NATO UNCLASSIFIED

STATEMENT OF WORK (SOW)

Document No : NSPA-LD-FFGOPV-SOW
Issue No : 2.1
Issue Date : 16 April 2024
SA Number : SA-PRT-077

STATEMENT OF WORK (SOW)

for

MLU of VGAM FFGH

and

OPV3S SEWACO Systems Acquisition

Project

for

PORTUGUESE NAVY

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REVISION SHEET

No.	Revision	Date
Initial Release	-	August. 2023
1.1		22 September 2023
1.2		29 September 2023
1.3		12 October 23
2.0		14 November 23
2.1		14 December 23
1.3	Review after BC	16 April 24

AMENDMENT RECORD

No.	Reference	Requirement
1	ANNEX E - PROGRAM TECHNICAL REQUIREMENTS: Table 1 – Scope of Supply	OPV NAVRAD - GFE
2	Annex B - LIST OF DELIVERABLE PRODUCTS AND SERVICES	Reference to EDC: October 2024
3	ANNEX E - PROGRAM TECHNICAL REQUIREMENTS: Table 1 – Scope of Supply	RWS 12.7 – CMS Integration Level

TABLE OF CONTENTS

1. FOREWORD

This SoW describes the responsibilities and efforts to be performed by the Contractor but also the system requirements for the Vasco de Gama Frigates Mid Life Upgrade (VGAM FFGH MLU) and Ocean Patrol Vessels Third Series (OPV3S) Sensors, Weapons and C4I (SEWACO) Systems Acquisition Program (hereafter will be mentioned as "FFGH MLU & SEWACO OPV3S Program") for the Portuguese (PRT) Navy.

2. DOCUMENT OVERVIEW

This SoW is comprised of 11 sections and 6 annexes and 7 appendices that describe from a managerial and technical standpoint, the requirements for the Contractor's performance of the Contract.

The body of the Statement of Work is supported by Annexes as follows:

- Annex A – Project Prospective Timeline
- Annex B – List of deliverables products and services including timeline,
- Annex C – Contract Data Requirement List (CDRL) and main meetings/reviews,
- Annex D – Glossary of Terms, Abbreviations and Acronyms
- Annex E – Project Technical Requirements
- Annex F – List of References

Each requirement defined in this document and its annexes has a unique requirement numbering as described below where X is the serial number:

- MGMT_Req.X. for the management requirements,
- TECH_Req.X. for the general system requirements,
- TECH_CMS.Req.X. for the CMS related system requirements,
- TECH_SNR.Req.X. for the sensors system related requirements,
- TECH_WPN.Req.X. for the weapon system related requirements,
- TECH_EOD.Req.X for the EOD system specification requirements,
- TECH_FCR.Req.X for the FCR system specification requirements,
- TECH_EOS.Req.X for the EOS system specification requirements,
- TECH_OSD.Req.X for the OSD system specification requirements,
- TECH_IFF.Req.X for the IFF system specification requirements,
- TECH_ESM.Req.X for the ESM system specification requirements,
- TECH_IBS_NAVRAD.Req.X for the IBS – NAV RAD System specification

requirements,

- TECH_3DRADAR.Req.X. for the navigation system related requirements,
- TECH_2DRADAR.Req.X. for the navigation system related requirements,
- TECH_COM.Req.X. for the communication system related requirements,
- TECH_CWP.Req.X. for the chiller water system specification requirements,
- TECH_ILS.Req.X. for the integrated logistics system specification requirements,

This aims to support the requirements' management (i.e. namely its traceability) throughout the execution of the project.

In the SOW package, the requirements are given in three types, in accordance with its level of priority, in a descend relevance scale, respectively expressed by; essential, desirable and optional. At the end of each requirement, the requirement type is marked in square bracket as [Essential], [Desirable1], [Desirable2] or [Optional] consecutively. The meaning of the types of the requirements are as follows:

- **Essential requirements:** These are the requirements which describes the basic configuration that the product to be delivered shall compulsorily meet as a minimum; these requirements are usually defined as a clear technical feature or target. The basic configuration requirements are mandatory requirements indicated with the term "shall" and marked as "[Essential]" requirements in this document.
- **Desirable requirements:** These are enhancement features which the product to be delivered should meet. These requirements are expected to bring higher performance, added qualities, or capabilities to the system. The enhanced capability requirements are defined as Level 1 and Level 2 enhanced capability for the systems with Level 2 being the highest, most capable category. Meaning, some of the systems might have met only one level of enhanced capability requirements while the others have met two levels (first and second) which are all to be considered in the best value evaluation. The details related to the best value evaluation criteria are given in the "Bid Instructions" document. These requirements are indicated with the term "should" and marked as "[Desirable Lvl1]" and "[Desirable Lvl2]"
- **Optional requirements:** These requirements will be constituted of single requirements related to specific services or deliverables that can prospectively be ordered throughout the duration of the Contract, subject to Purchase Order issuance. The details related to the preparation of these offers and their validity are in the "Bid Instructions" document. These requirements are indicated with the term "should" or "may" and marked as "[Optional]" requirement.

Unless otherwise stated, the requirement shall be applied for both FFGH MLU Program and OPV3S Program. In cases where the requirement is valid only for the FFGH MLU Program or OPV3S Program, the requirement validity is marked in bracket as (FFGH Only) or (OPV3S Only) respectively.

3. BACKGROUND INFORMATION

Vasco da Gama Class Frigates (VGAM FFGH) are currently in use by the Portuguese Navy. The VGAM FFGH MLU intends to extend the life cycle of two frigates. For this purpose, upgrade activities will be performed to the Sensors, Weapons and C4I (further mentioned as SEWACO) Systems and to Platform systems.

Furthermore, PRT Navy requires to increase the Ocean Patrol Vessels (OPV) fleet to replace the old Corvettes classes. In that respect, the new construction program for 6 (six) new ships of the third series (3S) of OPV class has been initiated by PRT Ministry of Defense (MoD).

Upon considering the system requirements for both classes of ships, a significant level of commonality has been planned. Concurrently, the procurement activities are scheduled within the same timeframe. This commonality presents various benefits in terms of scale-effect procurement, cost-effective system engineering, project management, and integrated logistics support. These advantages include:

- Reduced costs associated with larger scale procurement, designing, manufacturing, and maintaining different types of equipment.
- Simplified logistics by reducing the logistic dispersion, and thus the range of different equipment, spare parts, special tools and equipment to provide support.
- Improved interoperability between different types of equipment by enabling them to share Education & Training, simulators, maintenance resources, spare parts, systems, or procedures.

Therefore, the systems acquisition programs are decided to be merged.

4. RESPONSIBILITIES

NATO Support and Procurement Agency (NSPA) has the responsibility for the management of the overall FFGH MLU & SEWACO OPV3S Program and acts as Contracting Authority on behalf of PRT Navy.

In order to facilitate the readability of the SoW, the Contracting Authority will be designated by the acronym **NSPA**. The beneficiary of this acquisition, PRT Navy, will be designated as **End**

User. The provider of the product and services acquired in the framework of this acquisition will be designated as the **Contractor**.

5. PLACE OF PERFORMANCE & DELIVERY / END USER

The VGAM FFGH and OPV3S could be deployed in various locations, but the main place of performance and delivery of the products, activities and services covered by this Contract will be as in the following:

- **VGAM FFGH:** All the onboard activities shall be performed at and systems/materials shall be delivered to Lisbon Naval Base, at the Naval Station and at Arsenal do Alfeite S.A shipyard premises, located in Almada, Portugal
- **OPV3S:** The SEWACO systems shall be delivered to and installation services shall, in principle, be performed in the shipbuilder facilities (West Sea Viana - Shipyard in Viana do Castelo - Portugal). All remaining activities (e.g., Setting to work (STW), Integration, Harbour Acceptance Trails (HAT), See Acceptance Trails (SAT) as described in this SoW) are foreseen to be performed at the Lisbon Naval Base, at the Naval Station premises, or at Arsenal do Alfeite S.A shipyard premises, if deemed more appropriate.

6. GENERAL SCOPE AND KEY DEFINITIONS

6.1. KEY DEFINITIONS

Throughout the document and the annexes, the following definitions/naming conventions will apply:

- ***Platform***: All basic ship systems which enable the ship to function as a ship at sea, i.e. to float, to move, and to have the necessary support functions available for the operational systems. The Platform systems are divided into Structures, Propulsion, Electrical Power, Platform Command & Control, Auxiliaries, and Outfitting;
- ***Product:*** In general terms is associated with a physical deliverable in the framework of this project. This normally refers to Hardware (HW), Software (SW), Firmware (FW), documentation or all of the above.
- ***Commercial Off-The-Shelf or Modified Off-The-Shelf (COTS/MOTS)*** of a system, equipment or component, mean that the components are customary elements available on the market and directly procurable for use/integration in the framework of the project (for instance ruggedized laptops);
- ***COTS/MOTS based solution*** is a solution currently available and requires neither

major Research and Development (R&D) or solution reengineering efforts for its integration or high non-recurring costs to be funded upfront;

- ***Non-Deliverable Items*** are the ones which are developed under the terms of other contracts so the design and development parts of these systems and/or products (if required) cannot be delivered under the terms and conditions of this project.
- ***Non-Developmental Item (NDI)*** is an item of supply used exclusively for governmental purposes and customarily available in the commercial marketplace.
- ***Qualified item*** is an item which the Contractor already performed verification and acceptance activities in the framework of another project.
- ***Integration*** is defined as the set of responsibilities related to the engineering and design of the Platform or SEWACO systems, which include the system physical integration (physical placement, attachment to structural elements, including vibration and shock mounting where applicable), power and signal integration, and Hardware/Software integration within the system and between systems; the latter including data transfer and communications protocols to ensure full compliance of requirements.
- ***Installation*** is defined as the set of activities to transport and assembly of the systems or equipment in the final location, and making it ready to integrate.
- ***Government Furnished Equipment / Information / Services*** (GFE / GFI / GFS) is defined as equipment, information or documentation, and services that is owned by the End User and supplied or provided to a Contractor or subcontractor for use in the execution of the contract. This includes the ship itself.
- ***New system*** refers to a system supplied to replace an existing system that is outdated, inefficient, or unable to meet the changing requirements and needs of users, or it may be designed to fulfil a completely new need. The new systems, for the present case, refers to **CMS, 3D Radar, 2D Radar, IFF, ESM, IBS-NAVRAD, EOD, EOS, FCR, and OSD**.
- ***Legacy systems*** are the existing configuration systems of the VGAM FFGHs that will remain as part of the post-modernization ship systems configuration.

6.2. GENERAL SCOPE

FFGH MLU & SEWACO OPV3S Project is a joint acquisition project for:

- 2 (two) VGAM FFGH; supply of SEWACO systems (here after mentioned as "new systems") and perform the required engineering activities, install the new systems, and

integrate them with the supplied GFE and existing Legacy systems.

- 6 (six) PRT OPV3S class; supply of SEWACO systems and perform the required activities to integrate the supplied and GFE systems (excluding engineering design and physical integration).
- The associated Integrated Logistic Support (ILS) for the 8 previously mentioned ship systems as described in Annex E Appendix G.

This contract shall be implemented, within the specific FFGH MLU & SEWACO OPV3S Program scope, as a turnkey solution concept and with the objective to maximize the commonality for the SEWACO systems and for the integration for these two programs.

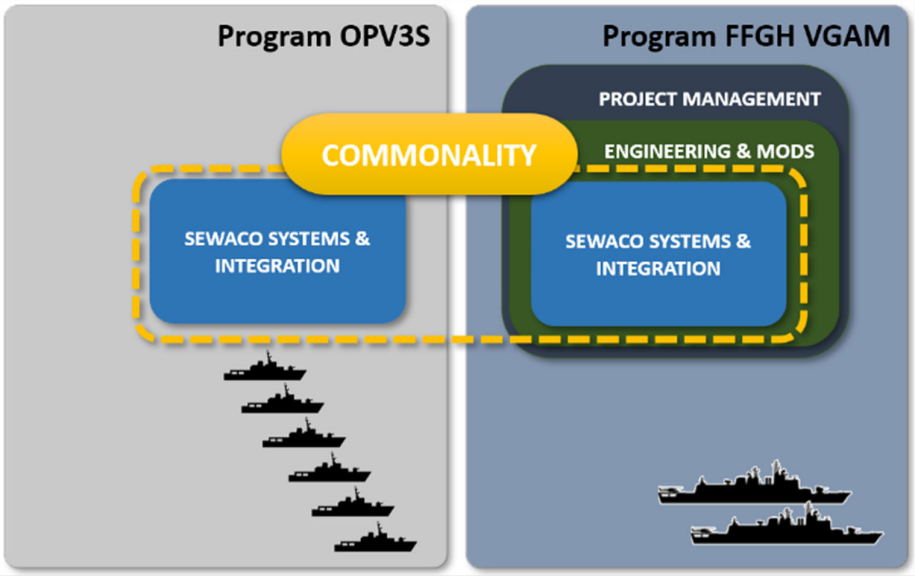


Figure 1 - VGAM FFGH & OPV3S Commonality

The macro work packages (and program functional blocks) that compose the elements of the full FFGH MLU Program within and out of the scope of this contract and the interrelation between them is illustrated below:

