " NOT FOR FLIGHT ",
- the engineering log card (If required) and the certificate of conformity shall be over stamped in red ink "NOT FOR FLIGHT".

In case of concession/production permit, refer to paragraph 16.7.

14. SPECIAL DOCUMENTATION

14.1 Configuration statement

For prototype models and for first equipment to be delivered to the Buyer or to the qualification process, a configuration statement must be prepared.

This configuration statement describes all drawing numbers at least down to module level, the modification status and appropriate part-numbers.

In addition, each deviations against the technical specification or each performance not fulfilled shall be clearly identified.

This also applies for Software.

Configuration statements will be accepted in any suitable format and must be up-dated with all modifications and shall be available on Buyer's request.

14.2 Engineering Log Card (If required)

A complete log card shall be established and delivered with each product, if required by the contract/order or by the specification.

The content shall be agreed with the Buyer. In particular following data must be indicated :

- concession/production permit number with revision (refer to § 16.7),
- life duration,
- Software part number,
- airworthiness information (refer to § 13.3).

14.3 Lifed item label

A lifed item label shall be established and delivered with each product subject to life time and/or shelf life limitations, except if a log card is already supplied.

The content shall be agreed with the Buyer.

15. ACCEPTANCE AND DELIVERY

15.1 General

Before delivery to the Buyer, an acceptance process shall be performed for each product by the Supplier. This includes the Environmental Stress Screening (Burn In Test) process in accordance with the relevant requirements: Reliability methodology requirements for Suppliers MD N000M0950E01 (these Environmental Stress Screening tests are required for models used for qualification or flight).

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

This acceptance process is also required before delivery of repaired/modified products.

The Buyer and/or relevant authority have the right to participate to this process.

15.2 Acceptance Test Procedure

The Supplier will prepare an acceptance test procedure, according to the DRL. Such procedure is subject to the agreement of the Buyer's Quality Assurance and design office.

The test procedure must clearly indicate its applicability to both the item part number and appropriate design/modification standard.

The Buyer has the right to request modification of this procedure. The test procedure may only be altered with prior agreement by the Buyer.

For system acceptance, it is required to prepare one Acceptance Test Procedure per sub-system covered by an overall procedure applicable to the whole system.

The contents of this procedure shall be at least:

- physical inspection: ensuring that the item is compliant with the design documentation for, at least, identification, workmanship, dimensions, weight, etc.
- electrical tests (for equipment with electrical/electronical components): compliance of electrical requirements, especially insulation resistance, dielectric rigidity, bonding and grounding, etc.
- functional and performance tests: ensuring, through sufficient tests, the compliance of the item with regard of the contractual requirements.
- specific Software tests (refer to section 2).
- configuration control: identifying each LRU/SRU/module identification in regard to the Definition Files.

15.3 Supplier's acceptance Tests

Completion of these tests is a Supplier's responsibility and shall be performed in its entirety on each completed item prior to release.

Attendance to tests by the Buyer's representatives must be rendered possible.

After the internal validation tests, the Supplier shall inform the Buyer's Quality Assurance and the NQAR in due time about the date when the acceptance test with the Buyer is planned.

Prior to this acceptance, the Buyer has the right to require :

- the internal validation tests results from the Supplier's in house tests,
- the configuration statement, as described in paragraph 14.1,
- the status of non conformities or concessions/production permit requests (if any),
- the documentation mentioned in the paragraph 15.5.

Supplier shall make available all documentation (Definition Files, inspection forms, Software test results,... if required by the Buyer's representatives during the acceptance.

Validation test shall be performed by the Supplier at the final step of integration of the equipment.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

15.4 Test equipment

All test equipment, rigs, tools and supporting Software used for acceptance process must have a valid calibration and/or acceptance/validation status.

Evidence must be available to the Buyer or to the NQAR on request.

15.5 Acceptance report and delivery

An acceptance report shall be established by the Supplier and delivered with each product under cover of a Certificate of Conformity (CoC). The content of the CoC must be agreed with the Buyer.

The acceptance report shall contain, at least, the following information :

- any observations, comments raised during the acceptance,
- any correctives actions,
- acceptance test results filled during the acceptance.

| In case of embedded Software, the acceptance report shall refer to the relevant part number.

| The following documents (Delivery Data Package) are part of the delivery of the product.:

- the configuration statement (if required),
- acceptance test report,
- the engineering Log Card (If required)
- the lifed item label (If applicable)
- major and minor concessions/production permits accepted by the buyer (if any)
- the Release Note/CoC.

Conditions of acceptance and warranty are defined in the contract/order.

15.6 Non conforming products

Defects occurring during acceptance process must be recorded and investigated. Necessary re-acceptance after corrective and preventive action must be done. The Buyer will be informed by the Supplier and may require additional actions.

Defects which cannot be corrected and deviations still present at delivery must be in accordance with the principles described in paragraphs 16 and 17.

15.7 Buyer's incoming acceptance test procedure

| If required by the Buyer, the Supplier will prepare a proposal for an incoming acceptance test procedure at Buyer's premises, according to the DRL.

| This procedure will be applicable for "C Model" items.

15.8 Maintenance and support for delivered Software

The Supplier's Quality Assurance Plan shall define all the Quality dispositions to be taken after delivery, including technical assistance on Buyer's request.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

16. CONCESSION/PRODUCTION PERMIT (WAIVER/DEVIATION)

16.1 Definitions

Concession (Waiver):

This is the permission granted to a Supplier to use or release a limited quantity of material, components or equipment already produced but not complying with the contractually required performances or definition.

Production permit (Deviation):

This is the permission granted to a Supplier to use or release a limited quantity of material, components or equipment prior to manufacture but not complying with the contractually required performances or definition.

