at customs. The Contractor shall therefore consider eventual delays and arrange for shipment in time. Under no circumstances can the Purchaser be held responsible for delays incurred, even when utilising Purchaser provided Custom Forms 302.

IPS-36   The Contractor shall ensure that any requirements related to delivery and shipment of the equipment are obtained from NCI Agency in advance of shipments.

IPS-37   The Contractor shall be responsible for the timely request of Custom Forms 302 at least 10 working days in advance of each shipment, required for duty free import/export of supplies between certain countries.

IPS-38   The written request for a Custom Form 302 shall contain the following information:

Serial	Requirement
1	Purchaser Contract Number
2	Contract line Item Number (CLIN), designation and quantities
3	Destination
4	Number and gross weight
5	Consignor's and Consignee's name and address
6	Method of shipment, e.g., road, air sea, etc.
7	Name and address of the freight forwarder

IPS-39   The request for a Custom Form 302 shall be addressed to:

XXXXXXXXXXXXXX

NATO Communication and Information Agency,

Acquisition / Integrated Product Support

XXXXXXXXXX, Belgium

Tel: XXXXXXXXXX

XXXXX.XXXXXX@ncia.nato.int

IPS-40   Following receipt of the request by the Purchaser, normally a maximum of three working days are required for the issue of the form. The Custom Forms 302 shall be original, shall be delivered by mail/express courier and shall accompany the shipment and therefore no fax or electronic copy will be used, nor provided to the Contractor. If an express courier has to be used by the Purchaser, to ensure that the form is available on time before shipment, all associated costs shall be reimbursed by the Contractor.

IPS-41   The Contractor shall be responsible to add the Custom Form 302 to the shipping documentation affixed to the to the exterior of the consignment in a sealed, weatherproof envelope on the outside of the shipment.

IPS-42   The Contractor shall ensure that forwarding agents are informed of the availability of the Custom Form 302 and how this form is utilised to avoid the payment of Customs Duties and that the carrier shall be fully conversant with the application and use of Custom Form 302.

IPS-43   If a Country refuses to accept the Custom Form 302 and requires the payment of custom duties, the Contractor shall immediately inform the Purchaser by the fastest means available and obtain from the Custom Officer a written statement establishing that its country refuses to accept the Custom Form 302. Only after having received Purchaser's approval, the Contractor shall pay these customs duties and shall claim reimbursement to the Purchaser.

5.4.3. Transportation

[38]   The Purchaser shall not be liable for any storage, damage or any other charges involved in such transportation of items and supplies prior to Acceptance. Any shipment loss shall be the responsibility of the Contractor.

[39]   The Purchase will be responsible for transportation of unserviceable equipment to Contractor facility for warranty repair/replacement

IPS-44   The Contractor shall be responsible to transport all items and supplies covered under this Contract to and from all destination addresses at no extra cost to the Purchaser until completion of the warranty period.

IPS-45   The Contractor shall be responsible for transportation of all equipment furnished under this Contract from its site in a NATO nation to final destination.

IPS-46   The Contractor shall be responsible for any insurance covering the shipment and delivery.

IPS-47   The Contractor shall be responsible for transportation of repaired/ replacement items under warranty to the original location.

IPS-48   The Contractor shall provide a Transportation Report within two (2) weeks after each shipment has arrived at final destination. The Transportation Report shall include:

- a copy of the Packing List;
- date of arrival at final destination;
- date of delivery acceptance by the Purchaser's POC at final destination;
- signature of delivery acceptance by the Purchaser's POC at final destination.

5.5. Technical Publications

IPS-49   The Contractor shall detail approach and plans for Technical Publications in the relevant chapter into the IPSP.

IPS-50   The Contractor shall provide User Manuals and Maintenance Manuals as per requirements of personnel operating and maintaining the equipment, in accordance with the Maintenance Concept and the Maintenance Tasks data (as per the Product Support Data Package):

- User Manuals: required for the operation of the equipment and describe operation, settings and fine tuning of the equipment to achieve maximum performance including administration instructions (e.g.: guidance on how to

show, edit and save the System Configuration Files on the respective devices, together with default user or administrator passwords, as required).

- Maintenance Manuals: required for the maintenance of the equipment and include:

    – scheduled and unscheduled maintenance detailed instructions, troubleshooting and fault finding techniques (including descriptions of all indicators, switches, switch positions, displays, menu's, settings etc), Installation and dismantling of the equipment (including as applicable physical, electrical, software, safety, RF aspects etc.), repair and test procedures up to HL3/SL3 activities included;

    – drawings of the mechanical, electrical and electronic assemblies and sub-assemblies that comprise the equipment in sufficient detail to allow technical staff to maintain the system at site level in accordance with the Maintenance Concept;

    – physical, functional, performance, environmental data and descriptions (including support equipment/tools and interfaces to external systems).

5.6. Training

IPS-51   The Contractor shall provide Training documentation in the English language.

IPS-52   The Contractor shall provide Training Materials for operators, maintainers and instructors ("train the trainer") in accordance with the Maintenance Concept, the Maintenance Tasks data (as per the Product Support Data Package) and the Technical Publications.

IPS-53   The Purchaser will review and approve (within 8 weeks) the draft Training Material delivered under this Contract. Upon acceptance of the draft version, the Contractor shall deliver the final version of the training material, as per Table 5-1 of this SoW.

5.7. In Service Support during Warranty

IPS-54   The Contractor shall provide a In Service Support (ISS) during Warranty until one (1) year after successful completion of FSA (i.e.: end of warranty period).

IPS-55   The Contractor shall provide the following services during the Warranty:

- Hardware: repair and/or re-placement of all defective technical installations/equipment;

- Software: remediation/resolution of all bugs, flaws, etc. of all software installations provided as part of this contract including formal deliveries of software updates.

[40]   The Purchaser will be responsible (at its own expenses) for returning of failed items to the Contractor.

IPS-56   The Contractor shall repair repairable items received at the Contractor's plant in maximum Turn Around Time (TAT) ten (10) calendar days. This shall include in-

processing, trouble shooting, repair, check-out and shipment until delivery to the Purchaser (i.e. to NATO CIS Sustainment Support Centre, at Brunssum).

IPS-57   The Contractor shall be responsible for returning of repaired items to the Purchaser (i.e. to NATO CIS Sustainment Support Centre, at Brunssum).

IPS-58   The Contractor shall be responsible for the provision of any alternative or superseding items, should the original part be no longer available, ensuring SRS (System Requirements Specification) compliance.

IPS-59   The Contractor shall submit at the end of the Warranty period a **Warranty Report** that documents all identified Warranty cases, affected CI's, corrective actions, cost and schedule.

IPS-60   The Contractor shall be responsible to provide indication for HW and SW corrective/unscheduled and preventive/scheduled maintenance HL/SL 2 included and onwards to ensure that the response times specified can be met (e.g.: MTTR, TAT).

IPS-61   The Contractor shall be responsible for the SW adaptive and perfective maintenance or change/update to ensure that the response times specified can be met.

5.8. In Service Support post Warranty (option)

IPS-62   In the event the Purchaser decides to exercise the post warranty option, the Contractor shall be obliged, in addition to the services to be performed during the Warranty period, to enter into a Framework Agreement, with the Purchaser starting one (1) year after the completion of the FSA (i.e.: end of warranty period) for a 3-year period.

IPS-63   The Contractor shall be responsible for maintaining all stocks of spares, test and other maintenance equipment, Automated Test Equipment (ATE) facilities, and all repair documentation including logistics databases technical publications, skills and personnel required.

IPS-64   The Contractor shall be responsible to provide indication for HW and SW corrective/unscheduled and preventive/scheduled maintenance HL/SL 2 included and onwards to ensure that the response times specified can be met (e.g.: MTTR, TAT).

IPS-65   The Contractor shall be responsible for the SW adaptive and perfective maintenance or change/update to ensure that the response times specified can be met.

IPS-66   The Contractor shall guarantee the provision of equipment replacement/repair services throughout the stipulated period.

IPS-67   If at any time the Contractor wishes to withdraw these replacement/repair services, it shall transfer to the Purchaser at no additional cost, all requisite fault diagnostic and repair expertise and instructions, documentation, etc., and special-to-type

software and hardware including test equipment, mock-ups, etc., to enable such repair at a Purchaser Facility.