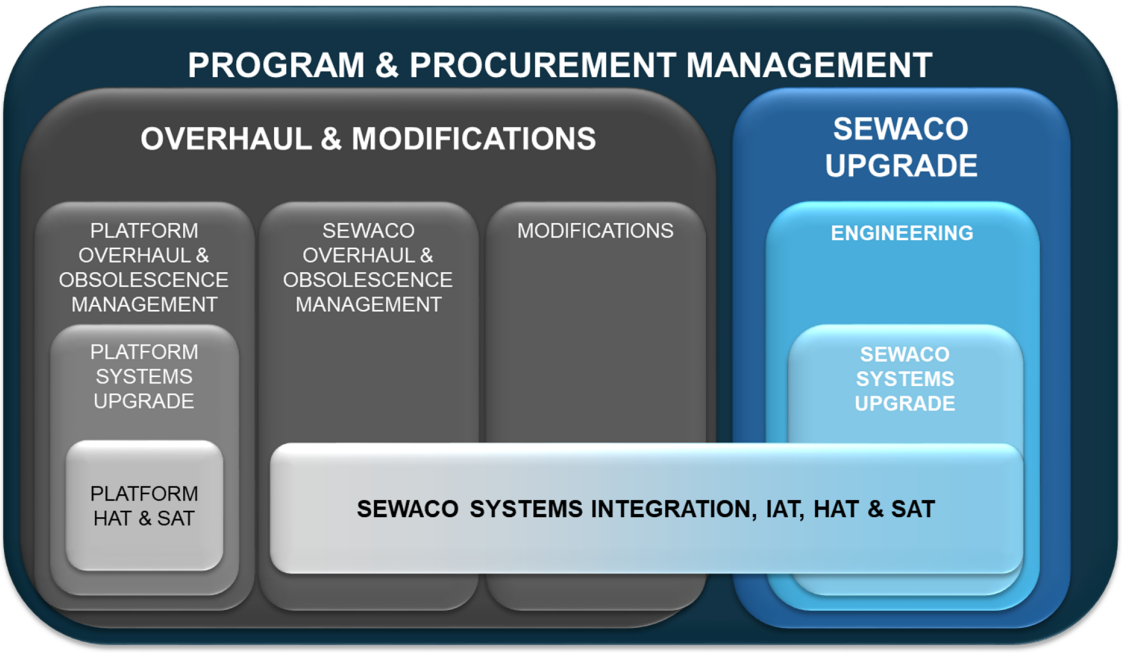


Figure 2 - VGAM FFGH MLU Program Macro Functional Components Concept

The overall list of specific systems to be acquired or upgraded is provided in Annex E Project Technical Requirements. For a more comprehensive understanding of the scope of each module given in macro functional concept, a complementary definition is given in para6.1:

- ***The SEWACO UPGRADE*** will encompass all the necessary activities for the change, conversion or modernization of the VGAM FFGHs to improve the original purpose or operational capabilities in relation to effectiveness, efficiency, reliability, sustainability or safety of that item.
- ***The ENGINEERING*** The detailed Engineering encompasses a broad spectrum of activities, outcomes and deliverables, geared towards ensure the ships' capabilities, performance, and lifespan, are aligned closely with the Scope of Work outlined in this Contract. These activities outcomes and deliverables include, but are not limited to, the development of engineering studies presenting technical solutions and associated deliverables, such as analysis reports and production-level documentation, with required design detail for executing/producing (such as detailed building specs and detail drawings) the modifications and integrating new systems, GFE and Legacy systems, if required, on-board the ships. These tasks will encompass, but are not limited to, the following study themes:

•System Design and Integration: the detailed design, study, and integration of new SEWACO systems, GFE and Legacy systems, if required, into the existing ships' structure, considering the shock requirements criteria.

•Structural Analysis: the detailed analysis of the ship's structural integrity evaluating the need for implementing structural modifications to safely accommodate the systems considering both statics and dynamics effects on structures and systems.

•Stability: Modelling, Analysis and Verification of final ship stability condition compliance with stability criteria to guaranty safety at sea for the next years of operation, considering possible suggestions for improvement of that final condition.

•Electrical and Mechanical Engineering: the analysis of the Power Generation and Distribution systems' needs (such as power balance), HVAC systems (such as cooling and ventilation balance), and presentation of detailed technical solutions for new Cooling Pipping, Vibration, and Noise absorption, and other essential infrastructure and systems to support the new equipment.

•Electromagnetic Engineering: the analysis of the impact of the new SEWACO and GFE systems electromagnetic field and radiation (such as RADHAZ and Systems performance under EMI) on the platform and respective technical and functional solutions, through e.g. EMC/EMI study and Top Side Design.

Related ENGINEERING areas of impact that will contribute to MODIFICATIONS Work Packages: Cabling; Piping; Cooling, Ventilation, and Power Balance; Stability and Damage Integrity; EMC; EMI and RADHAZ; Vibration, Shock and Noise.

The results of the studies shall be within the limits of the Building Specifications for Portuguese Navy MEKO 200 Frigates considering using original growth margins.

- ***The MODIFICATIONS*** are the set of transformation, adaptation and changes to structural, power, auxiliary (e.g. cooling, ventilation, etc.), signal (e.g. cabling), and all other systems, required for the existing ship´s infrastructures to be compatible/suitable for the installation and integration of the new or upgraded systems (i.e., New System and GFE System), including the removal of old system components when applicable. The MODIFICATIONS are to be defined within the ENGINEERING deliverables, provided by the Contractor, and will be performed under responsibility of NSPA/End User. Therefore the MODIFICATIONS are NOT included in the scope of this Contract.

- ***The PLATFORM SYSTEMS UPGRADE*** will mainly consist of the eradication of the obsolescence of platform legacy systems, whose sustainability can no longer be ensured, or is technical or economically unjustifiable. The Chilled Water Plant and SEWACO Containers´ Air Cooling Units upgrade, and associated capability enablers, are two of the already identified examples. The platform systems upgrade falls under responsibility of NSPA/End User. Therefore is NOT included in the scope of this Contract.

  • ***The SEWACO SYSTEMS UPGRADE*** will consist of the upgrade and/or update of the Sensors, Weapons and C4I systems. It will involve Hardware-Software Integration (HSI) of these systems between each other and with the other system enablers. The SEWACO systems will be composed of three main categories, in accordance with their origin:
    - Supplied by Contractor;
    - Government Furnished Equipment (GFE), or Government Furnished Information (GFI);
    - Legacy systems.
- ***The OVERHAUL*** work package as illustrated in Figure 1~~Figure 1~~ is NOT included in the scope of this Contract. This work package refers to the necessary and mandatory systematic and non-systematic maintenance works to be performed on the legacy systems that will remain as part of the ship systems configuration. The objective of the OVERHAUL is to enable the legacy systems regaining performance, quality, and reliability in order to enable them to adequately function and to be integrated alongside the new systems. The OVERHAUL will also include a dedicated dry-docking for the maintenance of the underwater hull and its systems, and to perform any required modifications, modernizations or updates.

7. MAIN OBJECTIVES

The main objectives of the FFGH MLU & SEWACO OPV3S Project are the following:

- Usage of high reliability sub-systems maximising the use of mission proven COTS/MOTS based solutions, Qualified Items or Non-Developmental Items;
- Ensure enhanced operational capability output within the mission profile envisaged for the remaining ships life for VGAM FFGH by modernizing the SEWACO and Platform systems;
- Evolve the ship technologically in its combat capabilities;

- Prevent obsolescence and extend the sustainable life cycle of the VGAM FFGH until at least 2035;
- Provide the military capabilities of the OPV3S considering an operational life of 35 years;
- To ensure maximum possible commonality between the SEWACO systems of the VGAM FFGH and those of the OPV3S.
- Reduce operational and support costs.

8. MAJOR PROJECT MILESTONES

MGMT_Req.1. The Contractor shall consider as a minimum the following major milestones for the Project: [Essential]

a. Approval of the management plans;
b. System Requirements Review (SRR);
c. Preliminary Design Review (PDR)
d. Critical Design Review (CDR);
e. Factory Acceptance Tests (FAT) (for each system);
f. Harbour Acceptance Trials (HAT) (i.e. for each ship);
g. Integration Acceptance Tests (IAT) (i.e. for each ship);
h. Sea Acceptance Trials (SAT) (i.e. for each ship);
i. Final Acceptance (FinAc) (i.e. for each ship).

An indicative Project Prospective Timeline is given in Annex A.

MGMT_Req.2. Considering the FinAc as the formal delivery of the platform to the End User, the contractor shall accomplish with the following schedule, considering a period of 8 months, between the delivery of the engineering deliverables and the FATs, in order to allow for the execution of the Modifications WP (responsibility of the NSPA/End User): [Essential] (FFGH Only)

- The first FFGH EDC plus 36 months;
- Second FFGH EDC plus 48 months;

NOTE: The following milestones should be considered as responsibility of the End User to comply with:

- First Ship available from EDC;
- Second Ship available from EDC plus 6 months (maximum accepted overlap time between ships is 6 months);
- Delivery of ship's, legacy and GFE systems information documentation: EDC;

- Ship's platform legacy systems ready to perform SEWACO STW and integration: on completion of Modifications implementation;
- Delivery of SEWACO GFE systems: on completion of Modifications implementation:
- SEWACO legacy systems installed and ready for integration: on completion of Modifications implementation plus 2 months;
- Ship ready to sail: by completion of Integration Acceptance Tests.

Any End User delays complying with these milestones will allow the Main Contractor to the corresponding adjustment in the plan.

MGMT_Req.3. Considering the FinAc as the formal delivery of the platform to the End User, the contractor should accomplish with the following schedule, considering a period of 8 months, between the delivery of the engineering deliverables and the FATs, in order to allow for the execution of the Modifications WP (responsibility of the NSPA/End User): [Desirable Lvl1] (FFGH Only)

- the first FFGH EDC plus 25 months;
- Second FFGH EDC plus 37 months;

MGMT_Req.4. Considering the FinAc of OPV system's to the End User, the contractor shall accomplish with the following schedule: [Essential] (OPV Only)

- delivery of the systems for the first OPV to the shipyard for installation, EDC plus 24 months and
- delivery of the systems for the remaining OPV, will be aligned with the foreseen in the Annex B.

MGMT_Req.5. The Final Acceptance shall be concluded no later than 6 months after the OPV´s arrival at the Lisbon Naval Base. [Essential] (OPV Only)

9. REFERENCES & APPLICABLE DOCUMENTS

The references and the applicable documents which were mentioned throughout this document are listed in Annex F which, in their most current version/revision, are considered relevant in whole or in part to the object of this SoW.

MGMT_Req.6. The applicable reference documentation which specified throughout this document do not relieve the Contractor, or sub-contractors depending on who is performing the work, of the obligation to comply with other applicable regulatory requirements and

applicable manufacturing and construction standards. [Essential]

MGMT_Req.7. In the event of an inconsistency or conflict between the main body of the SoW and references and applicable documents listed, the Contractor shall provide NSPA with an assessment on the potential impacts in order to identify the technical risks and potential alternatives. [Essential]

10. PROJECT MANAGEMENT REQUIREMENTS

10.1. PROJECT MANAGEMENT & PLANS

10.1.1. Project Management

MGMT_Req.8. The Contractor shall manage the project using a management methodology such as PRINCE2 or PMI-PMP. The Contractor shall use the associated tools and techniques allowing, among other things, to fulfil the FFGH MLU & SEWACO OPV3S Project requirements within the timeline committed upon Contract award. [Essential]

MGMT_Req.9. The risk management shall be performed in accordance with NATO ARAMP-1 or equivalent. [Essential]

MGMT_Req.10. The Contractor shall prepare and release all contractual deliverables in accordance with the tables in **Annex B** and **Annex C**. [Essential]

MGMT_Req.11. The Contractor shall appoint a single Project Manager who will be the main Point of Contract (PoC) for NSPA for this project. The Contractor Project Manager shall be responsible for the management, the successful execution, and the fulfilment of the requirements of this Contract. [Essential]
Note: From the Effective Date of Contract (EDC) the NSPA FFGH/OPV Project Manager will act as the primary NSPA representative and will be the primary interface with the Contractor for the successful execution of this project. All contractual matters will be exclusively handled by the NSPA Procurement Officer, and the relevant Subject Matter Experts (SMEs) will cover their respective areas of expertise.

MGMT_Req.12. In the case of a conflict between the FFGH and OPV activities, the conflict shall be brought to the attention of the NSPA FFGH/OPV Project Manager with the necessary background, justifications, and the recommendations by the Contractor minimum 3 (three) months in advance to the performance of the activity. The final decision regarding the conflict will be made by NSPA FFGH/OPV Project Manager. [Essential]

10.1.2. Project Management Plans

10.1.2.1. Project Management Plan (PMP)

MGMT_Req.13. The Contractor shall prepare and submit for approval in accordance with Annex C to NSPA a **ProjectManagement Plan (PMP)**, which shall describe in detail how the Contractor will manage the project from the EDC until the Contract closure. [Essential]

MGMT_Req.14. The PMP shall be sufficiently detailed to explain how the Contractor plans to meet the delivery dates with success and ensure that the Contractor's plans and capability to implement the entire project is in conformance with the requirements specified herein. To this extent, the PMP shall address at least the following topics: [Essential]

a. The project management structure, including its relationship within the company structure;
b. The project organisation structure and the identification of the main project stakeholders, their respective roles, responsibilities and authority;
c. The strategy for communication and stakeholder management including the means of communication; communication channels and the type of information/documentation/data expected to be exchanged;
d. The **Project Master Schedule (PMS)** shall be based on a Gantt chart and used to measure the contract performance progress with particular attention to delivery schedule and milestones. The PMS indicates the timeline of all the project activities (including duration, expected vs actual completion dates, internal/external dependencies, critical path, and with the baseline feature to follow the changes on the plan) and shall be maintained by the Contractor. Any changes to the initially approved PMS shall require the agreement of both parties (the Contractor and NSPA):
e. Any necessary management provisions, external relationships and project controls to both track project performance and highlight potential problem areas;
f. The definition and the mechanism to monitor and update the performance measurement indicators defined further below;
g. The Risk Management activities to include as a minimum;
    i. Risks identification and analysis method;
    ii. Assessment of probability/likelihood and quantification of the possible impact;
    iii. Identification of mitigating actions and consideration of potential contingency plans;
    iv. Risk reporting format and periodicity;

v. List of initial risks identified by the Contractor.

h. The Configuration Management activities.