16.2 Action at Supplier

Supplier shall maintain their own internal records of concessions/production permits granted.

The Supplier has to set up a Material Review Board (MRB). The members of this board shall be nominated and the Buyer shall be informed accordingly. The Buyer reserves the right to participate at Supplier's MRB.

The Buyer reserves the right to inspect all records at any time.

Supplier having design authority shall determine the category of the concession/production permit in accordance with paragraph 16.3.

16.3 Classification of concessions/production permits

There are three classes of concessions/production permits, which are given thereunder their order of precedence :

- major concessions/production permits,
- minor concessions/production permits,
- internal concessions/production permits.

Wherever a component shows several defects, the class of concessions/production permit shall be at least the highest class required by any single defect.

16.3.1 Major concessions/production permits

A major concession / production permit covers:

- all non conformities to Fit, Form, Function aspects with consequent limitations to the test programme or the flight envelope or having an impact on the test results validity.

Major concessions/production permits need an agreement from the Buyer.

Note: Any non conformity affecting Aircraft safety shall lead to the rejection of the concerned parts.

16.3.2 Minor concessions/production permits

Concessions/production permits shall be classified as "minor" for the following reason:

- all non conformities, not classified as "major", which are necessary to be known by the Buyer (as use of different component/materials, appearance defect visible on the helicopter, without disassembly operations other than those planned for maintenance, and which may cause concern to the Buyer).

Minor concessions/production permits need an agreement from the Buyer.

16.3.3 Internal concessions/Production permits

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Number	QD N000N0803E01	Issue	E	Date	23/06/1997	Page	14 of 35
--------	-----------------	-------	---	------	------------	------	----------

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

This class applies to minor defects which do not affect the areas listed above.

Note 1: this category is not submitted to the requirements defined in the following paragraphs. Nevertheless, they shall be recorded and maintained in Supplier's facilities, according to Supplier's internal procedure to be described in the Quality Plan.

Note 2: this category is not to be applied to Software concessions/production permits.

16.4 Concession/production permit request

The request for concession/production permit shall be signed by the Supplier's design and quality assurance representatives to the effect that the content of the request is correct.

The request shall then be forwarded to the Buyer.

The Buyer will provide the request form to be used by the Supplier.

16.5 Concession/production permit application

A unique concession/production permit shall be established per non conforming serialised part independently of the number of defects.

Any modification to a concession/production permit results in raising its issue.

Any issue change requires application of the complete approval procedure.

16.6 Authorisation of concession/production permit

Concessions/production permits agreed and signed by the Buyer shall be forwarded to the Supplier.

16.7 Identification of concession/production permit

When the concession/production permits has been agreed, a record shall be made by the Supplier in the item manufacturing history and the official concession/production permit number (given by the Buyer) must be marked on the item or assembly adjacent to the part number in a approved manner .

All numbers of concession/production permit shall be written on the CoC. The number of the concession/production permit shall be written with revision on engineering log card (if this engineering log card is required).

Concession/production permits numbers (without revision) shall be marked on the item

17. REPORTING AND INVESTIGATION OF DEFECTIVE ITEMS

17.1 Defect at Supplier site

Failures and investigations occurring during manufacturing and any testing of the equipment must be periodically recorded by the Supplier.

Copies of these records must be available to the Buyer on request.

The non conforming products shall be marked and isolated to prevent installation and shipment pending decisions to be taken (acceptance or concession, rework, repair or rejection). In case of concession/production permit submitted to the Buyer, unless formal specific Buyer agreement, the shipment of the product will be allowed only after the document has been returned formally agreed and signed.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

In case of a nonconformity noticed by the Supplier, likely to be detrimental to the quality of the equipment delivered, the Supplier shall immediately inform the Buyer and shall forward in the shortest time the results of the investigation carried out so as to provide both preventive and corrective action for the equipment not yet delivered and corrective action for the equipment already delivered.

17.2 Defect discovered by the Buyer

In case of nonconformity noticed by the Buyer, the non conforming item will be rejected to the Supplier. For all rejected items (including on site repairs) and all incidents in which the supplied item is involved, the Supplier will receive Defect Reports.

Defect Report distributed to the Supplier includes all necessary information to investigate the items and shall be treated accordingly by the Supplier. The Defect Report shall be correctly answered and, then, returned back to the buyer.

The requirements for defect investigation will be clearly stated in the Defect Report. If the items are returned to the Supplier for repair, the Defect Report shall be returned back with the repaired item to the Buyer including also the updated engineering log card.

It is requested that the Supplier nominates to the Buyer a co-ordinator responsible for the investigation of defects. This co-ordinator shall be the point of contact for the Buyer.

17.3 On-site repair

When items are repaired on-site by the Supplier's technical representative, the repaired item must be released after validation of the repair by the Supplier's Quality Assurance department or by the technical representative authorised by the Quality Assurance Manager of the Supplier.

Such delegation must be given by the Supplier's Quality Assurance manager in writing to the Buyer Quality Assurance department. The required Quality Assurance-release shall be entered on a repair report.

Such repair report will become an attachment to the applicable Defect Report for information.

17.4 Special investigation

The Buyer may request that a special and urgent investigation of a defect takes place at the Supplier premises. Under these circumstances the Buyer's Defect Report will be marked accordingly.

When so requested by the Buyer, these special investigations will be carried out by the Supplier as, for instance, repetition of acceptance tests.

Depending on the degree of gravity of the defect or defect implications, arrangements shall be made by the Supplier for the participation of any involved representatives of the Buyer.

When a defective item is the subject of a special investigation, steps will be taken by the rejecting firm to ensure that the unit is properly packed, sealed and the outside of the container distinctly marked "to be opened only in the presence of the Buyer's representative".