IPS-68   Alternatively, if agreed to by both parties, and again at no additional cost, the Contractor shall transfer to the Purchaser sufficient spare sub-assemblies, modules, circuit card assemblies, etc. to support a discard maintenance concept for the remaining operational life of the equipment. Ad hoc provisioning conference shall be organized for this purpose.

IPS-69   The Contractor shall maintain comprehensive repair records to enable detailed fault analysis and early detection of failures/maintenance trends. Periodically, the Contractor shall be required to forward the results of these analyses for review by the Purchaser.

IPS-70   The Contractor shall repair repairable items received at the Contractor's plant in maximum Turn Around Time (TAT) ten (10) days. This shall include in-processing, trouble shooting, repair, check-out and shipment until delivery to the Purchaser (i.e. to NATO CIS Sustainment Support Centre, at Brunssum).

5.9. In Service Support Plan

IPS-71   The Contractor shall provide a **In Service Support Plan (CLSP)** describing the strategy and the basis execution of a prospective In Service Support Contract.

IPS-72   The Contractor shall provide a description of how its proposed CM procedures shall continue to be implemented on the hardware and software/firmware after the post warranty period.

IPS-73   The ISSP shall be considered a living document and as such shall be updated as necessary by the Contractor, with the Purchaser's concurrence, throughout the contracted period.

IPS-74   The ISSP shall describe and detail the following:

- Detailed description of the product baseline for the ISS (HW and SW)

- Contractor's proposed ISS Management Organisation and Structure, to carry out the ISS effort proving adequate experience in the maintenance and support of major defence systems including specialised software.

- Plan and methods for performing ISS activities (e.g.: intervention on each site, preventive maintenance, repair activities, spares replenishment) for the main three areas: Engineering Support (ES), Material Management (MM) and Field Engineering (FE) (i.e.: maintenance activities and field services) and evaluating the Contractor's performance during ISS through proposed Key Performance Indicators for each area.

- Details for Data Reporting Analysis and Corrective Action System (DRACAS) and its link to ECP and configuration change management [included in Engineering Support].

- Details for maintaining and updating the Technical Publications and the Logistics Database providing relevant input to training material for refreshing training courses [included in Engineering Support].

- Details for spare parts procurement, replenishment and repair including PHST (e.g.: strategy for replacing hardware that can no longer be economically supported by the Contractor or sub-contractors) [included in Material Management].

- Plan and methods for Configuration Management and Obsolescence Management specific for the post warranty period.

- Plan and methods for communication (e.g.: for site personnel to inform ISS Contractor when spares have been used and when assistance is needed) detailing also the use of the Call centre and the Collaborative environment and how any exceptions have to be handled.

IPS-75   The Contractor shall provide a detailed description of the proposed product support processes. This description shall detail how the information from locations and the Contractor's maintenance facilities will be collected, stored and made available for evaluation. The term "Sites" refers to every physical location where systems or items under this contract are located when Contractor's activity is required.

IPS-76   The Contractor shall provide a description of how the QA/QC Programme of the Prime Contractor and sub-contractors providing CLS services shall meet the provisions of this contract. The Contractor shall include applicable certificates (issued by National Governments or International Organisations such as ISO) that demonstrate that the sub-contractors Quality Programme conforms to the requirement of the Prospective ISS Contract. The Contractor shall also demonstrate how the provisions of the Prospective ISS Contract regarding QA/QC shall be inserted in all subcontracts and enforced by the Prime Contractor.

5.10. In Service Support Support Monthly Report (option)

IPS-77   In the event the Purchaser decides to exercise the post warranty option at 5.8., the Contractor shall submit a **ISS Monthly Report** that documents all the CLSP foreseen activities. This report shall describe in detail all task performed in the preceding month under the contract covering the main three areas: Engineering Support (ES), Material Management (MM) and Field Engineering (FE) (i.e.: maintenance activities and field services) through appropriate use of DRACAS[1].

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[1] For the repair and replenish items at least the following data shall be recorded:
- Date and time of occurred failure (actual and/or estimated)
- Date and time of reception of request
- Date and time of dispatch
- Date and time of reception
- Part Number equipment/item received
- Serial Number equipment/item received

IPS-78   The CLS Monthly Report shall report for Engineeting Support (ES) all relevant activities performed, dashboard for the KPI evaluation to provide supportability evaluation and performance analysis.

IPS-79   The CLS Monthly Report shall report for Material Management (MM) in terms of:

- Repair
  o List of items sent to repair
  o List of items under repair
  o List of items sent back
- Replenish
  o List of items replenished
  o List of items planned to be used in the next period
  o List of items proposed for replenishment
- Consumables
  o List of consumables used
  o List of consumable planned to be used in the next period
  o List of consumable planned to be used by the end of contract
- Test Equipment (TE)
  o List of TE with location
  o List of TE planned to be used in the next period
- Stock optimization
  o List of items in stock
  o Optimization proposal

IPS-80   The ISS Monthly Report shall report for Field Engineering (FE) in terms of :

- Maintenance scheduled and executed
- Corrective maintenance performed
- Manpower involved and facilities issues
- List of all requests for on-site support, including:
  o Date and time of reception of request
  o Name of the employee(s) sent on-site
  o Location
  o Start and end-date and time of support provided
  o Date and time of closure of request
- List of all software maintenance requests, including:
  o Date and time of reception of request
  o Repair activities performed
  o Time to repair
  o Date and time of release of workarounds, patches and maintenance releases
  o Date and time of closure of request
- List of all requests for technical assistance, including:
  o Date and time of reception of request

- Repair activities performed and failure reporting analysis (or diagnose NFF or BER with evaluation cost, proposed solution and details on the disposal)
- Time to repair
- Repair cost, including PHS&T
- Date and time of shipment
- Date and time of arrival at return location identified by Purchaser (estimated and actual)
- Date and time of closure of request

- o Nature of the request
- o Details of SME responding to the request
- o Date and time of closure of request.

IPS-81   The ISS Monthly Report shall include the Obsolescence Report in accordance to the Appendix B (Content and structure for Integrated Product Support deliveries)

SECTION 6. CONFIGURATION MANAGEMENT

[41] This section addresses the Configuration Management (CM) requirements of the project. The purpose of these requirements is to ensure that the Contractor establishes and executes NATO-compliant and effective configuration management during the execution and until the end of warranty period, extended during the ISS optional period if activated.

CM-1 The Contractor shall establish and maintain the CM policies, processes and practices/procedures in conformance with [STANAG 4427 Ed.3] "Configuration Management in System Life Cycle Management" and underpinning ACMPs (ACMP-2000, ACMP-2009, ACMP-2100) and [ISO 10007:2017] "Quality Management System – Guidelines for Configuration Management".

CM-2 The Contractor shall establish and maintain an effective CM organization to implement the CM program and manage the CM functions (configuration identification and documentation, configuration control, configuration status accounting, configuration audits).

CM-3 The Contractor shall be responsible for the application of all necessary CM procedures throughout the duration of the Contract.

CM-4 The Contractor shall maintain a version control system as part of its CM program, both for HW/SW/FM and for documentation/data (data management).

CM-5 The Contractor shall ensure that there is full traceability through all baselines back to the functional baseline.

CM-6 All Contractor and Purchaser activities and milestones related to CM shall be identified and included in the Project Master Schedule (PMS) of the PMP in the PIP.

6.1. Configuration Management Plan

CM-7 The Contractor shall establish, provide, execute, and maintain an effective **Configuration Management Plan (CMP)** during the execution and until the end of warranty period (and in the optional ISS period if activated). The Contractor shall organize review meetings for CM progress starting from the first draft of CMP.

CM-8 The CMP shall assure the establishment and maintenance of configuration item records, configuration item life cycle records, and baselines throughout the duration of the contract and provide assurance that all changes to the baselines are performed through a formal change control process once a baseline has been established and agreed.

CM-9 The CMP shall be structured as a living document and subject to revisions and updates, as required. The Contractor shall place the plan under configuration control prior to its implementation and for the life of the Contract.

CM-10 The CMP shall identify, document and justify the organizational structure, roles and responsibilities, tasks, milestones and procedures to be used by the Contractor to implement the CMP and fulfil the requirements of this Contract.