MGMT_Req.15. The Contractor shall periodically, or whenever deemed necessary, revise the document and submit the latest version of the PMP to NSPA for review and approval. [Essential]

MGMT_Req.16. The Contractor shall understand the approval of the PMP by NSPA as acknowledgment of a logical and satisfactory approach for the management of the activities required in the frame of this Contract. [Essential]

Note: The Contractor shall consider the latest version of the PMP (i.e. the version approved by NSPA) as the official document for the execution of this Contract. The PMP shall be considered as a living document which will be updated as and when required during the execution of the project*. The required/proposed changes shall be implemented only by the agreement of the parties.*

MGMT_Req.17. In order to cover the relevant aspects of the planning, the Contractor shall prepare and release the following supporting plans/management plans in addition to the PMP: [Essential]

- Quality Management Plan (detailed in chapter 10.1.2.2);
- Configuration Management Plan (detailed in chapter 10.1.2.3);
- System Engineering Management Plan (detailed in chapter 10.1.2.4);
- ILS Plan as detailed in ILS chapter Appendix G.

10.1.2.2. Quality Management Plan (QMP)

MGMT_Req.18. The Contractor shall provide a **Quality Management Plan (QMP)** according to the requirements of **AQAP-2105**. [Essential]

MGMT_Req.19. The Contractor shall ensure that all procedures referenced in the documents are made accessible to NSPA representative(s). [Essential]

MGMT_Req.20. The Contractor shall ensure that the QMP covers all aspects of the QA Project for monitoring and control including but not limited to HW, SW, FW, Testing, Installation, check-out and documentation. [Essential]

MGMT_Req.21. For the QMP, the Contractor shall consider the same submission, review and approval process as per the PMP. [Essential]

10.1.2.3. Configuration Management Plan (CMP)

MGMT_Req.22. The Contractor, as part of his overall project management process, shall implement and maintain a structured Configuration Management System documented in a **Configuration Management Plan (CMP)** as per **AQAP 2110** Section 5.4.1.2.2. [Essential]

10.1.2.4. System Engineering Management Plan (SEMP)

MGMT_Req.23. The Contractor shall, as part of their global management process, implement and maintain a **System Engineering Management Plan (SEMP)** in accordance with **ISO/IEC 15288** focused on the management approach for following areas: [Essential]

a. the Engineering (in accordance with Project Technical Requirements Chapter 4);
b. Studies (in accordance with Annex E Project Technical Requirements Chapter 4);
c. the SEWACO System Upgrade;
d. integration with the CMS;
e. the system security engineering;
f. the software engineering.

MGMT_Req.24. To this extent, the SEMP shall address as a minimum the following topics: [Essential]

a. All aspects of the systems engineering management, strategy and processes that will be used as well as the way to ensure the compliancy with the Annex E ProjectTechnical Requirements related to the areas above;
b. The expected planning of the associated system engineering activities for the FFGH MLU & SEWACO OPV3S Projectand links with the ProjectMaster Schedule (PMS);
c. The associated standards, methods, tools, actions and responsibilities;
d. The adequacy of information for the system security;
e. The development process and selected approach for tailoring software development activities including the use of software qualified items;
f. The link with configuration management activities;
g. The description and management of non-deliverable items;
h. The identification of the measures taken to ensure the electromagnetic compatibility (EMC) of the SEWACO systems (including GFE and Legacy systems) with the platform;
i. The description of the criteria used for the selection of materials and manufacturing techniques employed so that inherent attenuation to electromagnetic emanations and susceptibility will be provided without compromising other mechanical considerations of individual equipment design and specification;

j. The EMI suppression techniques which will be applied to the parts and circuitry in terms of both the generation of undesirable emanations and susceptibility to the fields and voltage levels as described in Annex E Project Technical Requirements.

MGMT_Req.25. For the SEMP, the Contractor shall consider the same submission, review and approval process as per the PMP as given in Annex C. [Essential]

10.1.3. Project Controls

MGMT_Req.26. The Contractor shall report the following in order to track the project status and projectmanagement performance in order to monitor and control potential problem and risk areas: [Essential]

a. Key Milestone variation (tolerance 3 months);
b. Risks Management Performance;
c. Actions/Issues Status;
d. Contract Data Requirement List (CDRL) delivery status;
e. Government Furnished Equipment/Information (GFE/GFI) needs status.

MGMT_Req.27. The Contractor shall exercise, report, and present the ProjectControls during the ProjectManagement Review meetings (PMR) and in the ProjectProgress Reports (PPRs). [Essential]

10.1.4. Project Meetings

10.1.4.1. Overall organisation

MGMT_Req.28. NSPA reserves the right to delegate and/or associate End User representatives to any meetings, design reviews or witness activities mentioned in this SoW. [Essential]

MGMT_Req.29. No later than two weeks prior to each project meeting described in this SoW, the Contractor shall submit an **Agenda** covering all topics that they would like to address. [Essential]

MGMT_Req.30. Within a week after each project meeting described in this SoW, the Contractor shall submit a draft **Minutes of Meeting (MoM)** for NSPA review in accordance with Annex C. Following the necessary coordination, the Contractor shall sign and issue the final version to NSPA for countersignature. [Essential]

Note: The MoMs will not be regarded as a mechanism to change the T&C or SoW (which can

only be done by Contract amendment) but as an accurate and exhaustive record of exchanges and decisions. Decisions which may have impact on T&C or SoW shall compel to a validation process, potentially resulting in a Contract Amendment.

10.1.4.2. Kick-Off Meeting (KoM)

MGMT_Req.31. The Contractor shall set up a Kick-Off Meeting within 4 (four) weeks after EDC. The KoM shall preferably be held at Contractor's premises or via videoconference. [Essential]

MGMT_Req.32. The objectives of the KoM shall be in minimum; [Essential]

a. to review the Project objectives and requirements,
b. to review the scope.
c. to present how the Contractor will manage the Project from the EDC to the final acceptance of the system,
d. to initiate the Project.

MGMT_Req.33. At this meeting, the Contractor shall present the following agenda items: [Essential]

a. Introduce his Project Organization and Project Team for the Contract.
b. Present in detail the Project Master Schedule (PMS).
c. Present the initial risks and the mitigation strategies.
d. Present the main elements of Quality Management.
e. Review the objectives of the Project and the System Requirements as outlined in this SOW to ensure a common understanding with NSPA.
f. Review the strategies given in the planning documents which were delivered to NSPA as per 10.1.2.

MGMT_Req.34. The Contractor shall submit to NSPA the following KoM deliverables which cover the above agenda items in accordance with Annex C. [Essential]

a. Project Management Plan,
b. Project Master Schedule,
c. Quality Management Plan,
d. Configuration Management Plan,
e. System Engineering Management Plan,
f. Supporting information package such as presentations etc.

10.1.4.3. Project Management Review (PMR) meetings

MGMT_Req.35. The Contractor shall arrange a PMR with NSPA every 4 (four) months between EDC and the final test acceptance activity. The exact PMR dates will be mutually agreed between all parties so that they take place at the most judicious times, and the Contractor shall ensure that the Contractor Project Manager and relevant technical staffs are in attendance. The PMR meetings may be merged with the technical and ILS review meetings when those meetings are timely compatible. [Essential]

Note: The PMRs will preferably be organised via videoconference. When required (i.e. following a major milestone), a physical PMR shall be organised, if possible by alternating between End User and Contractor's facility.

MGMT_Req.36. No later than two weeks prior to each PMR, the Contractor shall submit a **Project Progress Report (PPR)** the following points as a minimum: [Essential]

a. The activities performed and work completed during the previous period, including major milestones achieved;
b. The up-to-date PMS and associated progress;
c. Project Control parameters in accordance with 10.1.3;
d. The up-to-date action item list;
e. The up-to- date list of GFE under Contractor's responsibility;
f. Description of any identified issues and high-risk areas along with the proposed solutions and corrective actions;
g. Status of open risks and issues;
h. Lessons Learned & Recommendations (if any);
i. Any foreseen or possible changes to Project performance or schedule;
j. Summary of Engineering Change Proposals (ECP), Request for Deviation (RFD), Request for Waiver (RFW) and their status (if applicable);
k. Expected activities during the following reporting period.

MGMT_Req.37. The Contractor shall release the PPR according to the original plan even in case of postponement of the PMR. [Essential]

10.1.4.4. Technical Interchange Meeting (TIM)

MGMT_Req.38. When needed, the Contractor or NSPA shall be allowed to call a Technical Interchange Meeting (TIM) in order to aid resolution of technical issues (including ILS topics) and to maintain visibility of the Project technical status. [Essential]

10.1.5. Data exchange

MGMT_Req.39. Except if otherwise specified, the Contractor shall deliver all Project deliverables (incl. documentations, presentations, reports, SW etc in English (UK) language and shall consider/use the following formats: [Essential]

- Technical documentation as described in the ILS section Annex E, Appendix G;
- Project Management and Baseline documents either in unlocked (i.e. allowing text recognition) Microsoft Word format (2003 or later), Microsoft Excel format (2003 or later). PDF format will be admissible when, appropriate being preferable for final/approved versions;
- Schematic diagrams at system, sub-system or process level either in unlocked (i.e. allowing research) Microsoft Visio format (2003 or later) or PDF when, being preferable for final/approved versions appropriate;
- Project Master Schedule (PMS) in Microsoft Project format (2003 or later);
- Presentations in unlocked (i.e. allowing research) Microsoft PowerPoint format (2003 or later) or PDF when, being preferable for final/approved versions appropriate

Note: *NSPA will advise the Contractor if or when any deviation from these standards would be accepted. It has to be noted that specific format of ILS deliverables will be directly addressed in the relevant section of this SoW.*

MGMT_Req.40. The Contractor shall handle classified data in accordance with the guidance provided in the Security Aspects Letter and Security Requirements Check List (SRCL) associated to the Contract Terms & Conditions (T&C). [Essential]

10.2. CONCEPT OF OPERATION (CONOPS)

MGMT_Req.41. The Contractor shall consider the Concept of Operation while building the system requirements (system performance, operational doctrine, organization, training, material, personnel, facilities and resources) for the FFGH MLU & SEWACO OPV3S Project, as well the long-term requirements of training, sustainment and product support. [Essential]

MGMT_Req.42. Considering the technical solution identified in Annex E Project Technical Requirements, the Contractor shall maximize the capacity of the FFGH VGAM integration with NATO forces capability as warship, and the OPV3S as a limited capability warship (in accordance with ACO forces standards volume IV – Maritimes forces standards - partner edition). [Essential]

MGMT_Req.43. The FFGH VGAM shall be capable for the deployment up to "Major Theatre

War" operations (see Figure 1). [Essential]

MGMT_Req.44. The OPV3S shall be developed with the aim to be deployed up to "Counter-Terrorism Operations", (see Figure 1). The OPV3S will have the main mission to perform sovereignly presence in the Portuguese Economic Zone including deployment to Portuguese island regions, and other non-combatant missions around the world as required. [Essential]

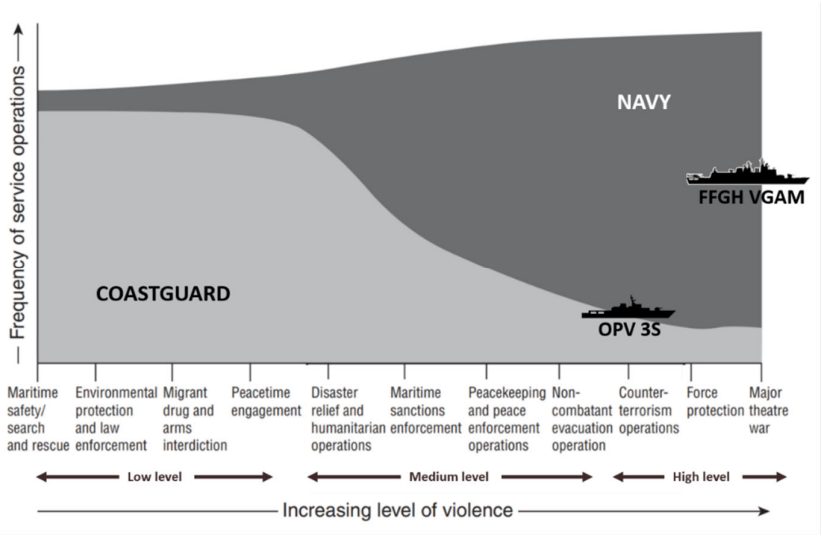


Figure 3 - Frequency and typology of operation having in account the level of violence

As seen in Figure 3, the concept of operation for both ships falls in the high level of violence operations field of area.

The below are the definitions for the operation levels which both ships concept of operation covers:

- **Low level of violence operations** is focused on the sea security that includes the:
  (1) Maritime Safety/Search and Rescue;
  (2) Environmental protection and law enforcement;
  (3) Migrant, drug and arms interdictions;
  (4) Peacetime engagement.
  This type of operation requires the need of military and civilian cooperation, supported by a capability of Recognized Maritime Picture (RMP) development that can contribute to the Decision Aid process.
- **Medium level of violence operations** is focused on the national and international crises operations based on:
  (1) Disaster relief and humanitarian operations;
  (2) Maritime sanctions enforcement;

(3) Peacekeeping and peace enforcement operations;
(4) Non-combatant evacuation operation.

- **High Level of Violence Operations** requires the defense of the national territory but also the armed conflicts where the Portuguese Navy has been involved in the integration of NATO and EU forces, based on:
  (1) Counter-terrorism operations;
  (2) Force Protection;
  (3) Major Theatre War.

  This type of operations focuses on a high level of military interoperations capability in different domains (air, water and land) performed at a Network Centric Warfare environment, demanding the need to build and share a Recognized Air, Maritime, and Land Picture that can contribute to the Decision Aid process and allow the Command-and-Control of the own unit but also of different units from different environments and nations.
  The success of this type of operation, among others, is in line with the capability to autonomously and timely detect, evaluate and classify an imminent threat, and if authorized, automatically neutralize or minimize them.