The Supplier will be responsible for recording the findings of the defect investigation and providing copies of such findings to the Buyer's representative.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

18. AUTHORITY OF SUPPLIERS TECHNICAL REPRESENTATIVES

The Supplier is held fully responsible for any technical intervention carried out by his personnel at the Buyer's premises, like removal of accessories, preservations, modifications, adjustment, touch ups, repair work, tuning, calibration, completion of documents.

The scope of work of this representative is to carry out, his status in respect to the Quality Assurance clearance of his work and his name must be supplied to the Buyer's Quality Assurance department before the work is carried out.

If the Supplier's technical representative is not cleared to carry out Quality Assurance functions, he must be accompanied by an Quality Assurance representative whose name and clearance must also be supplied to the Buyer's Quality Assurance department.

19. RELEASE NOTE/CERTIFICATE OF CONFORMITY

All supplies must be delivered to the Buyer under cover of a Certificate of Conformity/Release Note, and any deviations agreed by the Buyer must be detailed thereon.

The Certificate of Conformity/Release Note must quote in the remarks box the Qualification status of the equipment, as follows:

«QUALIFICATION STATUS»

- qualified (N°..... Issue.....) - refer to DDP,
- flight cleared (N°..... Issue.....) - refer to DDP,
- flight clearance/qualification pending (N°..... Issue.....) - refer to preliminary DDP (if applicable).

«NOT FOR FLIGHT» (for equipment supplied for ground or rig use only ; refer to paragraph 13).

The standard of any embodied Software must be referenced in the CoC/Release Note.

Software supplied for the purpose of incrementing embodied standards will be supported by a CoC/Release Note.

Software supplied for exercising random access memory elements of delivered hardware will be supported by CoC/Release Note.

The Supplier may use his own CoC/Release Note, provided that it is acceptable to the Buyer.

Each CoC/Release Note issued to cover an item affected by non conformities must quote all concessions/production permits granted.

20. PACKAGING, TRANSPORTATION, STORAGE

The Supplier shall make sure that the requirements concerning handling, storage, conditioning, preservation, and correct inventory turnover shall be met during the complete manufacturing process until equipment delivery to the Buyer.

If the packaging or shipping method is not specified by the Buyer, it will be the Supplier's responsibility to provide packaging and shipping methods that adequately protect the items from damage which will in any way impair its integrity or performance as certified by the release documentation.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

In any case, all interfaces (as connectors, pipes,...) as well as face plate (as keyboards, screens) shall be correctly protected from damage and dirtiness with appropriate means. For face plate, the protection shall allow the normal use of the equipment. All protections shall be removable without specific tools.

21. DIRECT DELIVERY FROM SUBCONTRACTORS

If the Buyer authorises direct delivery from Subcontractors of the Supplier, the Supplier remains responsible for the quality of these items.

Direct delivery by a subcontractor of the Supplier with subcontractor CoC shall be authorised by the Buyer. In that case, the Supplier shall inform officially the Buyer of the delegation given to the subcontractor for the release of the CoC with the names of authorised persons.

The items delivered are subject to the same Quality requirements as that delivered by the Supplier.

22. CUSTOMER/NQAR INVOLVEMENT

French, German, Italian and Netherlands Ministry of Defence's Quality Assurance rules, directives, procedures and standards shall apply within the respective national boundaries except where modified to meet the requirements of the NH90 project by procedure as agreed by the contractors and the authority.

These requirements also apply to any level of subcontracts established in furtherance of this contract.

All works carried out under this contract and any level of subcontracts issued in furtherance of, can be subject to Government Quality Assurance by the appropriate NQAA.

The Supplier shall allow the Customer access on request to all programme related Quality documentation and data. The necessary arrangements as to this data access will be agreed between the Supplier, the local NQAR and the Buyer.

Where proprietary information is involved, a mutual agreement has to be reached between the Customer and the Supplier.

The NQAR shall be entitled to access to the purpose of performing Government Quality Assurance activities at all levels including access to any premises where work is being carried out under this contract.

The NQAR shall be afforded unrestricted opportunity to verify compliance of Quality Assurance system procedures and conformance of material and services with the contracts requirements.

23. FIRST ARTICLE INSPECTION

A First Article Inspection (FAI) shall be performed for:

- the product submitted to flight clearance,
- the product submitted to qualification (if definition/built standard is different from the previous one).

The Supplier shall inform the Buyer in due time, that a product is available for First Article Inspection in order to permit him to attend.

The built standard is identified, recorded and frozen during the FAI, and all modifications to be performed afterwards shall be clearly described and shall be agreed by the Buyer's representative. The built standard must be kept under configuration management.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

During First Article Inspection, at least the following items shall be checked:

- Hardware and Software identification and current status (list of modules, components, list of Software modules implemented, etc.),
- compliance of the build standard with its Definition File and all other definition / manufacturing / inspection documentation,
- correct implementation of the manufacturing and inspection procedures,
- compliance with the technical requirements by running the acceptance procedure described in paragraph 15.

The Buyer has the right to require disassembling of the product for parts which can be easily removed (no soldering or removal of fixed connections).

24. QUALIFICATION

Supplier Quality Assurance shall ensure that the qualification process is performed according to the requirements stated in the General Requirement Specification (GRS).

The Buyer will describe, if necessary, his own detailed quality assurance requirements concerning Qualification in the Statement Of Work (SOW).

25. CONFIGURATION MANAGEMENT

25.1 General

The Supplier shall use a configuration management system in accordance with configuration management requirements quoted in the SOW of the contract/order.

Through the configuration management, Quality Assurance shall attest the configuration of the delivered products, with a particular attention to the modification process including qualification follow up.

25.2 Configuration identification

The configuration consists of the setting up and maintaining of baselines which give the definition of the product at the relevant point of the development phases.