CM-11   The CMP shall be structured following the requirements set in the [ACMP-2009-SRD-40.1 ref. # 4.3.C] and subject to revisions and updates, as required.

CM-12   The Contractor shall provide in the CMP the rationale and criteria for the CI identification and CI numbering for the Purchaser approval, based on the criteria for selection of CIs detailed in [NATO ACMP-2009, 2017].

[42]   The Purchaser reserves the right to modify the CI structure prior to its baselining.

6.2. Configuration Control

CM-13   The Contractor shall identify and describe HW, SW (including FW) and documentation Configuration Items (CI's) as defined in [NATO ACMP-2009, 2017].

CM-14   The Contractor shall be responsible for issuing in a timely manner, as required by this SoW, all approved changes and revisions to all baseline documents included in the Contract. This includes changes originated both by the Contractor and the Purchaser.

CM-15   Where a change affects more than one document, or affects documents previously approved and delivered, the Contractor shall ensure that the change is properly reflected in all baseline documents affected by that change.

CM-16   The Contractor shall use the instructions and templates provided by the purchaser to issue any ECPs and RfCs in accordance with the following:

   1) [AI 16.32.02] – Preparation of ECP forms and relevant annex,

   2) [AI 16.32.03] – Preparation of RfC forms and relevant annex.

6.3. Engineering Change Proposals

CM-17   The Contractor shall assign a priority rating of Emergency, Urgent or Routine Extensions to the target times for processing when submitting ECPs. Changes to the Contractor's baselined Cis shall be processed as:

   1) Class I ECPs: these shall have to be mutually agreed upon by the Contractor and Purchaser. Extensions to the target times for processing Class I ECPs shall be mutually agreed upon by the Contractor and Purchaser;

   2) Class II ECPs: these shall be submitted by the Contractor to the Purchaser for review and classification concurrence prior to implementation;

   3) If the Purchaser's representative does not concur in the classification, Class I ECP procedures shall be applied by the Contractor and the ECP and then formally submitted to the Purchaser for approval or rejection.

CM-18   The Contractor shall ensure that any ECP shall include, as a minimum, the following information:

   1) Reference Number;

2) requirement affected;

3) nature of change;

4) rationale for the change;

5) impact of change / CIs affected;

6) Description of how the change will be reflected in the delivered system's cost, schedule, and/or performance. This description shall include any trade-offs that shall be considered;

7) Status;

8) Priority.

CM-19   All design changes shall be appropriately reflected in the technical documentation by the issue of appropriate changes or revisions. Changes/revisions shall be provided for consideration and approval to the Purchaser by the Contractor in accordance with ECP procedures.

6.4. Requests for Concession

CM-20   If required, the Contractor shall prepare, handle, and submit for Purchaser's approval, Requests for Concession (RfC).

CM-21   The Contractor shall be aware that permanent departures from a baseline shall be accomplished by ECP action rather than by RfC.

6.5. Deficiency Reports

[43]   During testing or other inspection procedures, the Purchaser may observe perceived deficiencies. These Purchaser observations shall be included in the Contractor's Deficiency Log, and appropriately documented.

CM-22   The Contractor shall establish and maintain a process for reporting, tracking, and resolving deficiencies in the Developmental and Product Baselines. Deficiency Reports (DRs) shall document problems during the design, configuration, implementation, or operation of the system.

CM-23   DRs shall be closed when the identified problem is resolved through procedure or other action that does not affect the system baselines, or when a corresponding Change Request is opened to correct the deficiency through a change to a baseline.

CM-24   The Deficiency Log shall be maintained by the Contractor and contain the following information:

1) Serial number for each deficiency;

2) Description of the deficiency;

3) Test and test case or event under which the deficiency was first observed (e.g.: FAT, SIT);

4) Date of the observation of the deficiency and expected date of its correction;

5) The personnel raising and endorsing the observation;

6) Any clearance action taken such as repair and testing, notification, receipt of a written reply from the Contractor;

7) The authorized personnel endorsing the correction, and the date of correction;

8) The Contractor's proposed way forward, in case the deficiency remains, with target dates and description of the intended resolution strategy.

CM-25   The Deficiency Log shall be first created at the time of First Articles Acceptance Testing, and shall remain updated until the end of warranty period.

6.6. Configuration Status Accounting

CM-26   The Contractor shall be fully responsible for the Configuration Status Accounting (CSA) for all baselines and CIs throughout the duration of the Contract and in accordance with [NATO ACMP-2009, 2017].

CM-27   The Contractor shall propose the format of CSA report in the CMP for Purchaser's approval.

CM-28   The Contractor shall deliver CSA reports to the Purchaser both as part of management and specialist products in this contract and also as standalone documents at the Purchaser's request.

CM-29   At the end of the Contract, the Contractor shall deliver a set of final CSA reports for each CI in both hard copy and in electronic media.

6.7. Configuration Auditing

CM-30   The Contractor shall organize and support Purchaser witnessed configuration audits to demonstrate that the actual status of all CIs matches the authorized state of CIs as registered in the CSA Reports compliant with STANAG 4427.

CM-31   The Contractor shall provide (before each configuration audit) the Purchaser with all baseline documentation required to perform the configuration audit. At each audit, the Contractor shall make available the technical personnel capable of answering questions from the Purchaser's auditor.

SECTION 7. QUALITY ASSURANCE AND QUALITY CONTROL

[44] This section addresses the Quality Assurance (QA) and Quality Control (QC) requirements of the project. The purpose of these requirements is to ensure that the Contractor provides all deliverables on time and at the required level of quality by utilising a professional, best practice quality assurance framework and through internal quality control independent from the Contractor's project organisation. A second objective is to minimise the duration of the review cycles and decrease the review workload by ensuring that the Contractor provides mature deliverables only.

[45] Quality Assurance (QA) is a procedure or set of procedures intended to ensure that a product or service under development meets specified requirements.

[46] Quality Control (QC) is a procedure or set of procedures intended to ensure that a manufactured product or performed service adheres to a defined set of quality criteria or meets the requirements of the Purchaser.

[47] Under this contract the Quality Assurance process is intended as Quality Assurance and Control Process. The term Quality Assurance will include also the Quality Control definition.

QA-1 The Contractor's internal Quality Assurance process and system will be required to comply with STANAG 4107 "Mutual acceptance of Government Quality Assurance and usage of the Allied Quality Assurance Publications (AQAP)".

QA-2 The Contractor shall recognize and accept the application of STANAG 4107 for this Contract and sub-contracts thereof. The Contractor shall use AQAP 2070 as guidance to the delegation of QA.

QA-3 The Contractor shall provide all necessary assistance to the Purchaser QA Representative (QAR), or his delegated National Quality Assurance Representative (NQAR), if and when Quality Assurance (QA) activities are delegated in accordance with STANAG 4107.

QA-4 If sub-contracted quality resources are used, the Contractor's Quality Assurance Process shall describe the controls and processes in place for monitoring the sub-Contractor's work against agreed timelines and levels of quality.

QA-5 All Contractor and Purchaser activities and milestones related to QA shall be identified and included in the Project Master Schedule (PMS) of the PMP in the PIP.

7.1. Quality Assurance Plan

QA-6 The Contractor shall establish, execute, and maintain an effective **Quality Assurance Plan (QAP)** throughout the period of performance of this Contract. The Contractor's QA Process shall be described in the QA Plan. The process is subject to approval by the Purchaser, or its delegated representative(s), whenever it does not meet the Quality Assurance requirements that are stated in this contract. The Contractor shall organize QA Review meetings starting from the first draft of QA Plan. The location of the first meeting shall be Contractor's facilities and ad-hoc meetings shall be arranged upon agreement.

QA-7   The Contractor shall establish and maintain an effective QA organization to implement the QAP and manage the QA functions. It shall be managed independently of the management of the project.

QA-8   The QAP shall describe the Contractor's QA organization, QA programme, roles and responsibilities and procedures to ensure that all activities are performed in accordance with the requirements of this Contract.

QA-9   The Contractor's designated Quality Assurance Manager shall ensure that all required roles, responsibilities, processes and control mechanisms are identified and implemented to make sure that all the functional, non-functional requirements within the scope of the contract are analysed, planned and satisfied.