10.2.1. Mission Profiles

10.2.1.1. Vasco da Gama Class Frigates Mission Profile

MGMT_Req.45. The Contractor shall consider the usage profile for the VGAM FFGHs as given in Annex E, Appendix A. [Essential] (FFGH Only)

10.2.1.2. OPV3S Mission Profile

MGMT_Req.46. The Contractor shall consider the usage profile for the OPV3Ss as given in Annex E, Appendix B. [Essential] (OPV3S Only)

10.3. Government Furnished Equipment/ Information/ Services (GFE/GFI/GFS)

MGMT_Req.47. In the frame of this Project, the Contractor might be required to use, access or integrate Government Furnished Equipment/Information/Services (GFE/GFI/GFS) provided by the End User. Before any transfer, back and forth, a transfer protocol specifying the type of equipment, information, exhaustive breakdown (e.g., for kits/sets or information) as well as

their serviceability status shall be signed by the Contractor and the NSPA/End User. The signature date will formalize the transfer of the associated responsibility/liability (the GFE/GFI shall remain property of the End User). [Essential]

MGMT_Req.48. The Contractor and any of its subcontractors shall make sure to receive all potentially required credentials/licences and use the provided GFE only for the activities related to the scope of this Contract. [Essential]

MGMT_Req.49. The Contractor shall use the GFI only by the authorized personnel with need-to-know basis. [Essential]

MGMT_Req.50. All GFE/GFS shall be provided in a fully operational status upon their transfer between the NSPA/End User and the Contractor, under the responsibility of the delivering party. [Essential]

MGMT_Req.51. The Contractor shall bear the liabilities for repair or replacement of any GFE/GFS damaged or broken during its use by the Contractor or any of its subcontractors in the frame of this Contract. [Essential]

MGMT_Req.52. Upon completion of the Project, the Contractor return back the GFI, ensuring that all the copies are destroyed with a supporting **certificate** indicating that the GFIs has been returned and all the copies has been destroyed. [Essential]

MGMT_Req.53. The Contractor shall trace and record all GFE/GFI/GFS provided in the framework of this Contract in the PPR (see section 10.1.4.3). The recorded information shall contain at least the following: [Essential]

- A unique identifier for each item (GFE or GFI);
- The item name/description;
- The item P/N;
- The item S/N (if applicable);
- The quantity held;
- The physical location;
- The status of the GFE serviceability;
- The expected return date;
- A remark fields.

MGMT_Req.54. The Contractor shall organise the physical labelling of each GFE in order to clearly show the associated unique identifier as well as the mention "Property of PRT Navy". [Essential]

10.4. System Engineering Process

10.4.1. System Requirements Analysis

MGMT_Req.55. For all requirements of the Project Technical Requirements the Contractor shall derive detailed functional requirements and describe the expected system features and behaviour. This information and supporting documentation shall be delivered to NSPA in the form of a **System Requirements Specification (SRS)** (covering both the hardware (HW), software (SW) and the internal/external interfaces) in accordance with Annex C. [Essential]

MGMT_Req.56. The SRS shall consider functional and capability specifications, performance, physical characteristics, and environmental conditions under which the Systems is required to be used. The potential COTS/MOTS components or COTS/MOTS based solutions shall be clearly identified. [Essential]

MGMT_Req.57. The Contractor shall ensure the traceability between the Project Technical Requirements and the resulting SRS by creating, maintaining and delivering a **TRACeability Matrix (TRAC)** in accordance with Annex C. [Essential]

MGMT_Req.58. For the software part requiring Human Machine Interface (HMI) interaction, the Contractor shall identify and record the HMI requirements specifications in the SRS as well, including human-factors engineering (ergonomics) specifications, specifications related to manual operations, as well as potential constraints on personnel, safety and areas requiring specific attention and/or that are sensitive to human errors and training. [Essential]

10.4.2. System Design Architecture

MGMT_Req.59. For all requirements of the Project Technical Requirements, the Contractor shall collect record and release system design information (i.e. top-level design, concept of execution between the CIs etc.) allowing to understand why the proposed architecture and technical solutions allow a compliancy with the requirements of the Project Technical Requirements. This information shall be delivered to NSPA in the form of a **System/Subsystem Design Description (SSDD)** in accordance with Annex C. The SSDD can be supported with vendor documentation where the proposed technical architecture and technical solution is based on COTS/MOTS components or COTS/MOTS based solution. [Essential]

MGMT_Req.60. The Contractor shall ensure the traceability between the SRS and the SSDD but also the Configuration Items (CI/HWCI or CSCIs) defined. The Contractor shall achieve this traceability by maintaining the TRACeability Matrix (TRAC) delivered with the SRS. [Essential]

MGMT_Req.61. For the Configuration Items and/or technical solution qualified in the

framework of another project/Project (i.e., "qualified item") the Contractor shall associate the available engineering, testing, qualification documentation and/or certificates (including the Certificate of Conformity (CoC)) to the SSDD. [Essential]

10.4.3. System Interfaces

MGMT_Req.62. From the Preliminary Design Review onwards the Contractor shall document the detailed interfaces in an **Interface Control Document (ICD)** in accordance with Annex C. The ICD shall allow an exhaustive control of all inputs to and output from the systems and subsystems according to the technical solution validated during the Critical Design Review (CDR). [Essential]

MGMT_Req.63. The systems´ data integration shall cover at least all types of messages/information exchanged, the associated protocols, convention, data items and applicable documents, range and rate. [Essential]

10.4.4. Software Delivery Documentation

MGMT_Req.64. Prior to starting the verification and acceptance activities and in accordance with Annex C, the Contractor shall provide a **Software Version Description (SVD)** which shall contain and clearly identify the Computer Software Configuration Items (CSCIs) as well as track and control the applicable software version(s) for the SEWACO systems. [Essential]

MGMT_Req.65. The Contractor shall provide, for each formal software delivery, a **Software Installation Package (SwIP)** containing an installation media for the system as well as the installation procedure. The SwIP shall allow the End User to re-install the SW if and when required. [Essential]

10.4.5. System Integration Activities

MGMT_Req.66. The Contractor shall coordinate with NSPA/End User the activities necessary to be performed by each party for the assembly, disassembly, installation, integration of the Systems to the associated Ship. [Essential]

MGMT_Req.67. Not later than sixty (60) calendar days before the scheduled start date for the implementation activities, the Contractor shall coordinate the availability status of the associated ship and the support necessary for the installation and STW activities. [Essential]

MGMT_Req.68. The Contractor shall provide the necessary material and services to perform and demonstrate the on-board integration of the systems with the related components and control units of the ships platform. [Essential]

MGMT_Req.69. The Contractor will be supported by the End User and NSPA during the execution of the Project, who shall: [Essential]

a. Provide access to the associated ships and premises;
b. Provide all documentation and data available that could support the contractor's data collection and assessment;
c. Assist the Contractor with skilled technical personnel that is familiar with the operation and maintenance of the associated ship and the related platform components;
d. Assist the Contractor with the Shipyard activities where deemed necessary.
e. Assist the Contractor in the coordination of the ongoing activities onboard the ships.

MGMT_Req.70. The Contractor shall supply all the systems unique and specific installation materials (accessories, cables, connectors, tools, etc.) essential for systems assembly. [Essential]

10.5. DESIGN REVIEWS AND ASSOCIATED PROCEDURES

The main purpose of the design reviews is for the Contractor to present the selected technical solution/design and to demonstrate the technical progress to NSPA and the End User. This will be an opportunity for NSPA (and the technical specialists) to provide clarifications or guidance about what is requested or when a technical requirement could be fulfilled by different ways/means.

NSPA's guidance is based solely upon Contractor supplied information and in no way relieves the Contractor's obligation to deliver the systems in accordance with the requirements of the Contract.

MGMT_Req.71. The Contractor shall at least conduct the following design reviews in accordance with IEEE 15288.2: [Essential]

a. System Requirements Review (SRR);
b. Preliminary Design Review (PDR);
c. Critical Design Review (CDR).

MGMT_Req.72. For each review addressed in this SoW, the Contractor shall: [Essential]

a. Provide well defined entry and exit criteria for NSPA approval based on Contract

requirements;

b. Demonstrate, wherever possible, the products under review;
c. Sustain decisions with technical details and associated rationale;
d. Ensure appropriate participation of technical staffs as well as availability of relevant data and documentation;
e. Host the review at an appropriate facility, where deemed adequate and feasible;
f. Provide administrative support (e.g. resources, materials, meeting rooms, security, clerical etc.) for the review and meeting organised at Contractor's premises.

MGMT_Req.73. At each review, the Contractor shall present and perform a thorough review and forecast of appropriate engineering data, specifications, drawings, manuals, schematics, design and test plans, supported, if necessary, by implementation-oriented demonstrations, and the results of analyses as applicable. [Essential]

10.5.1. System Requirements Review (SRR)

MGMT_Req.74. Based on the output of the system design analysis and within 4 (four) months after the EDC, the Contractor shall conduct a System Requirements Review (SRR) to be attended by NSPA and End User representatives. The SRR shall be held at the Contractor´s premises (preferably) or via videoconference. [Essential]

MGMT_Req.75. At least 4 (four) weeks prior the SRR, the Contractor shall submit to NSPA for review the following data/documents: [Essential]

a. System Requirement Specification (SRS);
b. TRACeability Matrix (TRAC);
c. Supporting information package for SRR such as presentations etc.

MGMT_Req.76. During the SRR, the Contractor shall present the proposed Functional Baseline (FBL). In this extent, the Contractor shall in particular: [Essential]

a. Demonstrate how the requirements in the SRS will be accomplished;
b. Present the functional requirements and the expected system features and behaviour derived from the requirements given in Annex E Project Technical Requirements.
c. Dedicate give special attention to:
    i. interoperability capabilities;
    ii. systems´ functionality;
    iii. high level system integration with ships structure;
    iv. integration with CMS;

v.
vi. HMI;
vii. Interfacing;
viii. ILS.

d. Briefly address the consistency and completeness of the requirements that the Contractor assumes judicious to present;
e. Address the potential external constraints on system development that arise from the requirements related to the compliance with national or international laws and regulations but also compliance with industry/military standards and determine the possible mitigating actions or alternatives.

MGMT_Req.77. To successfully reach the SRR milestone, all of the following criteria are required to be met: [Essential]

a. SRR conducted with the attendance of NSPA and the End User;
b. SRR MoM approved by the Contractor, NSPA and End User;
c. No open action item preventing the initiation of the work related to the System Design Architecture.

MGMT_Req.78. Upon SSR MoM approval, the Contractor shall put the system requirements documentation under control version. The *Functional Baseline* will be set, and this shall support the forthcoming design and integration activities. [Essential]

10.5.2. Preliminary Design Review (PDR)

MGMT_Req.79. Based on the work performed for the System Design Architecture, the Contractor shall conduct a Preliminary Design Review (PDR) to be attended by NSPA and End User representatives. The PDR shall be held at the Contractor's premises (preferably) or via videoconference. [Essential]

MGMT_Req.80. At least 4 (four) weeks prior the PDR, the Contractor shall submit to NSPA for review the following data/documents: [Essential]

a. Up-to-date SRS (if need be);
b. System/Subsystem Design Document (SSDD);
c. TRACeability Matrix (TRAC);
d. Structured list of recommended Configuration Items (CIs) as well as the associated *Allocated Baseline* (ABL);
e. Engineering Deliverables (as per Annex E Project Technical Requirements Para 4

Integration Engineering Requirement).

f. Draft Verification and Acceptance Test Plan (V&ATP);

g. Supporting information package for PDR such as presentations etc.

MGMT_Req.81. During the PDR, the Contractor shall present the proposed Allocated Baseline (ABL). In this extent, the Contractor shall in particular: [Essential]

a. Present in detail the Systems design expected to meet the requirements given in Annex E Project Technical Requirements;
   i. CMS System design;
   ii. Systems' Engineering Deliverables presentation;

b. Demonstrate that functional requirements allocated to each configuration item are satisfied by the design for the allocated baseline;

c. Demonstrate that all technical performance parameters/measures are meeting or exceeding the levels determined in the entry of the PDR;

d. Demonstrate status/progress of the software development in respect to integration;

e. Demonstrate the engineering development in respect to integration with ships structure;

f. Present or demonstrate the interfacing capabilities of the systems;

g. Brief on open technical risks;

h. Present the draft V&ATP;

i. Present relevant elements of logistics support related with the requirements of this contract;

MGMT_Req.82. In order to successfully achieve the PDR milestone, all the following criteria are required to be met: [Essential]

a. PDR conducted with the attendance of NSPA and the End User;

b. PDR MoM approved by Contractor, NSPA and End User;

c. Approval of the *Allocated Baseline* (ABL).

10.5.3. Critical Design Review (CDR)

MGMT_Req.83. Based on the work performed for the System Design Architecture, the Contractor shall conduct a Critical Design Review (CDR) to be attended by NSPA and End User representatives. The CDR shall be held at Contractor premises (preferably) or via videoconference. [Essential]

MGMT_Req.84. At least 4 (four) weeks prior the CDR, the Contractor shall submit to NSPA for review the following data/documents: [Essential]

a. Up-to-date SRS (if needed);
b. System/Subsystem Design Document (SSDD);
c. Interface Control Document (ICD);
d. TRACeability Matrix (TRAC);
e. Structured list of recommended Configuration Items (CIs) as well as the associated *Allocated Baseline* (ABL);
f. Draft Verification and Acceptance Test Plan (V&ATP) which includes the intended test and verification activities allowing to demonstrate the conformance of the technical solution proposed by the Contractor with the performance requirements addressed in this SOW;
g. Supporting information package for CDR, such as presentations etc.

MGMT_Req.85. During the CDR, the Contractor shall present the proposed Product Baseline (PBL). In this extent, the Contractor shall in particular: [Essential]

a. Present in detail the Product design expected to meet the requirements given in Annex E Project Technical Requirements;
    i. CMS System design;
    ii. Systems' Engineering Deliverables presentation;
b. Demonstrate that functional requirements allocated to each configuration item is satisfied by the design for the product baseline;
c. Demonstrate that all technical performance parameters/measures are meeting or exceeding the levels determined in entry of the CDR;
d. Demonstrate that the software is in a mature state, and provide status/progress of the software development and software related test/evaluation results;
e. Demonstrate the engineering development in respect to integration with ships structure;
f. Present a Stability Analysis Report for the expected new ship configuration;
g. Present or demonstrate the interfacing capabilities of the systems;
h. Brief on open technical risks;
i. Present the draft V&ATP;
j. Present relevant elements of logistics support related with the requirements of this contract;

MGMT_Req.86. In order to successfully reach the CDR milestone, all the following criteria are required to be met: [Essential]

a. CDR conducted with the attendance of NSPA and the End User;
b. CDR MoM approved by Contractor, NSPA and End User;

c. No open action item preventing the initiation of the production activities;
d. Approval of the *Product Baseline* (PBL, i.e., "design freeze").