Quality activities shall ensure:

- the correct implementation of the corresponding baselines,
- the correct implementation of all modifications/changes affecting one of the baselines.

26. INSPECTION

26.1 Inspection principles

Quality Assurance shall implement appropriate inspection plans in order to ensure the conformity of each module/sub-assembly manufactured.

An inspection plan shall be established according the work breakdown (top-down approach). It means that the inspection plans shall be produced against the specification of the single module/sub-assembly and against the upper level of assembly.

The relevant inspection operations shall be performed by Quality inspection. The traceability is mandatory.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

26.2 Production and inspection means

Production and control tools must be provided to ensure the quality and uniformity of the production.

In the case where the product control cannot sufficiently guarantee the level of quality of the product, the Supplier shall institute a surveillance of the manufacturing methods and the means.

The accuracy of the control, measurement and test equipment must be appropriate to the specified value of tolerance.

All measurement tools and means used during manufacturing and control phases must be in their valid calibration period.

In particular, all specific test equipment, rigs, benches support Software used during any acceptance and qualification process must be in an acceptance status by the Supplier's Quality Assurance. The Supplier must be able to demonstrate the level of quality of such specific tools.

27 MANUFACTURING AND TESTABILITY REQUIREMENTS

27.1 Items manufacturing

In a general way, the items shall be designed and manufactured in accordance with the recognised rules and procedures applied in aeronautical practices.

27.2 Testability aspects

In order to reduce the efforts and to detect failures /problems as soon as possible, a methodology approach during the equipment design shall be implemented and proposed by the Suppliers. The objectives are:

- to ensure that each equipment characteristic and functionality can be tested,
- to reach a maximum coverage of the requirements verified before release of the equipment.

Specific meetings/reviews can take place on this topic to state about the ability and completeness of test of the item.

28 REQUIREMENTS DUE TO CLASSIFICATION OF STRUCTURAL AND MECHANICAL PARTS

28.1 General requirements

According to NH90 rules, structural and mechanical parts have to be classified with regard to Safety aspects.

The Supplier shall guarantee activities in accordance with the document "Classification and procedure for structural and mechanical parts" QD N000N0804E01, in conjunction with its internal rules and buyer's specific documents (classification criteria, manufacturing and inspection rules,...) if required by the contract (refer also to Documentation Validity List and SOW).

Each Supplier shall define his own "Invariable Defined Process" in a specific document, including the invariable manufacturing and quality control parameters.

Invariable Defined Process means that all or part of the manufacturing and inspection processes shall not be modified without the approval of the Quality Assurance and Design department of the Buyer.

A preliminary Critical parts list (class I) shall be provided at the Preliminary Design Review.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

28.2. Substantiation file

The substantiation of the requirement (fatigue resistance as an example) will be performed according to a substantiation programme provided by the Buyer, and the type of substantiation (by computation and/or tests) approved by the Buyer.

28.3 Testings

The Test Plan and the number of parts to be tested shall be established with the Buyer. This plan can be modified during the tests with the agreement of the Buyer and according to the results.
The location of these tests shall be defined according to the available test means, in the Supplier's facilities, in the Buyer's facilities or in an qualified laboratory.

28.4 Maintenance

Specific instruction may be reported in Maintenance documents according to Design office requirements, especially for Class **I_a** parts.

All manufacturing procedures and process used for class **I_a** parts repairing shall fulfil requirements applicable to class **I_a** parts manufacturing.

28.5 Documentation

For class **I**, the following documents shall be provided to the Buyer:

- the definition drawings of the elementary and subsets parts (before prototype parts manufacturing and before test specimen manufacturing),
- the invariable defined process files (class **I_a** only and, if required, class **I_b**),
- the substantiation files (refer to paragraph 28.2),
- the Test Plan (class **I_a** only and, if required, class **I_b**): refer to paragraph 28.3,
- the class **I_a** part list only and, if required, class **I_b** part list,
- the manufacturing process modification project for approval by the Buyer prior to modification (class **I_a** only and, if required, class **I_b**).

28.6 Responsibility

The Supplier shall be responsible of the equipment definition and the proposal of the list of Critical parts.

The classification of the elementary parts and subsets shall be agreed by the Buyer.

The Buyer is responsible of the definition of the limitations of use and of the life-time.

28.7 Quality Assurance

Inspection methods are as described in the usual inspection documents. Every design characteristics is to be guaranteed.

Generally, inspection operations will be left to the Quality Assurance department appreciation.

Specific inspection operations may be required, by the Design department of the Buyer, especially for Class **I_a** and **I_b** parts.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

Quality documentation may be necessary in some cases. Such documents may be required, by the Design department in accordance with the Quality Assurance department, especially for class **I_a** and **I_b** parts.

28.8 Modification

For class **I_a** only and, if required, class **I_b**, every modification of the definition as well as of the manufacturing file shall beforehand be submitted to the Buyer's approval.

The Buyer shall keep the right to ask for modifications if the fatigue resistance is judged insufficient after the fatigue computations or after fatigue tests.

For class **I_a** only and, if required, class **I_b**, every modification of the definition as well as of the manufacturing file shall beforehand be submitted to the Buyer's approval.

The Buyer shall keep the right to ask for modifications if the fatigue resistance is judged insufficient after the fatigue computations or after fatigue tests.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

SECTION 2

ADDITIONAL QUALITY ASSURANCE REQUIREMENTS FOR SOFTWARE DEVELOPMENT

0. GLOSSARY OF TERMS

- **AUDIT** : Independent examination of activities and results with the intent to evaluate the correct implementation of pre-established rules and procedures.

- **REVIEW** : A formalised examination of an activity and resulting products to confirm that objectives and requirements are being or have been met correctly.