QA-10   The Contractor's QAP shall be structured as a living document subject to revision/update, as required.

QA-11   The Contractor's QAP shall reference or document and explain the Contractor's QA procedures for analysis, software support, development, design, production, installation, configuration management, control of Purchaser furnished property, documentation, records, programming standards and coding conventions, library controls, reviews and audits, testing, corrective action and certification as specifically related to this project.

QA-12   The QAP shall apply to all hardware, software, documentation, activities, services and supplies that are designed, developed, acquired, maintained or used, including deliverable and non-deliverable items.

QA-13   The QAP shall also ensure that the exchange of deliverables from the Contractor to the Purchaser shall be adequately controlled, and that no deliverables shall be presented by the Contractor without adequate quality control and sign-off by the Contractor's QA Manager.

QA-14   The Contractor's QAP shall be compatible and consistent with all other plans, specifications, standards, documents and schedules, which are utilized under this Contract.

QA-15   All Contractor procedures referenced in the QA Plan shall either be submitted with the plan, or described in the plan and made available for review by the Purchaser upon demand.

QA-16   The QA Plan and all related QA procedures shall be subject to Purchaser approval.

QA-17   The Contractor shall maintain a QA log during the lifetime of the project in which records are kept accounting for all QA-activities, most notably all QA reviews. All accounting shall be done through dating and sign off by the responsible QA person. The QA log shall enable the Purchaser to verify if and when a deliverable has been QA reviewed and by whom and with what result.

7.2. Quality Assurance Process

QA-18   The Quality Assurance (QA) implemented by the Contractor shall apply to all hardware, software (including firmware) and documentation being developed,

designed, acquired, integrated, maintained, or used under the Contract. This includes non-deliverable test and support hardware and software.

QA-19   The Contractor's QA Process shall ensure that procedures are developed, implemented and maintained to adequately control the development, design, production, testing and configuration of all deliverables.

QA-20   Personnel performing QA functions shall have specific documented definitions of their assigned duties. In no case shall the QA personnel managing or performing QA functions be the same personnel responsible for performing other tasks that are reviewed by QA.

QA-21   The Contractor shall demonstrate, with the Quality Assurance process, that the processes set up for design, develop, produce and maintain the product will assure the product will meet all the requirements.

QA-22   If sub-contracted quality resources are used, the Contractor's Quality Management Process shall describe the controls and processes in place for monitoring the sub-Contractor's work against agreed timelines and levels of quality.

QA-23   The Contractor shall assure that all the test and procedure used to demonstrate the requirements will be monitored and controlled under the QA process.

QA-24   The Contractor shall periodically review the QA process and audit it for adequacy, compliance and effectiveness, and report any changes to the Purchaser POC.

QA-25   The Contractor shall on request provide the Purchaser with a copy of any subcontracts or orders for products related to the contract.

QA-26   The Contractor shall notify Purchaser if a subcontract or order has been identified as constituting or involving risk.

QA-27   The Contractor shall flow down the applicable contractual requirements to Sub-suppliers by referencing the stated contractual requirement, including relevant AQAP(s).

QA-28   The Contractor shall be responsible of ensure that the procedures and processes required to fulfil contract requirements are fully implemented at the Sub-supplier's facilities.

7.3. Auditing of Contractor Performance

[48]   The Purchaser reserves the right to perform Reviews and Quality audits at any of the Contractor (or Sub-Contractor(s)) facilities.

[49]   Audit activities at Sub-supplier's facilities do not relieve the Contractor and Subcontractors from any contractual quality responsibilities.

[50]   The Purchaser may engage auditors to evaluate the performance of the Contractor (or Sub-Contractor(s)) and verify, validate Contractor (or Sub-Contractor(s)) deliverables. The auditors can also monitor, assess, and report any perceived problem areas.

QA-29   The auditors may be requested by the Purchaser to monitor Contractor activities at Contractors' facilities or other sites related to the development, testing and

implementation of the contract. The Contractor shall fully support such activities and in particular:

- Host inspection visits by Purchaser's auditors;

- Make himself available for answering questions and furnishing all the information related to the project;

- Allow the Purchaser's auditors to inspect and monitor testing activities;

- Allow the Purchaser's auditors to inspect and monitor the Contractor's processes and tools applicable to this project.

QA-30   The Contractor shall transfer to the Purchaser's auditors all information deemed necessary to perform the activities, on his own initiative or on request by Purchaser's auditors.

QA-31   A non-exhaustive list of information that the Contractor shall transfer to the Purchaser's auditors includes minutes of meetings, planning documents, source code, requirements documents, and database, design, test and other technical documentation.

QA-32   Based on the Audit results if there are any disconformities or irregularities with the contract requirements, the Contractor shall immediately make necessary corrections and take necessary precautions to ensure the satisfaction of the requirements.

7.4. Certificate of Conformity

[51]   The Certificate of Conformity (CoC) is a document, signed by the Supplier, which states that the product conforms with contractual requirements and regulations.

[52]   The CoC verifies the process quality-enabled items produced or shipped comply with test procedures and quality specifications prescribed by the customer. It presents data derived from quality management information.

QA-33   The Contractor shall be solely responsible for the conformance to requirements, of products provided to the Purchaser.

QA-34   The Contractor shall deliver all the **Certificate of Conformity (CoC)** for products, COTS SW (including firmware) and hardware released by the COTS Vendors unless otherwise instructed.

QA-35   Any CoC delivered by the Contractor shall be part of the acceptance data package of the product and shall be provided at BDA.

Appendix A   Applicable and Reference Documentation

A.1   Applicable documentation for IPS

Abbreviation	Full document Name and Reference
[STANAG 4728, Ed.2]	System Life Cycle Management. Ed.2, 2015.
[AAP-20, Ed.C, Ver.1]	NATO Programme Management Framework (NATO Life Cycle Model). Ed.C, Ver.1, 2015.
[AAP-48, Ed.B, Ver.1]	NATO System Life Cycle Processes. Ed.B, Ver.1, 2013.
[ALP-10, Ed.C, Ver.1]	NATO Guidance on Integrated Logistics Support for Multinational Armament Programmes. Ed.C, Ver.1, 2017.
[STANAG 6001, Ed.5]	Language Proficiency Levels. Ed.5, 2014.
[STANAG 4280]	NATO Levels of Packaging
[STANAG 4281, Ed.3]	NATO Standard Marking for Shipment and Storage. Ed.3, 2016.
[STANAG 4329, Ed.4]	NATO Standard Bar Code Symbologies – AAP-44(A). Ed.4, 2010.
[AAP-44]	NATO Standard Bar Code Handbook

A.2   Reference documentation for IPS

Abbreviation	Full document Name and Reference
[ISO/IEC 15288, 2015]	Systems and software engineering – System life cycle processes
[ISO/IEC 12207, 2008]	Systems and software engineering – Software life cycle processes
[ISO/IEC 25010, 2011]	Systems and software engineering – Systems and software Quality Requirements and Evaluation (SQuaRE) – System and software quality models
[IEC 60050]	International Electrotechnical Vocabulary (IEV) (www.electropedia.org)
[AIA/ASD SX000i, 2021]	International specification for Integrated Product Support (IPS) – Issue 3, (2021)
[AIA/ASD S3000L, 2021]	International procedure specification for Logistics Support Analysis (LSA) – Issue 2 (2021)
[AIA/ASD S2000M, 2017]	International Specification for Material Management. Issue 6.1, 2017
[AIA/ASD S1000D, 2019]	International Specification for Technical Publications. Issue 5, 2019
[MIL–HDBK–338B]	Electronic Reliability Design Handbook
[MIL–STD–1629A]	Procedures for performing a Failure Mode, Effects and Criticality Analysis
[IEC 60812:2018]	Failure modes and effects analysis (FMEA and FMECA) - Ed.3 (2018)
[SD–22]	Diminishing Manufacturing Sources and Material Shortages (DMSMS). 2016
[Bi-SC Directive 075-003]	Collective Training and Exercise Directive, 02 October 2013, NU
[Bi-SC Directive 075-007]	Education and Individual Training Directive, 10 September 2015, NU

Abbreviation	Full document Name and Reference
[NATO C3 Taxonomy] Enclosure 1 to AC/322-D(2016)0017	"C3 Taxonomy Baseline 2.0", 10 November 2015

A.3   Applicable documentation for CM

Abbreviation	Full document Name and Reference
[STANAG 4427, Ed.3]	Configuration Management in System Life Cycle Management. Ed.3, 2014.
[ACMP-2000, Ed.A, Ver.2]	Policy on configuration management. Ed.A, Ver.2, 2017.
[ACMP-2009, Ed.A, Ver.2]	Guidance on Configuration Management. Ed.A, Ver.2, 2017.
[ACMP-2100, Ed.A, Ver.2]	The Core Set of Configuration Management Contractual Requirements. Ed.A, Ver.2, 2017.