MGMT_Req.87. Upon CDR MoM approval, the Contractor shall put the system/subsystem and Interface design description under version control. The *Product Baseline* (PBL) will be set for the support of the production but also the verification and acceptance activities. [Essential]

10.6. VERIFICATION AND ACCEPTANCE

MGMT_Req.88. The Contractor shall plan and conduct a verification and acceptance Project and be responsible for its thorough organisation, control and coordination while ensuring that there is a minimal redundancy of effort and data. [Essential]

10.6.1. Verification and Acceptance Test Plan (V&ATP)

MGMT_Req.89. The Contractor shall document the verification and acceptance Project and activities in a **Verification and Acceptance Test Plan (V&ATP)**. The V&ATP shall cover the overall management of the verification and test activities, the test plans and test procedures and subject to approval by NSPA in accordance with Annex C. [Essential]

MGMT_Req.90. The V&ATP shall facilitate validation that the design, products, services and supporting elements meet the physical, functional, interface, quality and performance requirements specified in the SOW and shall consider at least: [Essential]

a. Describe the Contractor's organisation, overall verification method(s) and activities, processes and tools put in place in order to fulfil the verification and acceptance requirements;
b. Consolidate the FAT plan(s) and procedures and evaluation activities;
c. Consolidate the HAT, IAT and SAT plan(s) and procedures and evaluation activities;
d. Identify the HW/SW to be tested, the test environment, expected test equipment, tools etc;
e. Specify the site requirements (when applicable);
f. Include an up-to-date TRACeability matrix (TRAC) and ensure the further traceability up to the test procedures and evaluation activities;
g. Serve as controlling document for the Contractor's test and evaluation Project.

MGMT_Req.91. Upon its approval by NSPA, the final version of the V&ATP shall be the official document for the execution of the verification and acceptance test activities. The

Contractor shall maintain the V&ATP up-to-date if any change on the system has an impact on the exhaustiveness and accuracy of this document. [Essential]

MGMT_Req.92. Approval of the Test Procedures by NSPA will be for testing purposes only and shall not represent an agreement that the test documents supersede the system requirements. [Essential]

10.6.2. Overview of the overall verification and acceptance test activities

MGMT_Req.93. The Contractor shall be responsible for the organization and execution of the verification and acceptance activities listed in Table 1~~Table 1~~ (below), as well as any additional inspections required to obtain certificates from the relevant authority in order to demonstrate that the equipment delivered has been built in accordance with the requirements of this SOW. [Essential]

MGMT_Req.94. Verification and acceptance test activities shall be performed at least in the following stages: [Essential]

a. at the design phase, if considered necessary for design validation,
b. at the associated factory as Factory Acceptance Test (FAT),
c. at the harbor on the ship as Harbor Acceptance Trials (HAT),
d. at the harbor on the ship as Interface Acceptance Test (IAT),
e. at the sea as Sea Acceptance Trials (SAT).

The objective of each stage is to demonstrate and verify compliance with the requirements at the appropriate level before advancing to the next stage. The stages of verification and acceptance test activities as a result will provide the compliancy for the fully integrated system to the associated ship. In that respect the Contractor shall ensure that all technical requirements are allocated at least in one of the test activities (i.e., FAT, IAT, HAT or SAT) and subject to verification and testing. V&ATP can consider that some requirements are only tested on the first on each class ship, subject of approval by NSPA.

MGMT_Req.95. To this extent, the Contractor shall ensure the traceability by extending the information already available in the TRACeability Matrix to the reference of the individual test plans, test procedures or inspection required. [Essential]

Note: *For the "qualified items", the Contractor can propose to NSPA the use of already available engineering, testing, qualification documentation and/or certificates in the relevant test plans, test procedures or inspection activities included in the V&ATP.*

Table 1 – Verification and acceptance activities

Activity #	Activity	Responsibility	Applicability	Location
Systems V&A Activities for each ship (VGAM FFGH #1&2 and OPV3S #1-6)				
1	Factory Acceptance Tests (FAT)	Contractor	Each system	Contractor premises
2	Harbour Acceptance Trials (HAT)	Contractor	Each ship	End User facility
3	Interface Acceptance Tests (IAT)	Contractor	Each ship	End User facility
4	Sea Acceptance Trials (SAT)	Contractor	Each ship	End User facility
5	Final Acceptance (FinAc)	Contractor	Each ship	End User facility
6	**PROJECT FINAL ACCEPTANCE**	Contractor	N/A	End User facility

MGMT_Req.96. The Contractor shall provide the appropriate number of personnel with necessary knowledge of the system in order to perform the test activities and respond to the clarification requests by the NSPA and End User representatives during tests´ planning, execution and following delivery of test reports. [Essential]

MGMT_Req.97. The Contractor shall develop and include in the V&ATP the required acceptance test plan and procedures that will be used as supporting documentation of the associated acceptance activities. [Essential]

MGMT_Req.98. An up-to-date version of the V&ATP shall be delivered the latest 4 (four) weeks before starting the associated acceptance activity as per Annex C. [Essential]

MGMT_Req.99. After the accomplishment of the tests, the Contractor shall prepare and provide the associated Acceptance Test Report in accordance with paragraph 10.6.9 and Annex C to NSPA. [Essential]

MGMT_Req.100. Successful completion of each acceptance test activity requires a formal approval of the associated Acceptance Test Report by NSPA and the End User. [Essential]

MGMT_Req.101. In case of failed results, the Contractor shall include to the associated Acceptance Test Report, the discrepancies with their resolution plan including the proposed corrective action(s) for the failed test(s). [Essential]

10.6.3. Factory Acceptance Test (FAT)

MGMT_Req.102. The FAT shall be entirely under Contractor's responsibility and

performed for each system in a traceable test environment at the Contractor's facility, with the aim to verify that each system has been developed in accordance with the system requirements and free from manufacturing defects. [Essential]

MGMT_Req.103. NSPA, the End User and/or local Government Quality Assurance (GQA) representatives (when delegated by NSPA) shall have the right to attend the FAT activities. [Essential]

MGMT_Req.104. The FAT shall be performed for each system individually for the verification of the design, functionalities, performance and full integration features using the system components and software in a simulated environment. Design validations that cannot be demonstrated or tested in FAT may be performed based on analysis, simulation and/or calculation, if adequate methods exist and can be accepted. [Essential]

10.6.4. Harbour Acceptance Trials (HAT)

MGMT_Req.105. The ship shall be subject to Harbour Acceptance Trials (HAT), to verify each system compliancy with requirements in the real working environment, after: [Essential]:

a. the systems are fully installed and integrated;
b. necessary certifications are provided to NSPA as per Annex C in advance to the start of the HAT.

MGMT_Req.106. For this purpose, the HAT shall be performed for each system individually for the verification of the design, interface with the other systems, functionalities and performance features using the system components and software in its real working environment. [Essential]

MGMT_Req.107. The HAT shall be entirely under the Contractor's responsibility and performed at the Lisbon Naval Base, at Alfeite, or if deemed adequate, at the Arsenal do Alfeite shipyard harbour facilities in Portugal. [Essential]

MGMT_Req.108. The Contractor shall organize as well as operate the system for the tests as agreed in the HAT V&ATP. The End User shall support the execution of the HAT activities while NSPA will monitor and witness the HAT activities. [Essential]

Upon successful completion of the HAT, the associated ship will be successfully set to work and commissioned.

10.6.5. Integration Acceptance Test (IAT)

MGMT_Req.109. The ship shall be subject to Integration Acceptance Test (IAT) only after; [Essential]

a. successful completion of associated HAT;
b. successfully set to work and commissioned.

MGMT_Req.110. The Contractor shall perform the IAT with the aim to verify that [Essential];

a. the systems are fully integrated physically;
b. the data integration has been fully accomplished;
c. system performance tests (covering stress tests, latency tests, redundancy test, etc).

MGMT_Req.111. In that respect, the IAT shall be performed, with operational scenarios by using the system functions to their maximum possible extent. [Essential]

MGMT_Req.112. All the functional tests which can be performed while the ship is at the harbour shall be planned to be performed during the IAT. [Essential]

MGMT_Req.113. The IAT shall be entirely under the Contractor's responsibility and performed at the Lisbon Naval Base, at Alfeite, or if deemed adequate, at the Arsenal shipyard harbour facilities, in Portugal. [Essential]

MGMT_Req.114. The Contractor shall organize as well as operate the system for the tests as agreed in the IAT plan. While NSPA will monitor and witness the IAT activities, the End User shall support the execution of the IAT activities. [Essential]

MGMT_Req.115. The final versions of the **Technical Data Package** shall be delivered during the handover in accordance with Annex C, which is covers as a minimum: [Essential]

a. Engineering Drawings ("as is"),
b. CM Data;
c. ILS components;
d. necessary certifications and documentations.

10.6.6. Sea Acceptance Trials (SAT)

MGMT_Req.116. Upon successful completion of IAT, the Contractor shall perform Sea Acceptance Trials (SAT) for the associated ship, which will depend on the ship's readiness and availability to leave the harbour. [Essential]

MGMT_Req.117. The End User shall execute the SAT activities for the associated Ship in close coordination and with the support of the Contractor while the ship is at sea and real

environmental and load conditions are present. [Essential]

MGMT_Req.118. With these tests the Contractor shall demonstrate the overall operational performance of the systems, in all modes of operation, and the associated ship under the real operational conditions. NSPA will monitor and witness the SAT activities. [Essential]

MGMT_Req.119. Verification and acceptance activities shall be based on the operational scenarios which the contractor shall prepare as part of the V&ATP in coordination with the NSPA. These scenarios shall cover in maximum extent possible the operational performance-based tests. [Essential]

Note: Ammunition and the assets will be provided by the End User.

MGMT_Req.120. The following verification activities shall be considered as part of the SAT Tests:

a. SHOL Certification (FFGH Only):
   i. In case of significant changes to the upper deck structures, Contractor shall perform an impact study of the airwake aerodynamics over the ships deck, with a recommendation if a new SHOL certification is required; [Essential]
   ii. Perform SHOL certification for the operation with the helicopter LYNX MK95A for the FFGH#1; [Optional]
b. Demonstration of performance of all weapons integrated with CMS via live firing, with the exception of HARPOON; [Essential]
c. Other SEWACO Systems to be determined in coordination with the Contractor; [Essential]

10.6.6.1. SAT Conference

MGMT_Req.121. Upon completion of the SAT for the associated ship, a formal review shall be organized with the attendance of the Contractor, NSPA and the End User. [Essential]

MGMT_Req.122. The aim of such review shall be; [Essential]

a. to summarize the results of the verification and acceptance activities regarding with the associated ship/ deliverable;
b. to address the challenges met during the SAT process;
c. to review the status of the discrepancies (i.e., review of the up-to-date Discrepancy Register);
d. to decide on the Sea Acceptance of the associated ship/deliverable.

MGMT_Req.123. Provisional Acceptance shall be established if any discrepancies do not have operational impact which to be agreed by all the parties. [Essential]

MGMT_Req.124. The identified discrepancies and their resolution plan shall be reported to NSPA's approval in accordance with para 10.6.10. [Essential]

10.6.7. Final Acceptance (FinAc)

FinAc is the act whereby NSPA will definitively accept the products and services for the associated ship in accordance with this SOW, as complying with the contractual requirements.

MGMT_Req.125. Upon successful completion of the SAT for the associated ship, a formal review shall be organized by the Contractor with the attendance of the NSPA and the End Useras follows: [Essential]

a. to summarize the results of the verification and acceptance activities regarding with the associated ship/ deliverables.
b. to address the potential challenges met.
c. to review the status of the discrepancies (i.e., review of the up-to-date Discrepancy Register) as well as the potential ECPs or waivers.
d. to review whether all necessary products and services have been received by NSPA for the associated acceptance milestone.
e. to decide on the final acceptance of the associated ship/deliverable.

MGMT_Req.126. Discrepancies which are pending resolution for the final acceptance of the associated ship, shall be verified by NSPA and the End User prior to the FinAc review meeting. [Essential]

MGMT_Req.127. The Contractor shall be responsible to organize the FinAc V&AT activities. [Essential]

Once all conditions for FinAc have been achieved, NSPA will issue to the Contractor a Final Acceptance Certificate.

10.6.8. Project Final Acceptance

MGMT_Req.128. Project Final Acceptance shall be achieved once the complete scope of this SOW has been accomplished and all required documentation and services have been provided. [Essential]

MGMT_Req.129. The Contractor shall provide the Project End Report to initiate the

Project closure. [Essential]

Once the **Project End Report** has been approved by NSPA, NSPA will issue the Project Final Acceptance Certificate.

10.6.9. Verification and Acceptance Tests Reporting

MGMT_Req.130. Within 4 (four) weeks after successful completion of each acceptance test activity listed in Table 1, the Contractor shall submit to NSPA an **Acceptance Test Report** in accordance with Annex C for review and acceptance, containing at least the following information: [Essential]

a. P/N and S/N of the sub-systems/components tested;
b. P/N and S/N of the test equipment when applicable;
c. List of performed tests for each sub-system/LRUs etc.;
d. Pass/Fail and evaluation criteria and thresholds used;
e. Recorded test/measurements/inspection results with a note "Passed" or "Failed" in accordance with the procedures, where applicable;
f. Any other supporting test, measurement, evaluation, inspection data/results, as appropriate (data recording and analysis files, printouts, pictures, records, figures, graphs, tables, certificates).
g. Discrepancies with their resolution plan with timelines including the proposed corrective actions to be taken by the Contractor for each failed test;
h. Overall Pass/Fail conclusion. A conclusion of "Pass" shall indicate the Contractor's confirmation that all discrepancies are resolved (or a corrective action approved) and that the Project can move to the next phase.