- **ACTIVITY INSPECTION** : A Quality activity that, by means of examination, observation or measurements, determines the status of the activities against the project plans.

- **PRODUCT INSPECTION**: Process of examination of Software and its related documentation against the project standards to verify both technical and formal contents and to investigate problems.

- **ANALYSIS**: An Engineering/Quality activity that by means of examination and traceability techniques determines the coverage of top level requirements by lower level requirements or the coverage of these requirements by tests.

- **WALK THROUGH** : A process by which a segment of design or code is examined by somebody different from the author, to assess the adherence to development standards and specifications.

1. SCOPE

1.1 Identification

This section provides the Software Quality requirements relatives to the development and the delivery of either a stand-alone Software or a Software/Firmware as part of equipment by a Supplier of the partner companies (EUROCOPTER FRANCE, EUROCOPTER DEUTSCHLAND, AGUSTA, FOKKER) for the NH90 programme.

These requirements shall be used jointly with the documents defined in the paragraph 2.3 in order to achieve an uniform Software development guide for Quality aspects and to get an efficiency and quality for Software and associated documentation.

The aims of these requirements are to :

- define the Software Quality Assurance objectives and activities to be performed in order to:
 - * ensure Software Quality implementation for the Software development by establishing the necessary rules and procedures.
 - * ensure that these Software Quality rules and procedures are correctly implemented.
- stipulate the Software Quality Requirements for Suppliers.

AGUSTA

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FOKKER

1.2 Area of application

This section 2 shall be applied whenever Software is provided by a Supplier.

The Quality Assurance dispositions shall take into account the different types of Software :

- for new development, the present requirements are fully applicable.
- for "off-the-shelf" Software, the Supplier shall prove the validation status of the Software taking into account these requirements associated to the criticality level.
Results of this analysis shall be submitted for acceptance to the Buyer.
- for adapted "off-the-shelf" Software, the Supplier is authorised to propose to tailor these requirements.

1.3 Software Quality Program Plan

For each CSCI to be developed, a Software Quality Program Plan shall be prepared by the Supplier, describing in detail the Quality activities to be performed throughout the life cycle of the Software development.

The activities laid down in the plan shall fulfil all these requirements and shall be mandatory for all personnel involved in the project.

This SQPP shall be structured according to applicable standards. It shall be submitted for acceptance to the Buyer. After Buyer's approval, any modifications shall be submitted for approval to the Buyer before implementation. Modification procedure shall be defined in the relevant SQPP.

2. REFERENCED DOCUMENTS

2.1 Contractual standards

- AQAP-13: Allied Quality Assurance Publication - NATO Software Quality Control System Requirements

2.2 Applicable standards

- DoD-STD 2167A : Military standard - Defense system Software development
- DoD-STD 2168: Military standard - Defense system Software Quality Program
- RTCA/DO 178 A: Software considerations in Airborne systems and equipment certification
- DID DI-QCIC 80572 : Data Item Description - Software Quality Program plan

2.3 Specific NH90 document

- MD N000G0406E01: Software Development Requirements for Supplier

2.4 Priority :

In the event of a conflict between the content of this section and the documents referenced here in chapters 2.1 and 2.2 above, the content of this section shall be considered a superseding requirement.

AGUSTA

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FOKKER

3. ORGANISATION AND MANAGEMENT

3.1 Organisation structure

The organisation responsible to perform Software Quality activities shall be described in details in the relevant SQPP, including an organisation chart.

The organisational independence of the Quality department as regard of development and management teams, in accordance with contractual requirements, shall be achieved.

3.2 Personnel

As a main requirement, personnel performing Software Quality functions shall have the responsibility and the authority to identify and evaluate Software Quality problems and to initiate, recommend or provide solutions during all phases of the project.

The detailed description of involved personnel's skill and responsibility shall be defined in the relevant SQPP.

The Quality personnel shall have the right of access to any area of the development process.

The Quality personnel is afforded unrestricted opportunity to verify conformance of the products and all support tools shall be available for verification purposes.

4. SOFTWARE QUALITY REQUIREMENTS

4.1 Quality involvement in the Software development

Software Quality personnel shall participate in all technical tasks which either require specific Quality knowledge or where an objective point of view due to the independence from the engineering is desirable.

Such main tasks are :

- preparation of Quality standards,
- proving of all products with regard to Quality standards,
- participation in the Software validation and acceptance process,
- producing the Quality Assurance requirements of the Software Requirements Specifications,
- participation in reviews,
- conducting of audits.

In a general way, the Software Quality personnel shall ensure the application of Quality criteria throughout the development and assess that all tasks are performed according to the relevant plans and procedures.

4.2 Quality procedures and methods

The general Quality Evaluation method has to be based on the following:

- to perform transitions from one phase to the next one, after conclusion of the present phase by reviews with pre-defined aims and controlled acceptance criteria,
- to iterate any development activity, if errors or problems are detected or if system or/and Software requirements are modified.,
- to perform evaluation during one phase on the products and/or activities which are defined in the relevant project plans.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

As a consequence, the main Quality monitoring methods can be defined as follows:

- AUDIT
- REVIEW
- ACTIVITY INSPECTION
- PRODUCT INSPECTION:
- ANALYSIS
- WALK THROUGH

These methods shall be supported by formal procedures, which shall be precisely described in the relevant SQPP and shall address as a minimum the following subjects:

- description of their purposes,
- planning,
- criteria of acceptance
- check-list,
- documents to be reviewed and inspected.

Modulation of the Quality Evaluation activities depending on the Software criticality is presented in chapter 5.2.

Furthermore, Quality Assurance shall have the right to initiate audits whenever necessary.