A.4   Reference documentation for CM

Abbreviation	Full document Name and Reference
[ISO 10007:2003]	Quality Management System – Guidelines for Configuration Management. Second edition, 2003.

A.5   Applicable documentation for QA

Abbreviation	Full document Name and Reference
[STANAG 4107, Ed.11]	Mutual Acceptance of Government Quality Assurance and Usage of the Allied Quality Assurance Publications. Ed.11, 2019.
[AQAP-4107, Ed.A, Ver.2]	Mutual Acceptance of Government Quality Assurance and Usage of the Allied Quality Assurance Publications (AQAP). Ed. A, Ver.2, 2018.
[AQAP-2000, Ed.3]	NATO Policy on an Integrated System Approach to Quality Through the Life Cycle. Ed.3, 2009.
[AQAP-2070, Ed.B, Ver.3]	NATO Mutual Government Quality Assurance (GQA). Ed.B, Ver.3, 2015.
[AQAP-2105, Ed.C, Ver.1]	NATO Requirements for Quality Plans. Ed.C, Ver.1, 2019.
[AQAP-2110, Ed.D, Ver.1]	NATO Quality Assurance Requirements for Design, Development and Production. Ed.D, Ver.1, 2016.
[AQAP-2131, Ed.C, Ver.1]	NATO Quality Assurance Requirements for Final Inspection and Test. Ed.C, Ver.1, 2017.
[AQAP-2210, Ed.A, Ver.2]	NATO Supplementary Software Quality Assurance Requirements to AQAP-2110 or AQAP-2310. Ed.A, Ver.2, 2015.
[AQAP-2310, Ed.B, Ver.1]	NATO Quality Assurance Requirements for Aviation, Space and Defence Suppliers. Ed.B, Ver.1, 2017.

Appendix B   Content and Structure for Integrated Product Support Deliveries

B.1. Integrated Product Support Plan (IPSP)

IPS-82   The Contractor shall provide the IPSP in accordance with the following content and structure.

Structure	Content
1	Introduction
2	Documents and Acronyms
2.1	List of Applicable Documents
2.2	List of Reference Documents
2.3	List of Acronyms
3	System Overview
3.1	Architecture
3.2	Operational scenario
3.3	Maintenance Concept
3.4	Support Concept
4	IPS Management
4.1	IPS team and sub-contractors
4.2	IPS processes and procedure overview
4.3	IPS constraints
4.4	IPS tools
4.5	IPS Contractual Documentation Requirements List (CDRL)
5	Reliability, Availability, Maintainability and Testability (RAMT)
6	Failure Mode Effects Analysis (FMEA)
7	Logistics Support Analysis (LSA)
7.1	Maintenance Concept
7.1.1	Preventive/Scheduled maintenance
7.1.2	Corrective/Unscheduled maintenance
7.1.3	Hardware Maintenance Concept
7.1.4	Software Maintenance Concept
7.2	Maintenance Levels Description
7.3	Support Concept
7.4	Support Levels Description
7.5	Maintenance Task Analysis (MTA)
7.6	Level Of Repair Analysis (LORA)
7.7	Product Support Database
8	Supply support
8.1	Manpower and personnel
8.2	Spare Parts
8.3	Tool and Test Equipment
8.4	Facilities
8.5	Packaging, Handling, Storage and Transportation (PHST)
8.5.1	Packing, Coding and Labelling (Packaging)
8.5.2	Delivery and Shipment (Handling and Storage)
8.5.3	Transportation
9	Parts Obsolescence Management
9.1	Evaluation criteria
9.2	Resolution strategies
10	Technical Publications
11	Training
12	In Service Support (ISS)
12.1	Warranty period
12.2	Post Warranty period
12.2.1	Post Warranty Services (PWS): Repair On Need

Structure	Content
12.2.2	Performance Based Services
12.3	Sub-Contractors

B.2. Product Support Data Package

IPS-83 The Contractor shall provide the Product Logistics Support Data Package in accordance with the following content and structure. Artifacts to support the data shall be appendices of the document.

Structure	Content
1	Introduction
2	Documents and Acronyms
2.1	List of Applicable Documents
2.2	List of Reference Documents
2.3	List of Acronyms
3	System Breakdown Description
4	Reliability, Availability, Maintainability and Testability data
5	Failure Mode Effects Analysis (FMEA)
6	Maintenance Tasks data
7	Level of Repair data
8	Repair Price List

IPS-84 The Contractor shall provide for RAMT data one .xls spreadsheet as annex of the Product Support Data Package in accordance with the following content and structure.

- Product Breakdown
  - Level
  - Description
  - Cage Code
  - Part Number
  - Quantity
- Reliability
  - Critical item (Y/N)
  - Source data (Calculated / Predicted / Estimated / Supplier evidence)
  - Failure rate (fpmh)
  - MTBF (h)
  - Redundancy model
  - MTBCF (h)
- Maintainability
  - TTR (h)
  - MTTR (h)
  - MTTRS (h)
  - MTBPM (h)
  - Mpt (h)
- Testability
  - Fault Detection (FD%)
  - Fault Isolation:
    - FI(1LRU)%
    - FI(2LRU)%
    - FI(3LRU)%

- FI(>3LRU)%

IPS-85 Mean Time Between Failures (MTBF) shall represent the Basic Reliability, where 'failure' is understood to mean any condition in which an item, assembly, sub-system or the entire system is not operating according to specifications.

IPS-86 Mean Time Between Critical Failures (MTBCF) shall represent the Mission Reliability, where 'critical failure' is understood to mean any condition in which the entire system is not operating according to specifications.

IPS-87 Mean Time To Repair (MTTR) shall be provided for all kind of failures (Critical and non critical) and shall include fault isolation, access, disassembly, remove and replace, reassembly, configuration, check-out and start-up, and to exclude administrative and logistics delay times.

IPS-88 Mean Time to Restore the System (MTTRS) shall be provided for critical failures only and shall include fault isolation, access, disassembly, remove and replace, reassembly, configuration, check-out and start-up, and to exclude administrative and logistics delay times.

IPS-89 Fault Detection (FD) shall be provided to include Built-In Test (BIT) and/or Built-In Test Equipment (BITE) capable of on-line detection of failure modes (Fault Detection rate).

IPS-90 Fault Isolation (FI) shall be provided to include Built-In Test (BIT) and/or Built-In Test Equipment (BITE) capable to isolate the detected failure (Fault Isolation rates) with or without ambiguity.

IPS-91 The Contractor shall provide for the FMEA one .xls spreadsheet as annex of the Product Support Data Package in accordance with the following content and structure.

- Product Breakdown
  - Level
  - Description
  - Cage Code
  - Part Number
- Failure Mode Effects Analysis (FMEA)
  - Failure Modes
  - Mission Phase / Operational Mode
  - Failure effects
    - Local Effects
    - Next Higher Level
    - End Effect
  - Failure Detection Method
  - Compensating Provisions
  - Severity Classification
  - Remarks

IPS-92 The Contractor shall provide for Maintenance Tasks data one .xls spreadsheet as annex of the Product Logistics Support Data Package with the following tables in:

- Logistic Breakdown Report – LBR : worksheet that hierarchically list the logistic breakdown and the link with the PBL containing at least the following information:

    o Indenture level, Breakdown Element Identifier, Cage code, Part Number, Breakdown Element Name, Part as Designed Name, SMR Code, Qty, Qty for End Item, Unit of Measure (UM), MTBF, UM, MTTR, UM

- Maintenance Index Report – MIR : worksheet that list all maintenance (scheduled and unscheduled) containing at least the following information:

    o Indenture level, Breakdown Element Identifier, Cage code, Part Number, Breakdown Element Name, Part as Designed Name, SMR Code, Task Identifier, Task Name, Type, Task Frequency, UM, Task Duration, UM, MTBF, UM, MTTR, UM, Task Labour Time, UM,

- Maintenance Report – MR : worksheet that details all maintenance (scheduled and unscheduled) including all resources details (materials, personnel, facilities) with subtasks and duration details per skill and per subtask.