10.6.10. Discrepancy Reporting & Resolution for V&A activities

MGMT_Req.131. During the Verification and Acceptance activities the Contractor shall: [Essential]

a. perform an exhaustive analysis of the discrepancies reported by NSPA or the End User, or identified during the verification and acceptance activities;

b. identify and apply the approved corrective actions for the future deliveries and/or perform the required retrofit activities for the already delivered and accepted systems, products, deliverables, services and documents. These activities shall be supported by applying the Configuration Management requirements.

MGMT_Req.132. The Contractor shall record and manage the discrepancies in a so-called "**Discrepancy Register**" (in the form of an Excel file) and shall contain at least the following information: [Essential]

a. a unique identification number assigned for each identified discrepancy;
b. a summary of the discrepancy reported;
c. the technical status (discrepancy confirmed, rejected, cancelled);
d. the applicability of the discrepancy (one system/document only or all similar systems/documents);
e. the operational output or performance impact caused by the discrepancy;
f. the proposed corrective actions (including potential non-regression tests, modification of an existing plan) and associated timescale;
g. the priority for the correction of the discrepancy (urgent/routine);
h. the administrative status (for instance "New", "Subject to NSPA approval", "under validation", "retrofit ongoing" etc.);
i. the link with the associated ECP;
j. the potential safety issue (yes/no);
k. a comment cell – to be used for Contractor justification in the event a discrepancy is disputed.

In order to ease the process, the Contractor shall propose a Discrepancy Register template for NSPA approval prior to starting the field testing at the latest.

10.7. Configuration Management (CM)

MGMT_Req.133. A Configuration Management system shall be established, documented, applied and maintained by the Contractor in accordance with **ACMP-2100**. [Essential]

10.7.1. Configuration Management Responsibilities and Authorities

MGMT_Req.134. Considering the systems are expected to be based on an existing and proprietary design of subsystems (i.e. COTS), the Contractor shall retain all responsibilities and authorities on configuration decisions. NSPA will only remain the final dispositioning authority on interface requirements that must be controlled by the End User. [Essential]

Note: *The Contractor's CM strategy will aim to deliver a coherent and supportable*

configuration (cf. the configuration identification and the change control requirements in the following sections).

MGMT_Req.135. The Contractor shall submit all proposed changes (e.g. ECP, RFD, RFW) to the Configuration Control Board (CCB) for their authorisation prior to submission to NSPA. The CCB shall be defined in the Configuration Management Plan (CMP). [Essential]

10.7.2. Configuration Identification (CI)

MGMT_Req.136. The Contractor shall recommend a structured list of potential CI(s) to NSPA, using the selection criteria specified below: [Essential]

a. Safety of personnel and/or equipment;
b. Criticality, complexity, and state-of-the-art, high-cost items;
c. Critical performance or operational effectiveness;
d. Functionality and performance;
e. Interface with other systems, government or sub-contractor furnished items, NATO standard items and support equipment;
f. Integrated logistic support;
g. Applications that affect a delivered product;
h. Reliability and maintainability;
i. Organization, management and responsibility considerations;
j. Second sourcing and
k. Susceptibility to change.

The list can consist of documents, data, HW, SW, or FW. Although the requirements of this SoW will address the term CI in a generic way, the naming convention is usually CI for documents and data, HWCI for hardware, CSCI for software/firmware under configuration management.

MGMT_Req.137. The Contractor shall indicate for each recommended CI, and for information purposes, whether it is a new development item or an already qualified technical solution (e.g. a mission proven COTS solution). [Essential]

MGMT_Req.138. As a minimum for each CI, the Contractor shall develop and maintain configuration information and obtain the NATO Commercial and Government Entity (NCAGE)

code and NATO Stock Number (NSN). [Essential]

MGMT_Req.139. The Contractor shall only use configuration information that has been formally released and has taken into account potential access limitations, (e.g. as a minimum, security classifications and proprietary license constraints). [Essential]

MGMT_Req.140. The Contractor shall establish the Functional Baseline (FBL) for each CI. [Essential]

MGMT_Req.141. The Contractor shall establish the Allocated Baseline (ABL) for each CI. [Essential]

MGMT_Req.142. The Contractor shall establish the Product Baseline (PBL) for each CI. [Essential]

MGMT_Req.143. The Contractor shall ensure that the configuration documentation defining the Configuration Baselines required in this SOW are mutually consistent and mutually compatible. [Essential]

NOTE: Each succeeding level of configuration documentation from the FBL to the ABL to the PBL shall be traceable to, and be a detailed extension of, its predecessor(s).

MGMT_Req.144. The Contractor should assign approved item names to CIs preferably in accordance with NATO Item Name Directory (**ACodP-3**). [DesirableLvl1]

10.7.3. Change Control

MGMT_Req.145. The Contractor shall implement a Change Control Project (CCP) to: [Essential]

a. ensure effective control of all CIs and their approved configuration documentation;

b. provide effective means for proposing engineering changes to CIs, requesting deviations or waivers pertaining to such items, preparing notices of revision and specification change notices; and

c. ensure implementation of approved changes.

MGMT_Req.146. The Contractor shall prepare and process **Engineering Change Proposal(s) (ECP)** for any kind of engineering, design, development or verification an acceptance change. Each ECP shall be associated to a classification ("Class I" or "Class II) and be submitted to CCB for review and, approval. [Essential]

MGMT_Req.147. The Contractor shall classify an ECP as "Class I" if: [Essential]

a. The Functional Baseline (FBL) or Allocated Baseline (ABL), once established, is affected to the extent that any of the requirements are not within specified limits or specified tolerances;

b. The Product Baseline (PBL), once established, is affected or the change impacts one or more of the following:

   i. Government Furnished Equipment (GFE);

   ii. Safety (to include safety critical software);

   iii. Security;

   iv. Deliverable computer software;

   v. Compatibility or interoperability with interfacing items;

   vi. Delivered operational and maintenance manuals;

   vii. Interchangeability or replaceability; or

   viii. Skills, manning, training, biomedical factors or human engineering design; and

c. any of the contractual factors are affected, such as costs, guarantees, warranties, deliveries or scheduled contractual milestones.

MGMT_Req.148. An ECP shall be Class II ECP to address all changes not classified as Class I. [Essential]

MGMT_Req.149. The Contractor shall assign one of the following priorities to each Class I ECP. The Contractor's proposed priority will stand unless NSPA has a valid reason for changing the priority: [Essential]

a. Emergency Priority. An Emergency Priority shall be assigned to an Engineering Change Proposal (ECP) for either of the following reasons:
   i. to effect a change in operational characteristics which, if not accomplished without delay, may seriously compromise security; or
   ii. to correct a hazardous condition which may result in fatal or serious injury to personnel or in extensive damage or destruction of equipment.

b. Urgent Priority. An Urgent Priority shall be assigned to an ECP for any of the following reasons:
   i. to effect a change which, if not accomplished expeditiously, may seriously compromise the mission effectiveness of deployed equipment or forces; or

ii. to correct a potentially hazardous condition, the uncorrected existence of which could result in injury to personnel or damage to equipment; or
iii. to meet significant contractual requirements (e.g., when lead time will necessitate slipping approved production or deployment schedules, if the change was not incorporated); or
iv. to affect an interface change which, if delayed, would cause a schedule slippage or increase cost; or
v. to effect life cycle cost savings to the nations involved.

c. Routine Priority. A Routine Priority shall be assigned to an ECP when emergency or urgent is not applicable.

MGMT_Req.150. Prior to implementing the change, the Contractor shall call a meeting for the CCB to evaluate and shall seek the approval of CCB for the Class I ECPs. [Essential]

MGMT_Req.151. The Contractor shall submit the Class II ECP to CCB and seek for the approval prior to the associated change is submited into production. [Essential]

MGMT_Req.152. If the Contractor determines, prior to manufacture of an item, that it is impossible to satisfy the mandatory requirements of the specification or drawings, the Contractor shall have a procedure for preparing and submitting a **Request for Deviation (RFD)** to NSPA. [Essential]

MGMT_Req.153. If the Contractor determines, either during or after manufacture of an item, that the item does not meet specified requirements, but nevertheless believes that the item is suitable for use "as is" or after rework by an approved method, the contractor shall have a procedure for preparing and submitting a **Request for Waiver (RFW)** to NSPA. [Essential]

MGMT_Req.154. The OPV Construction Project foreseen engineering reviews every 2 platforms. In order to maximize and enrich the engineering reviews the bidder shall align the implementation of the approved ECP with the construction engineering reviews. [Essential] (OPV Only)

10.7.4. Configuration Status Accounting (CSA)

MGMT_Req.155. In order to continue CSA during the in-service phase, the Contractor shall transfer the CSA database to NSPA or parties indicated by NSPA during the handover of each ship. The means and format of transfer of this data shall be agreed by the parties and described in the CMP. [Essential]

10.7.5. Configuration Audit and Verification

MGMT_Req.156. The Contractor shall be responsible for conducting the Functional Configuration Audits (FCA). [Essential]

MGMT_Req.157. The Contractor shall be responsible for conducting the Physical Configuration Audits (PCA). [Essential]

MGMT_Req.158. After completion of the IAT, a PCA shall be conducted jointly by the Contractor and NSPA/End User prior to handover of the systems to the End User and in order to establish the product baseline (PBL) for the system. This audit entails the formal examination of the "as-built" or "as-modified" configuration against their technical documentation to ensure that each deliverable matches the related documentation. [Essential]

MGMT_Req.159. After completion of the audit(s), the Contractor shall publish and distribute copies of **Audit Minutes**. Upon validation, NSPA will officially acknowledge completion of the audit as indicated in the CMP. [Essential]

10.8. QUALITY ASSURANCE

MGMT_Req.160. The Contractor shall establish, document and maintain a Quality Assurance (QA) Project in compliance with the requirements in **AQAP-2110** applicable to all products and services to be delivered under this Contract. [Essential]

MGMT_Req.161. For the specific case of software development activities and as per the applicability addressed it its section 1.2, the Contractor shall also apply the requirements of the supplementary **AQAP-2210**. [Essential]

MGMT_Req.162. In the event NSPA exercises Quality Auditing rights to include right of access, on a non-interference basis, the facilities where the work associated to this Contract is performed, the Contractor and/or when applicable the subcontractors, shall provide the required assistance for the safe and convenient performance of an audit and evaluation in accordance with AQAP-2110 and AQAP-2210. This activity will be conducted by the NSPA QA representative and/or delegated to the National Government Quality Assurance (GQA) representative and announced at least 3 weeks in advance. The aim of such audit will be to review the Quality Management System (QMS) in place, the QMP requirements or any other requirements related to the quality of the system and to verify the conformance of the goods and services to be furnished under this Contract with the terms and conditions thereof. [Essential]

10.9. HEALTH AND SAFETY

MGMT_Req.163. This Project is prone to elevated risks for the health and safety of the personnel involved on activities on board of the PRT Navy ships. The Contractor is responsible for the safety of their personnel, the use of appropriate tools, to comply with the work and safety regulations in the country and location where work is performed, and for providing personal protection and safety equipment. [Essential]

Note: *PRT Navy will be responsible for informing the Contractor regarding any on-going work that could impact the safety on board and issuing related safety instructions. The PRT Navy will nominate a Facility Representative and a Safety Officer on duty and issue a detailed duty schedule with contact information. The safety officer on duty will be reachable by phone at any time during which personnel is on-board a ship. The safety instructions and Safety Duty Officer will also be communicated to the NSPA FFGH/OPV* Project *Manager.*

MGMT_Req.164. The Contractor shall assign an OHS On Site Coordinator during the installation being performed to the associated ship. [Essential]

MGMT_Req.165. OHS plan with regards to the electrical works shall be mutually developed and agreed by the Contractor and the End User prior to the installation activities on board. [Essential]

11. Project TECHNICAL REQUIREMENTS

See Annex E.