4.3 Quality evaluation reports

For each activity of Quality monitoring (review, audit, inspection, walk through and analysis) performed during the development process, a report shall be established in order to highlight problems and to initiate proposals for corrective actions as far as possible. These reports shall be available on Buyer's request.

Provisions shall be set up for recording reports and recommendations arising from the continuous activities of Quality Evaluations.

Such reports and associated corrective actions shall be distributed to all involved responsible teams to contribute effectively to the solution of deficiencies.

The details concerning these reporting procedures (formats, information.) shall be defined in the relevant plans.

4.4 Subcontractors products

In case of subcontracts, the Supplier shall ensure that all these requirements are fully applicable to Subcontractors. The Supplier is responsible to the Quality monitoring of Subcontractors and all the Quality Assurance requirements and activities shall be defined in the relevant SQPP.

5. SOFTWARE QUALITY ACTIVITIES

5.1 Phase independent activities

The purpose of the following paragraphs is to describe the Quality Evaluation activities to be performed independently of the development cycle.

Detailed description of the methods, procedures and acceptance criteria shall be defined in the relevant SQPP in accordance with these requirements and the requirements defined in Software Development Requirements for Supplier.

AGUSTA

EUROCOPTER

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FOKKER

5.1.1 Evaluation of plans, standards and procedures

The evaluation of development plans, standards and procedures are performed by Quality.

Typically, the main tasks are to :

- create and update the relevant SQPP describing the Quality programme set up for the project. This plan shall be agreed by project management,
- participate with the project management to the establishment of the Supplier Software Development Plan and Software Configuration Management Plan for the project. These plans shall be agreed by the Software Quality management,
- participate with the Software engineering to the establishment of any project standard used for the Software development.

5.1.2 Evaluation of configuration management

Configuration management applied to the project shall be defined in the relevant SCMP.

Quality Assurance shall ensure the implementation and application of the procedures by establishing whether the procedure have been followed and that only approved traceable modifications are integrated and that they are really traced. In addition, it shall ensure that throughout the Software life cycle, Software items including plans, documentation, codes are subjected to control as defined in the plans.

Special care shall be taken by Quality personnel who has to be closely involved in the decision process about any changes and defects/problems reporting.

Any non conformities shall be treated according to concessions/production permits procedures (refer to paragraph 16 - section 1).

5.1.3 Evaluation of Software development and support tools

The use of Software development and support tools in all phases of the project shall ensure a consistent level of Quality. All tools which have a direct influence on the Quality of the deliverable product (building executable, loaders and qualification tools) shall be validate taking into account the type of tools.

All changes to Software tools shall be evaluated to determine whether re-acceptance process is necessary.

The Supplier shall specify in its relevant SQPP how these tools used during the development and tests phases will be kept under configuration management and Quality control.

5.1.3.1 Tools with direct impact on product Quality

A validation process shall be applied for the final acceptance of the tool such as development methodology, reviews, evaluation, tests and acceptance tests. All these validation processes shall be described in a validation programme that must be accepted by Quality Assurance prior to the use of the tools. In any case, an acceptance test is required prior to the installation.

The results shall be recorded in a validation report and available to the Buyer.

The validation of adapted "off-the-shelf" or complete "off-the-shelf" tools may be facilitated due to the tool maturity and the evaluation programme can take into account results or observations from previous projects or from the tool's Supplier. In any case, a functional demonstration shall be prepared and accepted by Quality Assurance prior to the demonstration. The results of the functional demonstration shall be recorded accordingly.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

5.1.3.2 Tools with indirect impact on product Quality

A functional demonstration shall be applied for the acceptance of the tool. A brief description of the functional demonstration shall be prepared and accepted by Quality Assurance prior to the demonstration. The results of the functional demonstration shall be recorded accordingly.

Special attention shall be applied to the adaptations to the "off-the-shelf" tool or the parts with indirect impact on product Quality.

5.1.4 Evaluation of Software test environment

The Supplier shall establish and put under configuration control a Software test environment before performing the Formal Qualification Testing (FQT) activities according to the document "Software Development Requirements for Supplier" § Formal Qualification Testing (FQT).

This environment (benches, rigs, simulation/stimulation,...) shall be developed and evaluated using the methods and procedures tailored from the applicable standards (refer to paragraph 2.2). The depth of the methodology applied and of the Quality Evaluations shall be adjusted to match the effect the bench has on the Software validation and the criticality level of the Software.

The Supplier shall define in its SQPP how he will fulfil these requirements.

In any case, an acceptance test shall be performed prior to the installation to demonstrate that the item fulfils its intended use. An Acceptance Test Procedure shall be established and agreed by the Quality Assurance. The acceptance test shall be performed with the participation of the Quality Assurance, and an acceptance test reports shall be raised and available on Buyer's request.

5.1.5 Evaluations of others processes used in Software development :

Quality Assurance shall undertake evaluations for the followings:

- Software development library,
- corrective actions process,
- media distribution,
- storage and handling,
- commercially available, re-usable and government furnished Software,
- non-deliverable Software,
- non-developmental Software.

Quality shall evaluate these activities/products to ensure that they comply with the Software plans. The detailed descriptions of each evaluation criteria shall be defined in the relevant SQPP.

5.1.6 Evaluation of deliverable Software

The deliverable Software version shall be accepted by the Quality Assurance prior to release Quality Assurance acceptance shall be documented within the VDD.

As far as the Software is not fully qualified (intermediate version) or after any version changes, the specific Software acceptance tests shall be performed before any delivery of the product. This acceptance can be part of the equipment acceptance tests and shall be based on the Formal Qualification Tests.

The Supplier shall define in its SQPP how he will verify the duplication procedures of Software before every delivery (control of checksum, version number,...).