- Material Resource Report – MRR : shall include the following vistas:

    o Material Resource List : the list of all the resources with associated type (e.g.: spare, consumable, common tools, special tools);
    o Material Resource Utilization: the list of all the resources with associated maintenance where the resource is used;
    o Material Resource Annual Use: the list of all the resources with the calculated annual use based on the task frequency.

- Personnel Report – PR : shall include the following vistas (same as MRR but for personnel): Personnel List, Personnel Utilization, Personnel Annual Use

- Facilities Report – FR : shall include the following vistas (same as MRR but for facilities): Facilities List, Facilities Utilization, Facilities Annual Use

IPS-93   The Contractor shall provide for Maintenance Tasks data the following summary tables as annex of the Product Logistics Support Data Package:

- Quantity of maintenance

Level of maintenance	Scheduled			Unscheduled			Total		
	HW	SW	Sum	HW	SW	Sum	HW	SW	Sum
HL1/SL1									
HL2/SL2									
HL3/SL3									
HL4/SL4									
Total									

- Mean Annual Downtime and Mean Annual Workload (one table for HW+SW Maintenance, one table for HW Maintenance, one table for SW Maintenance)

Level of maintenance	Scheduled		Unscheduled		Total	
	Elapsed time (h)	Man workload (h)	Elapsed time (h)	Man workload (h)	Elapsed time (h)	Man workload (h)
HL1/SL1						
HL2/SL2						
HL3/SL3						
HL4/SL4						

Total						

- Scheduled maintenance grouped by periodicity using as many columns as periodicity defined (one table for HW+SW maintenance, one table for HW maintenance, one table for SW maintenance)

Level of maintenance	(e.g.: daily)					…
	Quantity	Mean elapsed time (h)	Mean man workload (h)	Total elapsed time (h)	Total man hours (h)	
HL1/SL1						
HL2/SL2						
HL3/SL3						
HL4/SL4						
Total						

IPS-94   The Contractor shall provide a Product Support Database in .xls that shall match the PBL and shall include information fields required for each HW and SW (including Firmware) item to be provided/updated as annex of the Product Support Data Package:

- **Indenture level**: Level of indenture starting from the system that is the first level and classified as End Item

- **Breakdown Element Identifier (BEI)**: String of characters used to uniquely identify a Breakdown Element and to differentiate it from other Breakdown Elements that comprise a product. Note: used to establish a hierarchical structure of the technical system.

- **Reference Designator**;

- **Subsystem**;

- **Breakdown Element Name**: Word or phrase by which the breakdown element is known and can be easily referenced.

- **Part Logistic Category**[2];

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2   The **Part Logistic Category** is a classification that defines an item (HW or SW) as designed in the context of product support. In particular these identifications can be used:

➢ **EI** - End Item and **SS** – System Subsystem

➢ Hardware (HW) Maintenance Significant Items (MSI): **LS** - Statistical Life LRUs (e.g.: Computers, Power PCs, Switches, Routers, IF modules, RF modules, Breakers, Power Supplies, Monitors, Modems, Power Amplifiers); **LL** – Limited Life LRUs (e.g.: Batteries, flexible waveguides, oscillators); **II** – Insurance Items [e.g.: docking stations, Keyboards, Mice, Cables, mechanical parts (e.g. Racks, drawers), simple E/M parts (e.g. patch panels)]; **C[T]** – Technical Consumables (e.g.: fuse, gas discharger, surge protection devices, lamps, bulbs, led); **C[NT]** – Non-Technical Consumables [e.g.: POL (Petrol, Oils, Lubricants), water, gas]; **C[G]** – Generic Consumables (e.g.: printer cartridges, toners, printers' paper); **AP** – Attaching Parts [e.g.: washers, gaskets (not EMI), nuts, bolts, screws].

➢ Software (SW): **SWA** – Application Software [e.g.: contractors' developed application SW, COTS application SW (e.g. MS Office, Adobe Acrobat)]; **SWO** – Software Operating Systems (e.g.: Linux, Unix, MS Windows, LynxOS, Android, IOS); **FW** – Firmware; **DD** – Device drivers.

➢ Support equipment and tools: **CHT** (Common Hand Tool), **CSE** (Common Support Equipment), **PSE** (Peculiar Support Equipment);

- **Manufacturer item data**: Cage Code, Part Number, Part Nomenclature;

- **Vendor/Contractor item data**: Cage Code, Part Number, Part Nomenclature;

- **Item characteristics**:

  o LRU (Y/N), Serialized Item (Y/N); Mean Time Between Failure (MTBF) (in hours); Mean Time To Repair (MTTR) (in hours);
  o LRU Maintenance Level (HL/SL 1 to 3 included); HW part repairability (Y/N);
  o NATO Stock Number (NSN); Unit Price and Currency;
  o Provisioning Lead Time (PLT) (days); Turn Around Time (TAT) (days).
- **Quantity**: Qty per line item; Qty in Next Higher Assy; Qty in End item.

B.3. Obsolescence Report

IPS-95   The Contractor shall provide an Obsolescence Report jointly with a .xls file that shall include information fields required for each HW and SW (including Firmware) item to be provided/updated:

- **Breakdown Element Name**: Word or phrase by which the breakdown element is known and can be easily referenced.

- **Manufacturer item data**: Cage Code, Part Number, Part Nomenclature;

- **Vendor/Contractor item data**: Cage Code, Part Number, Part Nomenclature;

- **Quantity**: Qty in End item;

- **Product current status:** Cancelled without alternative Form Fit and Function (FFF) replacement, Off production but on the stock (last buy), On production, Cancelled with alternative FFF replacement;

- **Product current status rationale/evidences:**

  o for HW [e.g.: production started in "year", last update in "year", support availability till "year" or End of life date (if any)]

  o for SW (e.g.: release date of the item, support of this version till "year")

- **Warranty and Service:**

  o for HW (e.g.: warranty duration granted when procured, Provisionning Lead Time, Repair cycle time)

  o for SW (e.g.: software comunity (shareware/freeware), open source, …)

- **Risk - Item criticality:** This risk category addresses the degree to which an item (whether or not it is an assembly or a component used to repair an assembly) is critical to the functionality of the system and ultimately the operational readiness of the unit employing that system. (e.g.: from FMECA criticalities 2 - red, 3 - yellow, 4 - green). Please note that FMECA criticality 1 shall require Fault Tree Analysis

- **Risk - Supply chain vulnerability:** This risk category represents a key difference between electronic items and Materials and Structural, Mechanical and Electrical (MaSME) items.

  o Electronic items: often becomes obsolete because of technology changes (e.g.: red, yellow, green).

o MaSME items: obsolescence is usually related to a source going out of business or changing its product line (e.g.: red, yellow, green).

- **Risk - Time to implement a resolution:** This risk category addresses how long it will take to implement a resolution to a Obsolescence issue for an item or material in comparison to the stocks that the program has on hand. If there is more than enough stock on hand and the time to implement is short, then the risk to the program would be viewed as lower; however, if there is a long lead time to implement a resolution and the stocks on hand are not sufficient, then this indicates high risk. (e.g.: red, yellow, green)

- **Risk cathegory rationale/evidences:** Narrative for each risk cathegory rank

- **Risk Level:** product of the above risk ranks

- **Proposed mitigation:** FFF alternative (ECP type 1), Function alternative (ECP type 2), Redesign of higher level, To Be Defined, Not Applicable, Other;

- **Proposed mitigation rationale:** Narrative for the proposed mitigation.