ANNEXES

ANNEX A: PROJECT PROSPECTIVE TIMELINE

ANNEX B: LIST OF DELIVERABLE PRODUCTS AND SERVICES

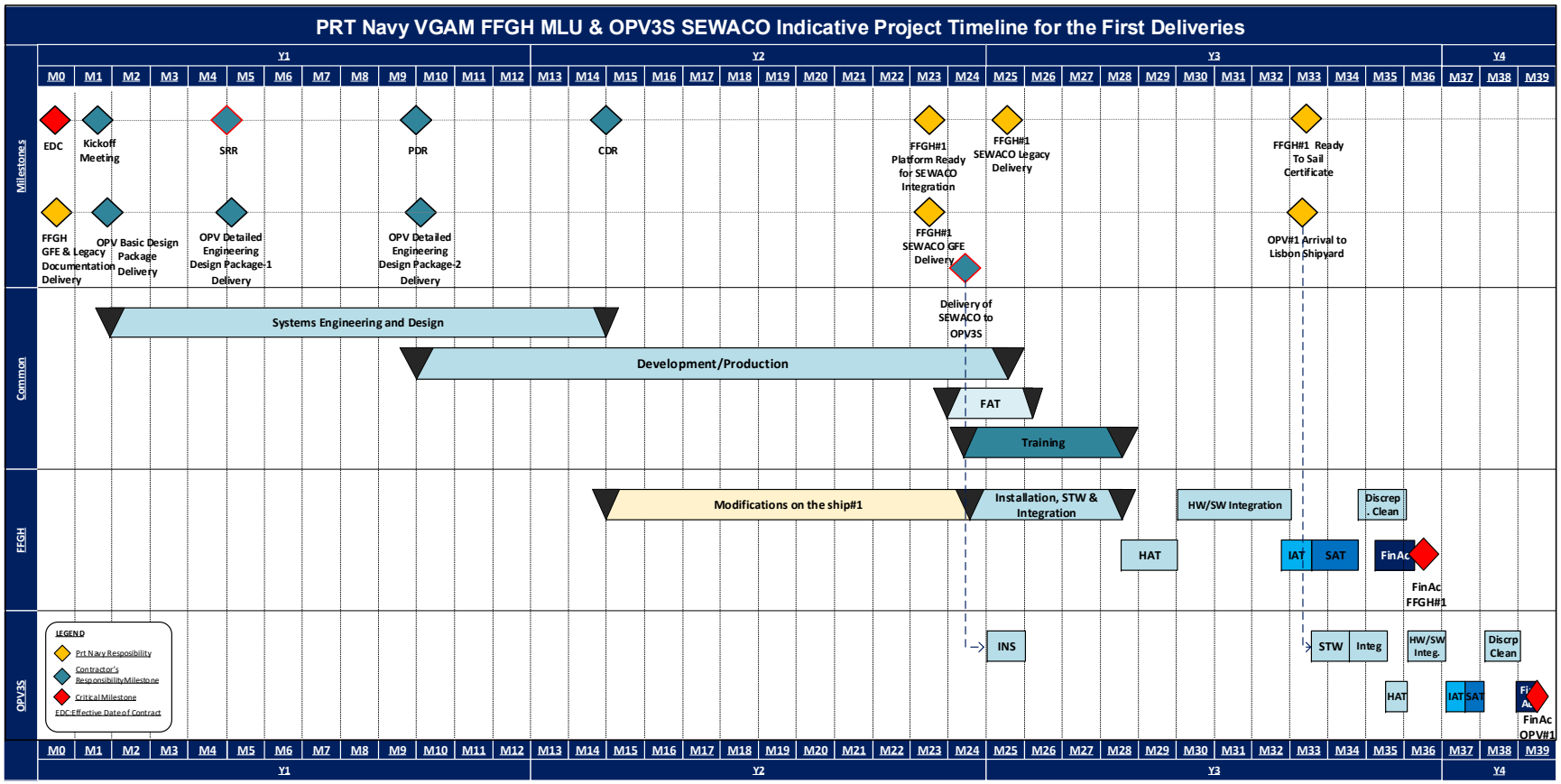
ANNEX C: CONTRACT DATA REQUIREMENT LIST (CDRL) AND MAIN MEETINGS/REVIEWS

ANNEX D: GLOSSARY OF TERMS, ABBREVIATIONS AND ACRONYMS

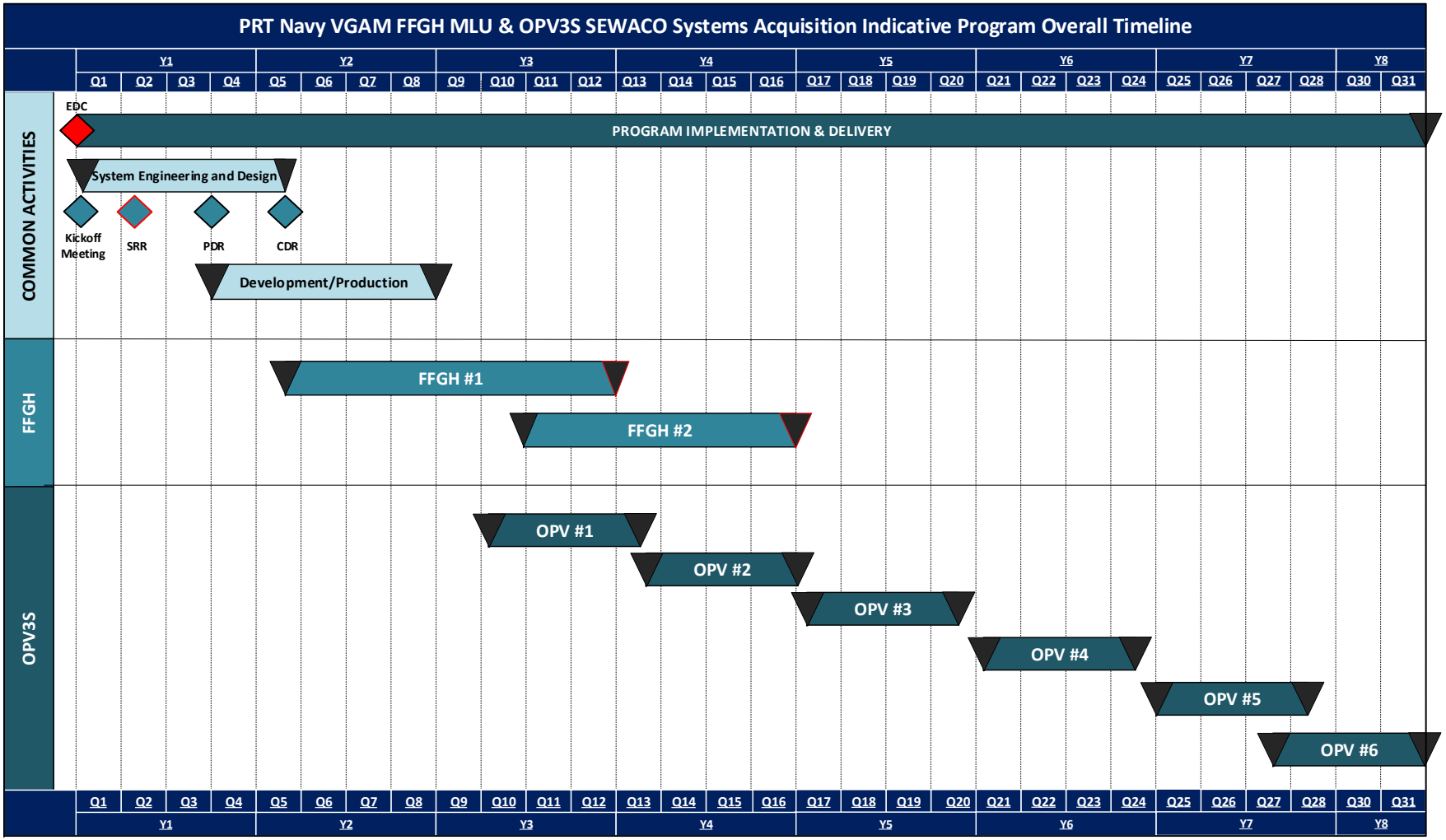
ANNEX E: PROJECT TECHNICAL REQUIREMENTS

ANNEX F: LIST OF REFERENCES

ANNEX A: Indicative Project Timeline



ANNEX A


PRT Navy VGAM FFGH MLU & OPV3S SEWACO Systems Acquisition Indicative Program Overall Timeline
Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8
Q1 Q2 Q3 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q30 Q31
COMMON ACTIVITIES
EDC
PROGRAM IMPLEMENTATION & DELIVERY
System Engineering and Design
Kickoff Meeting
SRR
PDR
CDR
Development/Production
FFGH
FFGH #1
FFGH #2
OPV3S
OPV #1
OPV #2
OPV #3
OPV #4
OPV #5
OPV #6

ANNEX B: List of Deliverable Products and Services

#	Main Goods/ Services	Type	Quantities, deliveries timeline					
			2026	2027	2028	2029	2030	2031
1	FFGH#1	System	1					
2	FFGH#2			1				
3	OPV3S#1			1				
4	OPV3S #2				1			
5	OPV3S #3					1		
6	OPV3S #4						1	
7	OPV3S #5							1
8	OPV3S #6							1
9	Spares and consumables	ILS		X	X	X	X	X
10	Support & Test Equipment			X	X	X	X	X
11	Operator & Maintainer Training (incl. training means)			X				
12	Technical Manuals			X				

Note: The delivery timelines considered as the EDC is exercised on October 2024.

ANNEX C: Contract Data Requirement List (CDRL) and main meetings/reviews

Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW 10.1.2.1	PMP	Project Management Plan	Common	Plan	EDC+3 weeks	Approved version 2 weeks after KoM and revisions when necessary.
SOW 10.1.2.1	PMS	ProjectMaster Schedule	Common	Schedule	with PMP	With each PPR following.
SOW 10.1.2.2	QMP	Quality Management Plan	Common	Plan	with PMP	As per PMP.
SOW 10.1.2.3	CMP	Configuration Management Plan	Common	Plan	with PMP	As per PMP.
SOW 10.1.2.4	SEMP	System Engineering Management Plan	Common	Plan	with PMP	As per PMP.
SOW 10.1.4.1	-	Agenda	Common	Agenda	-	2 weeks prior each Project meeting (incl. design reviews, test debriefings etc.)
SOW 10.1.4.1	MoM	Minute of Meetings	Common	MoM	-	Within 1 weeks after each Project meeting (incl. design reviews, test debriefings etc.)
SOW 10.1.4.3	PPR	Project Progress Reports	Common	Report	-	2 weeks prior each Project Management Review (PMR) meeting
SOW 10.3	GFI	Certificate for the destroy of the GFI copies	Separate for FFGH and OPV	Certificate	Project Final Acceptance	N/A
SOW 10.6.8	-	Project End Report	Common	Report	Withing 2 weeks after the Final Acceptance	N/A

ANNEX C

Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW 10.4.1	SRS	System Requirements Specification	Separate for FFGH and OPV	Specification	4 weeks prior SRR	4 weeks prior to PDR and CDR and when an impact is identified in an approved ECP.
SOW 10.4.1	TRAC	TRACeability Matrix	Separate for FFGH and OPV	Document	4 weeks prior SRR	4 weeks prior to PDR and CDR and with V&ATP
SOW 10.4.2	SSDD	System/Subsystem Design Description	Separate for FFGH and OPV	Specification	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW 10.4.3	ICD	Interface Control Document	Separate for FFGH and OPV	Specification	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW 10.4.4	SVD	Software Version Description	Separate for FFGH and OPV	Specification	4 weeks prior to FAT	To be updated when an impact is identified in an approved ECP.
SOW 10.4.4	SwIP	Software Installation Package	Separate for FFGH and OPV	Installation Package	4 weeks prior to HAT	Only if required (i.e. in case of SW update)
SOW 10.6.1	V&ATP	Verification and Acceptance Test Plan (incl. FAT/IAT/HAT/SAT plans and procedures)	Common	Plan	4 weeks prior PDR (draft) and to be approved prior to FAT	Approved version 4 weeks prior to each verification and acceptance activity. To be updated when an impact is identified in an approved ECP.

ANNEX C

Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW 10.6.9	-	Factory Acceptance Tests Report	Separate for each ship	Report	Within 4 weeks after FAT	Within 4 weeks after each additional FAT
SOW 10.4.2	CoC	Certificate of Conformity	Separate for each ship	Document	Within 4 weeks after FAT	Within 4 weeks after each additional FA.
SOW 10.6.5	-	Technical Data Package	Separate for each ship	Document	During the handover of the first ship	During the handover of each ship
SOW 10.6.9		Interface Acceptance Tests Report	Separate for each ship	Report	Within 4 weeks after FAT	Within 4 weeks after each additional IAT
SOW 10.6.9		Harbour Acceptance Trials Report	Separate for each ship	Report	Within 4 weeks after HAT	Within 4 weeks after each additional HAT
SOW 10.6.9	-	Sea Acceptance Trials Report	Separate for each ship	Report	Within 4 weeks after SAT	Within 4 weeks after each additional SAT
SOW 10.6.10	-	Discrepancy Register	Separate for each ship	Document	Within 4 weeks after FAT	Within 4 weeks after each additional FAT, HAT, IAT and SAT acceptance reviews of each ship
SOW 10.7.3	-	Request for Waiver and Deviation		Document	As required	As required.
SOW 10.7.3	ECP	Engineering Change Proposal		Document	As required	As required.
SOW 10.7.5	FCA Report	Configuration Audit Minutes	Separate for each ship	Report	FCA+2 weeks	
SOW 10.7.4		CSA Database	Separate for each ship	Data	Handover of the first FFGH and OPV3S	During handover of each ship.
SOW Annex E	-	Engineering Documentation	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an

Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
						impact is identified in an approved ECP.
SOW Annex E 4.1.3		Cable Routing List	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.3		Wiring Diagram per System	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.3		Core Lists for Each New Cable	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.3		Internal Layout of Each New Cabinet	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Mechanical Interface Drawings	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		New Room Layout Drawing	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW Annex E 4.1.4		New Mast Engineering Drawings	FFGH	Document		Note: to be provided in case of a new mast is required.
SOW Annex E 4.1.4		Detailed Removal Instructions Document for the Original Mast(s)	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Construction Drawings	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Piping Arrangement Drawings Inside and Outside the New Mast	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Drawings of the Cable Trays, Cable Ducts and Cable Transits Inside and Outside of the New Mast	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Drawings for the Ventilation Ducts	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Ship´s Radar Cross Section (RCS) Study	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW Annex E 4.1.4		Engineering deliverables for each of the modified SEWACO FU	FFGH	Document		
SOW Annex E 4.1.4		Mechanical drawings with new cable routing	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Mechanical drawings with new piping and ventilation ducts	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Mechanical drawings with the new equipment location including structural drawings with the new physical integration	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Water and Gas Tight as per Construction Report	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.4		Shock and Vibration Compliance Certificate	FFGH	Certificate	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.5		Ship Helicopter Operational Limits Study	FFGH	Certificate	4 weeks before the first ship's HAT	4 weeks before the HAT activity of each ship
SOW Annex E 4.1.6		EMR and RADHAZ Areas Study	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an

Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
						impact is identified in an approved ECP.
SOW Annex E 4.1.6		EMR and RADHAZ Areas Drawing	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.7		Cooling Balance Study	FFGH	Document	4 weeks prior PDR	4 weeks prior to CDR and to be updated when an impact is identified in an approved ECP.
SOW Annex E 4.1.7		Air Cooling Study	FFGH	Document	4 weeks prior PDR	4 weeks before the HAT activity of each ship
SOW Annex E 4.1.8		Stability and displacement reduction related reports	FFGH	Report	TBD	TBD
SOW Annex E 4.1.8		Longitudinal, Transverse Bending Moment Absolute and relative (with respect to the Non-Upgraded Configuration) Assessment Report	FFGH	Document	4 weeks prior PDR	When an impact is identified in an approved ECP.
SOW Annex E 4.1.8		b. Global Primary Structure Strength Assessment and Validation Report, including stress "hot spot" characterization and location, if any	FFGH	Document	4 weeks prior PDR	When an impact is identified in an approved ECP.