A Certificate Of Conformity shall be established by Quality Assurance after completion of acceptance process.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

5.2 Phase dependant activities

The purpose of the following paragraphs is to describe the Quality Evaluation activities to be performed by the Suppliers dependently of the Software life cycle.

Detailed description of the methods, procedures and evaluation criteria will be defined in the relevant SQPP in accordance with these general requirements.

The phases of Software development process are defined by the Software Development Requirements for Supplier § "Software Product evaluation" and are applicable to all versions developed according to the Software Development model applied:

- Software Requirements analysis
- Preliminary design
- Detailed design
- CSU coding and unit testing
- CSC integration and testing
- CSCI integration and testing

The testing activity includes also the SW/SW and HW/SW integration testing, as described in the Software Development Requirements for Supplier respectively § "SW integration testing" and § "HW/SW integration testing".

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

5.2.1 Modulation of Quality Evaluation

The main criteria to be taken into account for the Quality Validation is the Software criticality.

This aspect in the validation of products consists in defining the levels of criticality for Software, as defined in Supplier Software Development Plan and to adjust the depth of Quality involvement and validation activities according to the levels.

The modulation of the Quality Validation is summarised in the following matrix:

SOFTWARE QUALITY VALIDATION ACTIVITIES	LEVEL 1	LEVEL 2A	LEVEL 2	LEVEL 3
Verification of Sw requirements process	IPc A(5)	IPc A(5)	IP	IP
Verification of preliminary design process	IPc A(5)	IPc A(5)	IP	
Verification of detailed design process	IP A(5)	IP	S	
Verification of Sw coding process	IPc	IP	S	
Verification of CSU testing process	IP A(1)	IP A(1)	IP A(4)	
Verification of CSC testing process	IP A(2)	IP A(2)	IP	
Verification of CSCI testing process (FQT process)	IPc A(3)	IPc A(3)	IP A(3)	IP

IP : Product Inspection (as defined in the glossary, it could be performed by walk through techniques).

The technical aspects are evaluated by Engineering), while the formal aspects are evaluated by Engineering and Quality.

Index "c" means assessment of coverage required, without index "c" sampling is authorised.

Note: Whenever an inspection is performed on a sampling base, the extent of the coverage should be at least the 30% of the product.

The result of Product Inspection are validation reports.

A :Analysis (as defined in the glossary). The results will be provided by Engineering and evaluated by Quality.

A(1) : Result of structural coverage (Summary). For each CSU, the results of the Structural coverage are recorded in the SDFs. A Summary is provided by Engineering and evaluated by Quality.

A(2) : Traceability list between CSC interfaces and test cases.

A(3) : Traceability matrixes between SRS requirements, STP test identifiers and STD test descriptions.

A(4) : Traceability list between Detailed Design and CSU test cases (requirements coverage).

A(5) : Traceability matrix to upper level document.

S : Statement of compliance against Supplier Software Development Plan, provided by Quality.

This matrix defines the overall product verification process (the others validation activities, like testing, are described in the Supplier Software Development Plan for qualification demonstration.

AGUSTA

EUROCOPTER

EUROCOPTER DEUTSCHLAND

FOKKER

The fulfilment of these validation requirements can combine engineering (product inspection - walk through and analysis) and Quality Assurance (as required in paragraph 5.2.2) involvement. Product inspection by engineering shall be performed according to the Supplier Software Development Plan.

Supplier Quality Assurance shall assure that Software criticality is specified in the SRS.

NOTE :

* The criticality level of the Software is defined in the Item Requirement Specification. The levels of criticality are defined in the Software Development Requirements for Supplier.

5.2.2 Quality activities during development phases:

Basically, evaluations are performed according to the matrix 1 and will consist in quality methods and procedures, as listed in paragraph 4.2, for each development activity.

When Product inspection (typically as walk through) is performed in totality by engineering, it is required that Quality Assurance shall also evaluate the documentation / Software in a sampling basis. The percentage shall be defined and approved in the relevant SQPP, and the samples shall be a representative subset of the Software and approved by the Buyer.

The results of the evaluation shall be used for the reviews.

Exact involvement of the Quality Assurance in each Software development activity shall be defined in the relevant SQPP.

* *Reviews :*

Each Software development phase shall be closed by a formal review with the attendance of Quality Assurance. Additional internal reviews can be performed. Exact reviews planning shall be described in the relevant SDP / SQPP.

Prior to each formal review, Quality shall ensure by the means of check-list that:

- all required products are available and ready,
- all required preparations have been made in adherence to the review procedures.

In addition, Quality Assurance shall present the evaluation results achieved during the phase.

Minutes of review meeting are filled up in order to ensure traceability of examined features, and shall be submitted to the Quality Assurance. The minutes can also be considered as an approval form in case of formal acceptance. An action list shall be set-up, tracking all deficiencies and proposing the corrective actions.

Review procedures shall be defined in the relevant Software plans, according the general requirements defined in paragraph 6.1.

The SQPP shall define, at least:

- involved personnel and responsibilities,
- attached documentation,
- Quality Assurance activities.

AGUSTA

EUROCOPTER

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** Product inspection/analysis :*

Quality personnel shall evaluate the produced documents undergoing the reviews according to the above matrix with respect to completeness, correctness, consistency, traceability and coherence versus upper documents. For each document, evaluation criteria shall be prepared through check-list or evaluation form which shall be defined in the relevant SQPP. The evaluation criteria shall be based on the DoD STD 2167A and shall take into account the relevant project procedures (such as design standard and coding standard).

At least the following documents will be evaluated according the here above matrix :

- Software Requirements Specification,
 - Interface Requirements Specification,
 - Software Design Document (preliminary and detailed),
 - Interface Design Document (preliminary and detailed),
 - Software Test Plan,
 - Software Test Description,
 - Source code,
 - CSU test reports,
 - CSC integration and tests reports,
 - Software Test Reports.