B.4. In Service Support Plan (ISSP)

IPS-96   The Contractor shall provide the In Service Support Plan (ISSP) in accordance with the following content and structure:

Structure	Content
1	Introduction
2	Documents and Acronyms
2.1	List of Applicable Documents
2.2	List of Reference Documents
2.3	List of Acronyms
3	System Overview
3.1	Architecture
3.2	Operational scenario
3.3	Maintenance Concept
3.4	Support Concept
4	ISS Management
4.1	ISS team
4.2	ISS processes and procedure overview
4.3	ISS RACI Matrix
4.3	ISS constraints
4.4	ISS tools
4.5	ISS Contractual Documentation Requirements List (CDRL)
5	System Breakdown
6	Engineering Support (ES)
6.1	Framework and processes description
6.2	Data Reporting Analysis and Corrective Action System
6.3	Product Support deliveries update
6.4	Key Performance Indicators for ES
6.5	Supportability Evaluation and performance analysis
7	Material Management (MM)
7.1	Framework and processes description
7.2	Materials and maintenance concept
7.3	Stock
7.4	Key Performance Indicators for MM
8	Field Engineering (FE)
8.1	Framework and processes description
8.2	Manpower and support concept
8.3	Facilities

Structure	Content
8.4	Key Performance Indicators for FE
9	Cost Model for CLS Activities

Appendix C   Appendix C List of Acronyms

Acronym	Description
ACMP	Allied Configuration Management Publication
ACP	Allied Communications Publications
AES	Advanced Encryption Standard
AFPL	Approved Fielded Product List
CAB	Change Advisory Board
CBRN	Chemical Biological Raiological Neuclear
CES	Core Enterprise Services
CIS	Communications and Information System
CLIN	Contract Line Item
CMDB	Corfiguration Management DataBase
CMP	Configuration Management Plan
COTS	Commercial Off The Shelf
CoC	Certificate of Conformity
CSSC	CIS Sustainment Support Centre
DSGT	Deployable Satelitte Ground Terminal
DVD	Digital Video Disk
EDC	Effective Date of Contract
EPM	Electronic Protective Measures
EUR	Euro
FAT	Factory Acceptance Testing
FAST	First Article System Testing
FIPS	Federal Information Processing Standards
FMECA	Failure Mode, Effects and Criticallity Analysis
FDMA	Frequency Division Multiple Access
FSA	Final System Acceptance
ILS	Integrated Logistic Support
ILSP	Integrated Logistic Support Plan
IMS	International Military Staff

Acronym	Description
INFOSEC	Information Security
INV	Investment
ISO	International Organisation for Standardisation
ISS	In Service Support
ISSP	In Service Support Plan
IPSEC	Internet Protocol Security
ITSM	IT Service Management
IVV	Independent Validation and Verification
KOM	Kick-Off Meeting
LSA	Logistic Support Analysis
MACSEC	Standard for Security in Ethernet Local Area Networks
MIL	Military
MILSATCOM	Military Satellite Communications
MPLS	Multiprorocol Label Switching
MTBCF	Mean Time Between Critical Failure
MTBF	Mean Time Between Failure
MTP	Media Termionation Point
MTTR	Mean Time To Restore
MTTRS	Mean Time To Restore Service
MTU	Maximum Transmission Unit
NATO	North Atlantic Treaty Organization
NCI	NATO Communications Infrastructure
NCIA	NATO Communications and Information Agency
NCISG	NATO CIS Group
NCISS	NATO Communications and Information Systems School
NCS	NATO Command Structure
NFS	NATO Force Structure
NGCS	NATO General Communications System
PBL	Product Baseline
PBR	Policy Based Routing

Acronym	Description
PBS	Project Breakdown Structure
PFE	Purchaser Furnished Equipment
PHS	Packaging, Handling, Storage
PIP	Package Implementation Plan
PMO	Programme Management Office
PMP	Project Management Plan
PMS	Project Master Schedule
PMT	Project Management Team
PMTP	Project Master Test Plan
POC	Point of Contact
PRM	Project Review Meeting
PSA	Provisional System Acceptance
QAP	Quality Assurance Plan
RAMT	Reliability, Availability, Maintainability and Testability
RfC	Request for Concession
RFD	Request For Deviation
RFI	Ratio Frequency Interference
RIL	Recommended Items List
RMA	Reliability, Maintainability and Availability
RMP	Risk Management Plan
RSPL	Recommended Spare Parts List
RTM	Requirements Traceability Matrix
SATCOM	Satellite Communications
SCR	SATCOM Convergence Router
SGS	Satellite Ground Station
SGT	Satellite Ground Terminal
SHAPE	Supreme Headquarters Allied Powers Europe
SHF	Super High Frequency
SOW	Statement of Work
SRS	System Requirements Statement

Acronym	Description
SSS	Schedule of Supplies and Services
STANAG	Standardization Agreement
STD	Standard
TVV	Test Validation and Verification

RFQ-CO-115455-SGSBS

PROVIDE SATCOM GROUND SEGMENT BASEBAND SYSTEMS

Provision of SATCOM Convergence Routers (SCR) and Switches (WP2)

BOOK II

PART IV

STATEMENT OF WORK (SOW)

ANNEX A – SYSTEM REQUIREMENTS SPECIFICATION (SRS)

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TABLE OF CONTENTS

Section 1 - General

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Section 1 - General

Section 1   General

[1]   This Annex to the Provision of SATCOM Convergence Routers (SCRs) and Switches Statement of Work (SoW) provides the System Requirements Specification (SRS) for the SCRs, switches and related components to be provided under this Contract.

SRS-1   The delivery shall include the following equipment as further specified in the following paragraphs:

    1) Routers in 5 configurations (§2.1), referred to as:

        a) Router G3,

        b) Router G4,

        c) Router DB,

        d) Router HB,

        e) Router SAC.

    2) Switches (§2.3);

[2]   For the quantity of equipment to be delivered please refer to the Schedule of Supplies and Services (SSS).

SRS-2   The Equipment provided under this Contract shall meet or exceed the requirements identified herein for each respective Contract Line Item.

Section 1 - General

Section 2   Equipment Requirements

2.1   Routers

[3]   This section provides requirements for the routers.

[4]   In this section, router configurations are defined which differ in the amount and types of ports and functionality to be provided.

[5]   These router configurations will be referred to as Router G3, Router G4, Router DB, Router HB and Router SAC.

[6]   The requirements in this section are applicable to all router configurations, unless it is indicated that requirements refer to specific router configurations.

SRS-3   All routers in the Contractor's solution shall be of the same model across all router configurations.

2.1.1   Hardware

2.1.1.1   Data ports

SRS-4   If port modules are used to augment the router ports that are built-in to the routers, then all modules of a particular port type (i.e. Ethernet or Serial) shall be of the same model across all router configurations.

2.1.1.1.1   Router G3

SRS-5   Each Router G3 shall provide at least the following ports, supporting simultaneous use:

1)   1 x SFP,

2)   4 x 10/100/1000 Mbps Ethernet ports with RJ45 connectors,

3)   4 x Serial ports as per the specifications of § 2.2.1.

SRS-6   All ports required per SRS-5 shall support forwarding of data by the router, management ports shall not count towards the ports required in SRS-5.

[7]   The ports required in SRS-5 may be offered through the use of modules integrated in the Router chassis.

SRS-7   Each Router G3 shall meet the port requirements of SRS-5, and shall be simultaneously able to host a module with four Serial ports as per the specifications of § 2.2.1 (in which case the total number of serial ports would become eight).

SRS-8   Each Router G3 shall include one interoperable SFP with 1000BASE-LX/LH transceiver for MMF and SMF, 1300-nm wavelength.

SRS-9   Each Router G3 shall include four serial cables with the following specifications:

Section 2 - Equipment Requirements

1) Each serial cable shall support synchronous serial connections at 8 Mbps between any single port of the serial module specified in § 2.2.1 and a Purchaser equipment serial port having an EIA-530-A DCE interface on a DB25 female connector.

2) The serial cables shall be constructed such that 4 serial cables can be simultaneously connected to the serial module of § 2.2.1.

3) The cable length shall be 460 mm, measured between the end of the pins on the connectors at either end of the cable.

2.1.1.1.2 Router G4

SRS-10 Each Router G4 shall provide at least the following ports, supporting simultaneous use:

1) 1 x SFP,

2) 4 x 10/100/1000 Mbps Ethernet ports with RJ45 connectors.

SRS-11 All ports required per SRS-10 shall support forwarding of data by the router, management ports shall not count towards the ports required in SRS-10.