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW Annex E 4.1.8		c. Longitudinal Shear Force distribution report with the identification of the critical locations, if any	FFGH	Document	4 weeks prior PDR	When an impact is identified in an approved ECP.
SOW Annex E 4.1.8		Evaluation of Intact and Damaged Stability Report	FFGH	Document	4 weeks prior PDR	When an impact is identified in an approved ECP.
SOW Annex E 4.1.8		Evaluation of Secondary Strength Report	FFGH	Document	4 weeks Before the first ship's HAT	4 weeks Before the first ship's HAT
SOW Annex E 4.1.10		Power Balance Study	FFGH	Document	4 weeks prior PDR	When an impact is identified in an approved ECP.
SOW Annex E 4.1.10		Power Balance Report	FFGH	Document	4 weeks Before the first ship's HAT	4 weeks Before the first ship's HAT
SOW Annex E 4.2		Basic Engineering Design (BD) Information Package (The content of required information is given in Annex E 4.2.)	OPV3S	Information	2 weeks after the Kick-Off Meeting	N/A
SOW Annex E 4.2		Detailed Engineering Design (DD1) Information Package (The content of required information is given in Annex E 4.2.)	OPV3S	Information	Not later than 6 (six) months after the EDC	N/A

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
SOW Annex E 4.2		Detailed Engineering Design (DD2) Information Package (The content of required information is given in Annex E 4.2.)	OPV3S	Information	Not later than 10 (ten) months after the EDC	N/A
Appendix F	ILSP	Integrated Logistic Support Plan	Common	Plan	EDC + 12 weeks	Revisions when necessary
Appendix F	RAMP	Reliability, Availability and Maintainability (RAM) Plan	See respective requirement	Plan	4 weeks prior PDR	Revisions when necessary
Appendix F		Reliability Mathematical Model(s) and Report	See respective requirement	Report	CDR-12 weeks	Revisions when necessary. Final submission of theoretical analysis CDR +8 weeks.
Appendix F		Maintainability Modelling, Allocation and Prediction Report	See respective requirement	Report	CDR-8 weeks	Revisions when necessary. Final submission of theoretical analysis CDR +8 weeks.
Appendix F		Availability Prediction Report	See respective requirement	Report	CDR-4 weeks	Revisions when necessary. Final submission of theoretical analysis CDR +8 weeks.

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
Appendix F		Maintenance Task Analysis (MTA) Report	See respective requirement	Report	Draft CDR-8 weeks	Revisions when necessary. Final submitted HAT-8 weeks.
Appendix F		Reliability, Availability and Maintainability (RAM) Status Report	See respective requirement	Report	Technical Review-3 weeks	As required
Appendix F		Technical Manuals	See respective requirement	Document	HAT-8 weeks	Revisions when necessary.
Appendix F		Commercial-Off-The-Shelf (COTS) Technical Manuals	See respective requirement	Document	HAT-8 weeks	Revisions when necessary. Final submission: HAT-4 weeks (NOTE: Final submission required only if previously submitted version is not current at HAT)
Appendix F		Technical Manual Validation Plan (TMVP)	See respective requirement	Plan	EDC+16 weeks	Revisions when necessary.
Appendix F		Recommended Spare Parts List (RSPL)	See respective requirement	Document	SMTR-4 weeks	Final SMTR+4 weeks

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
Appendix F		Recommended Consumable Items List (RCIL)	See respective requirement	Document	SMTR-4 weeks	Final SMTR+4 weeks
Appendix F		Tools and Test Equipment List (TTEL)	See respective requirement	Document	SMTR-4 weeks	Final SMTR+4 weeks
Appendix F		Support Equipment Recommendation Data (SERD) Report	See respective requirement	Report	SMTR-4 weeks	Final SMTR+4 weeks
Appendix F		NATO Codification Data Report	See respective requirement	Report	Draft SMTR-4 weeks	
Appendix F		Training Plan	See respective requirement	Plan	Draft: CDR+12 weeks	One time & revisions
Appendix F		Training Documentation	See respective requirement	Document	Each course-12 weeks	One time & revisions
Appendix F		Trainee and Training Course Completion Report and Certificates of Training	See respective requirement	Report	First training course +2 weeks and NLT HAT -2 weeks.	Each training course +2 weeks and NLT HAT -2 weeks.
Appendix F		Packaging and Transportation Plan	See respective requirement	Plan	CDR+12 weeks	One time & revisions

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Section	Acronym	Deliverable	Platform	Type (Plan, Report, List, MoM…)	First release	Frequency of submittal (updates)
Appendix F		PHST Report	See respective requirement	Report	SMTR-4 weeks	Final SMTR+4 weeks
Appendix F		Facilities Requirement Report	See respective requirement	Report	Draft SMTR-4 weeks	Final SMTR+4 weeks
Appendix F		ILS Repository	See respective requirement	Document	CDR+4 weeks	As required
Appendix F		Conference Agenda	Common	Document	Conference-4 weeks	As required
Appendix F		Conference Minutes	Common	Document	Conference+2 weeks	As required

ANNEX C

Main meetings/reviews

Acronym	Meeting/Review	First meeting	Recurrence
KoM	Kick-Off Meeting	EDC + 4 weeks	N/A
PMR	Project Management Review Meetings	EDC + 3 month	Every 4 (four) months
TIM	Technical Interchange Meeting	As and when required	
SRR	System Requirement Review	EDC + 4 months	N/A
PDR	Preliminary Design Review	To be agreed between NSPA and the Contractor based on the expected delivery plan in Annex B	N/A
CDR	Critical Design Review	To be agreed between NSPA and the Contractor based on the expected delivery plan in Annex B	N/A

ANNEX D: Glossary of Terms, Abbreviations and Acronyms

Acronym	Acronym (full text)
2D	2 Dimension
3D	3 Dimension
ABL	Allocated Baseline
ACU	Air-Cooling Unit's for the SEWACO containers
AEP	Application Environment Profile
AISI	American Iron and Steel Institute
ALDT	Administrative Logistics Delay Time
AMTI	Adaptive Moving Target Indicator
ANEP	Allied Naval Engineering Publication
AQAP	Allied Quality Assurance Publication
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineer
ATAS	Active Towed Array Sonar
ATE	Automatic Test Equipment
BD	Basic Engineering Design
BERT	Bit Error Rate Test
BLOS	Beyond-Line-Of-Sight
C4I	Command, Control, Communications, Computers and Information Systems
CAP	Clutter Automatic Processing
CCB	Configuration Control Board
CCP	Change Control Project
CDR	Critical Design Review
CDRL	Contract Data Requirement List
CFM	Clutter filtering Modes
CI	Configuration Item
CIC	Combat information Center
CIS	Communication and Information System
CIWS	Close-In Weapon System
CM	Configuration Management
CMP	Configuration Management Plan
CMS	Combat Management System
CoC	Cones of Courses
CONOPS	Concept of Operation
COP	Common Operational Picture
COTS	Commercial Off The Shelf
CREA	NRP Corte Real
CSA	Configuration Status Accounting
CSCI	Computer Software Configuration Items
CV	Curriculum Vitae
CWP	Chilled Water Plant.

ANNEX D

Acronym	Acronym (full text)
CWU	Chilled Water Unit.
DD	Detailed engineering Design
DID	Data Item Description
DLM	Depot Support Level Maintenance
DMRL	Data Modules Requirement List
DNV	Det Norsk Veritas
DTS	Data Link Terminals
ECM	Electronic Counter Measures
ECP	Engineering Change Proposals
EDC	Effective Date of Contract
EMC	Electromagnetic Compatibility
EMCOMPLAN	Electromagnetic and COMmunication emission PLAN
EME	Electromagnetic Environment
EMI	Electromagnetic Interference
EMR	Electromagnetic Radiation
EOD	Electro Optic Director
EOS	Electro-Optic System
ESD	Electrostatic Discharge
ESECS	Electronic Security Environment Conformance Statement
ESM	Electronic Support Measures
EU	European Union
EW	Electronic Warfare
FAT	Factory Acceptance Test
FBL	Functional Base Line
FCA	Functional Configuration Audit
FCR	Fire Control Radar
FFGH	Frigates
FoC	Furthest on Circles
FR	Facilities Report
FSM	Frequency Selection Modes
FTP	Fire Test procedure
FOV	Fields of View (
FU	Functional Unit
FW	Firmware
GFE	Government Furnished Equipment
GFI	Government Furnished Information
GQA	Government Quality Assurance
GTTE	General Purpose Tools and Test Equipment
GUI	Graphics User Interface
HAT	Harbour Acceptance Trials
HERE	Hazards of Electromagnetic Radiation to equipment

ANNEX D

Acronym	Acronym (full text)
HERF	Hazards of Electromagnetic Radiation to flammable liquids and fuels
HERO	Hazards of Electromagnetic Radiation to ordinances and ammunitions
HERP	Hazards of Electromagnetic Radiation to Personnel
HMI	Human Machine Interface
HVAC	Heating, ventilation and air conditioning
HW	Hardware
HWCI	Hardware Configuration Items
HWS	Harpoon Weapon System
IACS	The International Association of Classification Societies
IBMS	Internal Battle Management System
IBS	Integrated Bridge System
ICCS	Integrated Communication Control System
ICD	Integration Control Document
ICL	Itemized Cost List
IEC	International Electrotechnical Commission
IETM	Interactive Electronic Technical Manuals
IFF	Identification of Friend or Foe
IFOV	Instantaneous Field of View
ILM	Intermediate Level Maintenance
ILMP	Intermediate Level Maintenance Period
ILS	Integrated Logistic Support
ILSP	ILS Plan
IMO	International Maritime Organization
INS	Installation
INS	Integrated Navigation System
IP	Index of Protection
IPB	Illustrated Parts Breakdown
IR	Infrared
ISO	International Standardization Organization
KoM	Kick-Off Meeting
LDM	Low Doppler Maps
LPI	Low Probability of Interception
LPC	Local Processing Cabinet.
LSA	Logistic Support Analysis
LSC	Logistic Support Concept
LRU	Line Replaceable Unit
LWL	Length at Water Line
LUX	Luxembourg
MGMT	Management
MILSATCOM	Military SATCOM
MIL-STD	Military Standard

ANNEX D

Acronym	Acronym (full text)
MLA	Mean Line of Advance
MLU	Mid-life Upgrade
MoM	Minute of Meetings
MOTS	Military Off the Shelf
MTA	Maintainability Task Analysis
MTI	Moving Target Indicator
NAI	Non-Automatic Initiation
NATO	North Atlantic Treaty
NAVRAD	Navigation Radar
NCAGE	NATO Commercial And Government Entity
NDI	Non Developmental Items
NFOV	Narrow Field of View
NGS	Naval Gun Support
NSN	NATO Stock Number
NSPA	NATO Support and Procurement Agency
OC	Operation Cycle
OEM	Original Equipment Manufacturer
OLM	Organizational Level Maintenance
OPV	Ocean Patrol Vessel
OPV3S	Ocean Patrol Vessels Third Series
OSD	Ownship Data
OSHA	Occupational Safety and Health Administration
OTH	Over-The-Horizon
OTDR	Optical Time-domain Reflectometer
PBL	Product Baseline
PCA	Physical Configuration Audit
PDR	Preliminary Design Review
PHST	Packaging, Handling, Storage and Transportation
PMP	Project Management Plan
PMR	Project Management Review
PMS	Project Master Schedule
PoC	Point of Contract
POE	Pool of Errors
PoN	Portuguese Navy
PPR	Project Progress Report
PR	Projectme Reviews
PRT	Portugal or Portuguese (i.a.w. the context)
QA	Quality Assurance
QMP	Quality Management Plan
QMS	Quality Management System
Radar CW 1FC	Radar Continuous Wave 1 Fire Channel

ANNEX D

Acronym	Acronym (full text)
RADHAZ	Radiation Hazard
RCS	Radar Cross Section
RADAHZ	Radar Hazard
RAM	Reliability, Availability and Maintainability
RAM	Radar Absorbing Material
RAMT	Reliability, Availability and Maintainability and Testability
RCIL	Recommended Consumable Items List
RCS	Radar Cross Section
RFD	Request for Deviation
RFW	Request for Waiver
RoHS	Restriction of hazardous substances
RPES	Radar Performance Evaluation System
RPL	Recommended Provisioning Lists
RSPL	Recommend Spare Parts List
SAL	Security Aspects Letter
SAR	Safe And Rescue
SAT	Sea Acceptance Trials
SATCOM	Satellite Communication
SE	Support Equipment
SEMP	System Engineering Management Plan
SERD	Support Equipment Recommendation Data
SEWACO	SEnsors Weapons And COmmunications
SHOL	Ship Helicopter Operational Limits
SLP	Standardised Language Proficiency
SMR	Source Maintenance Recoverability
SMTR	Support Material Technical Review
SOLAS	Safety Of Life at Sea
SONAR	Sound Navigation and Ranging
SOW	Statement of Work
SRR	System Requirements Review
SRS	System Requirements Specification
SRU	Shop Replacable Unit
SSDD	System/Subsystem Design Description
STANAG	Standardization Agreement
STC	Sensitivity Time Control
STTE	Special-to-type Tools and Test Equipment
SVD	Software Version Description
SW	Software
SwIP	Software Installation Package
TAS	Towed Array Sonar
TBD	To Be Determined
TDL	Tactical Data Link

ANNEX D

Acronym	Acronym (full text)
TIM	Technical Interchange Meeting
TM	Technical Manual
TMPP	Technical Manual Validation Plan
TMVP	Technical Manual Validation Plan
TNA	Training Needs Analysis
TOC	Table of Contents
RAC	TRACeability matrix
TTE	Tools and Test Equipment
TTEL	Tools and Test Equipment List
TX	Transmission (Communications)
T&C	Terms & Conditions
UAV	Unmanned Air Vehicle
UPS	Uninterruptible Power Systems
USV	Unmanned Surface Vehicle
UUV	Unmanned Underwater Vehicle
V&ATP	Verification & Acceptance Test Plan
VDR	Voyage Data Recorder
VGAM	NRP Vasco Da Gama
WAIS	Warship Automatic Identification System
WAN	Wide Area Network
WECDIS	Warship Electronic Chart Display and Information System
WFOV	Wide Field of View
XBT	Expendable Bathythermograph
XSV	Expendable Sound Velocimeter

ANNEX E: Project TECHNICAL REQUIREMENTS

See separate document

ANNEX F: LIST OF REFERENCES

See separate document