** Audits*

Quality Assurance shall propose an audit program within the development cycle according to the Software levels. In addition, an audit can be initiated by either programme/project management, or Quality Assurance in case of problems, as well as by Buyer's representative.

** Activity inspection*

Quality Assurance shall evaluate, according to the above matrix, whether the activities foreseen during one phase have been achieved according to the relevant plans and standards. In particular, these inspections shall address the configuration management, informal tests process, documentation availability, prototyping/incrementing results, tools, etc. and in general all subjects covered by the relevant Supplier Software Development plans.

** Testing process*

Quality personnel shall be closely involved during the testing and integration phases, and in particular during Formal Qualification Testing process.

Test results as well as test procedures and cases shall be evaluated by Quality Assurance for, at least, completeness and traceability. The environment Hardware (Host and/or target computers) shall be under acceptance and Quality control (refer to paragraphs 5.1.3 & 5.1.4).

Quality documentation shall be maintained and be available on Buyer's request.

5.2.3 Maintenance and support for delivered Software

The relevant SQPP shall define all the Quality dispositions to be taken after delivery, including technical assistance on Buyer's request.

The Supplier's Quality Assurance shall ensure that each problem or design changes occurring after product delivery are correctly taken into account according to the phase where the problem/change takes place. Subsequent activities shall follow the established procedures.

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5.3 Quality Assurance involvement into the Engineering process

Quality Assurance shall be involved into the engineering process.

This involvement shall be obtained by a close contact with the Engineering and a complete access right to all development products and its Software development environment.

At least, the Supplier shall define all evaluation foreseen for Ground Test versions and Experimental Flight versions.

These activities shall be defined in the relevant SQPP.

Quality involvement shall be adjusted in function of the Software engineering approach and organisation defined for the engineering development, in term of management, produced documentation, testing philosophy and corrective actions and configuration management processes.

The Quality methods and procedures are the same as defined in paragraph 4. Evaluation criteria could change considering the produced documentation and engineering activities.

Evaluation shall take into account the refined Software from previous development phases.

5.4 Software Qualification

The Qualification is a complete and formal demonstration assuring by a verification and validation process that the results of the Software development fulfils the requirements

The verification activity is to prove that the Software is developed correctly and consistently with the applicable standards. The validation activity is the process of establishing that the Software complies with its functional requirements.

It shall be performed by the Supplier with the involvement of its Quality Assurance.

For each CSCI, a report of the qualification evidences shall be prepared. This report will be based on the evidence of the successful completion of each verification (audits, reviews, inspection, analysis as defined in paragraph 5.2.1) and validation (Tests, Formal Qualification Test reports) activities.

In the same way, for all CSCIs not yet fully qualified but aimed to be fitted in flight helicopter, a preliminary flight clearance is required by the Buyer according the general requirements defined in the Software Development Requirements for Supplier § "Experimental Flight Approval".

A specific "Experimental Flight Approval" review shall be held with the participation of the Buyer in order to state about the Software air worthiness.

* For "off-the-shelf" and modified Software :

In case of Qualification evidences are not available, the Buyer has the right to require additional evidences (by tests ,analysis , etc.).

In case of modified Software, this procedure could be tailored in agreement with the Buyer.

5.5 Preparation of delivery of Software

For storage, handling and delivery, the Supplier Quality Assurance will evaluate these activities to ensure that they comply with the Supplier Software Development Plans.

The detailed descriptions of the delivery process will be defined further in the relevant SQPP. This definition also covers the approval for the selected media to transport the Software (magnetic, network, PROM, etc..)

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6. REVIEW REQUIREMENTS

6.1 General

The Supplier shall conduct a series of reviews during the development of the CSCIs. They will be planned, organised and managed by the Supplier according to the Software Development Requirements for Supplier § "Software Reviews". The Buyer's representatives may attend to these reviews and can participate to the review board.

6.2 Review notification

Review notification shall be provided at least 10 working days before intended review date

All documentation required for the review shall be available at least, with the review notification.

6.3 Review meeting

Quality Assurance shall be member of the review board.

During the review, any member is allowed to raise an Action Sheet.

All action sheets shall be recorded.

Minutes of the meeting and action sheet classification shall be prepared and issued by the review chairman.

At the end of the review meeting, a formal conclusion shall be given by the review board. Such conclusion can be:

- successful - move to the next phase,
- successful with some reworks - move to the next phase,
- not successful - new review is mandatory - no move to the next phase.

6.4 Review report

A review report shall be issued within 10 working days after the review meeting. The review report is under the responsibility of the review chairman

7. NOTE

7.1 List of abbreviations :

CSC	Computer Software Component
CSCI	Computer Software Configuration Item
CSU	Computer Software Unit
FQT	Formal Qualification Testing
HWCI	Hardware Configuration Item
IDD	Interface Design Document
IRS	Interface Requirements Specification
NFH	NATO Frigate Helicopter
SCMP	Software Configuration Management Plan
SDD	Software Design Document
SQPP	Software Quality Program Plan
SRS	Software Requirements Specification
STP	Software Test Plan
STR	Software Test Report
TTH	Tactical Transport Helicopter
VDD	Version Description Document

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7.2 Cross-reference

These additional Quality Assurance requirements shall be used jointly with the section 1. The following table gives the general requirements of the section 1 which are applicable for Software.

Title	paragraph
Quality Assurance Plan	8
Quality monitoring	11
Manufacturer's part number	12
Special documentation	14
Acceptance and delivery	15
Concessions/production permit	16
Release Note/Certificate Of Conformity	19
Customer/NQAR involvement	22
First Article Inspection	23
Configuration management	25
Inspection	26