[8] The ports required in SRS-10 may be offered through the use of modules integrated in the Router chassis.

SRS-12 Each Router G4 shall include one interoperable SFP with 1000BASE-LX/LH transceiver for MMF and SMF, 1300-nm wavelength.

SRS-13 Each Router G4 shall meet the port requirements above and simultaneously support the addition of at least one instance of the modules as specified at § 2.2.

2.1.1.1.3 Router SAC

SRS-14 Each Router SAC shall provide at least the following ports, supporting simultaneous use:

1) 6 x 10/100/1000 Mbps Ethernet port with RJ45 connectors.

SRS-15 All ports required per SRS-14 shall support forwarding of data by the router, management ports shall not count towards the ports required in SRS-14.

[9] The ports required in SRS-14 may be offered through the use of modules integrated in the Router chassis.

SRS-16 Each Router SAC shall meet the port requirements above and simultaneously support the addition of at least one instance of the modules as specified at § 2.2.

2.1.1.1.4 Router DB and Router HB

SRS-17 Each Router DB and each Router HB shall provide at least the following ports, supporting simultaneous use:

1) 2 x SFP,

2) 5 x 10/100/1000 Mbps Ethernet port with RJ45 connectors.

Section 2 - Equipment Requirements

SRS-18 All ports required per SRS-17 shall support forwarding of data by the router, management ports shall not count towards the ports required in SRS-17.

[10] The ports required in SRS-17 may be offered through the use of modules integrated in the Router chassis.

SRS-19 Each Router DB and each Router HB shall include two interoperable SFPs with 1000BASE-LX/LH transceiver for MMF and SMF, 1300-nm wavelength.

2.1.1.2 Management ports

SRS-20 Each router shall feature, dedicated for management, at least one RS232 port, one USB port, and one Ethernet port.

2.1.2 Environmental

SRS-21 The routers shall meet the following environmental requirements:

> 1) Operating temperature range of at least 0 to +40°C,
>
> 2) Non-Operating temperature range of at least -40 to +70°C.

2.1.3 Physical

SRS-22 The routers shall meet the following physical requirements:

> 1) Be rack mountable and include all necessary accessories for 19" rack mounting of the device,
>
> 2) Weight shall be less than 6.5 kg in configuration G4,
>
> 3) Maximum dimensions shall be 44.45 x 438 x 438 mm (H x W x D).

2.1.4 Supportability Requirements

SRS-23 The router Mean Time Between Failures (MTBF) shall be greater than 200000 hours in Ground Fixed environment (ref. MIL-HDBK-338B) using failure rates data at component level or by actual data collected from already fielded systems.

SRS-24 The router Fault Detection (FD) rate shall be 100% through Built-In Test (BIT) capable of on-line detection of failures modes.

SRS-25 The router Fault Isolation (FI) rate without ambiguity shall be greater than 95% through Built-In Test (BIT) capable to isolate the detected internal function/component in failure.

SRS-26 The router SW / FW updates and setting shall be Software Organizational Maintenance (Level 2) SL2 or lower (Please refer to Appendix C - Maintenance and Support Concepts.)

2.1.5 Operating System

SRS-27 The Operating System for all routers shall meet the following requirements:

> 1) Be listed on the NCIA Approved Fielded Product List (AFPL),

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Section 2 - Equipment Requirements

2) Support payload encryption.

2.1.6 Functionality

SRS-28 All routers shall include the required hardware, operating system and licenses to provide at least the following functionalities:

1) IPv4, IPv6,

2) MPLS, MPLS TE, VPLS, EoMPLS,

3) IPSEC,

4) MACSEC (in accordance with IEEE 802.1AEbn-2011), extended with support for transporting VLAN tags in the clear (while using MACSEC):

a) On each Router G3 and G4 on at least two 10/100/1000 Mbps Ethernet ports.

b) On each Router DB, HB and SAC on at least four 10/100/1000 Mbps Ethernet ports.

2.1.7 Performance

SRS-29 All routers shall provide a deterministic throughput of at least 300 Mbps.

[11] Deterministic throughput is the throughput which can be achieved with services NAT, QoS, IPSEC and firewall enabled.

2.1.8 Power

SRS-30 All routers shall meet the following power requirements:

1) The router shall have an integrated AC power supply with C14 power inlet,

2) The router shall support an AC input range of 100V – 240V, 50 to 60Hz,

3) For all 5 configurations listed in § 2.1 the router power consumption shall not exceed 250 Watts.

2.2 Router interface modules

2.2.1 Four port Serial module

SRS-31 Each Four port Serial module shall meet at least the following minimum specifications:

1) Provide 4 synchronous serial EIA-530-A ports, each port shall support a data rate of 8 Mbps full duplex, also when all ports are operated simultaneously at that date rate.

2) Operating temperature range at least 0 to +40°C,

3) Non-Operating temperature range at least -20 to +65°C,

Section 2 - Equipment Requirements

4) Be interoperable with the Routers as defined above in § 2.1.

2.2.2 Dual Ethernet / SFP module

SRS-32   Each Dual Ethernet / SFP module shall meet at least the following minimum specifications:

1) Provide at least two Ethernet ports and two SFP ports, of which two ports have to be supported simultaneously, and in any combination,

2) Operating temperature range at least 0 to +40°C,

3) Non-Operating temperature range at least -40 to +70°C,

4) Support MACSEC (IEEE 802.1AEbn-2011) with VLAN tag in the clear.

2.3 Switches

2.3.1 Hardware

[12]   This section provides requirements for the switches.

SRS-33   All switches to be delivered by the Contractor's shall be of the same model.

2.3.1.1 Data ports

SRS-34   The switches shall each provide at least the following types of ports for traffic:

1) 4 x SFP,

2) 24 x 10/100/1000 Mbps Ethernet port with RJ45 connectors.

3) The above requirements shall be met without the use of modules.

SRS-35   Each switch shall include four SFPs with 1000BASE-LX/LH transceiver for MMF and SMF, 1300-nm wavelength; the SFPs shall be compatible with the Switch.

2.3.1.2 Management ports

SRS-36   Feature dedicated for management at least one RS232 port, one USB port, and one Ethernet port.

2.3.1.3 Environmental

SRS-37   Switches shall meet the following environmental requirements:

1) Operating temperature range of at least 0 to +40°C,

2) Non-Operating temperature range of at least -40 to +70°C.

2.3.1.4 Physical

SRS-38   Switches shall meet the following physical requirements:

1) The weight shall be less than 4.4 kg,

Section 2 - Equipment Requirements

2) The maximum dimensions are 44.45 x 445 x 329 mm (H x W x D).

3) Be rack mountable and include all necessary accessories for 19" rack mounting of the device.

2.3.1.5 Supportability Requirements

SRS-39   The switches Mean Time Between Failure (MTBF) shall be greater than 200000 hours in Ground Fixed environment (ref. MIL-HDBK-338B) using failure rates data at component level or by actual data collected from already fielded systems.

SRS-40   The switches Fault Detection (FD) rate shall be 100% through Built-In Test (BIT) capable of on-line detection of failures modes.

SRS-41   The switches Fault Isolation (FI) rate without ambiguity shall be greater than 95% through Built-In Test (BIT) capable to isolate the detected internal function/component in failure.

SRS-42   The switches SW / FW updates and setting shall be Software Organizational Maintenance (Level 2) SL2 or lower (Please refer to Appendix C - Maintenance and Support Concepts).

2.3.2 Operating System

SRS-43   The operating system for all switches shall meet the following requirements:

1) Be listed on the Approved Fielded Product List (AFPL).

2.3.3 Functionality

SRS-44   All switches shall include the following functionalities:

1) Layer 2 Switching,

2) Routed Access (RIP, OSPF),

3) Private VLAN,

4) 802.1X,

5) MACSEC-128,

6) VRF,

7) VXLAN.

2.3.4 Power

SRS-45   All switches shall meet the following performance requirements:

1) Have integrated an AC power supply / supplies with C14 power inlet(s),

2) Support an AC input range of 100V – 240V, 50 to 60Hz,

Section 2 - Equipment Requirements

3) Power consumption shall not exceed 125 Watts.

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Section 2 - Equipment Requirements