**ATTACHMENT XXX**

**Statement of Work (SOW)**

**USMC Heavy Lift Replacement**

**CH-53K™ *Forward Looking InfraRed (FLIR)***



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Controlled By: Department of the Navy

NAVAIRSYSCOM: PEO (A); PMA-261

CUI Category: Defense, Financial, Privacy, Provisional

Dissemination Control: Distribution Statement D

POC: Avionics Engineer

Level 2 IPT lead

Level 3 IPT lead

REVISION HISTORY

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Reason for Revision** |
| A | 01-18-2024 | Baseline |
|  |  |  |

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# Scope

## Introduction

This Statement of Work (SOW) identifies the tasks to be performed by the Contractor for the integration, testing and production of the Forward Looking Infrared (FLIR) System for the CH-53K aircraft. The Contractor will be required to participate in Technical Interchange Meetings (TIMs) and Systems Engineering Technical Reviews (SETRs). The Contractor will demonstrate integration of its system with the CH-53K avionics systems at the Government’s system integration laboratory (SIL) at Patuxent River Naval Air Station. The Contractor will be required to provide material, services and necessary support documentation needed to complete the tasks identified in this SOW. The Contractor will be required to provide technical support to the Government and prime contractor during all ground (to include SIL) and flight integration testing.

## Background

The FLIR is a required avionics component of the CH-53K to provide navigation and situational awareness capability.

# Applicable Documents

All referenced documents are mandatory unless otherwise specified within the body of this SOW or whose use are identified as “Guidance Only” documents not citable as requirements at DOD ASSIST (https://quicksearch.dla.mil ) (e.g. MIL-HNBK-61A(SE)). Guidance documents may be used as an aid in identifying applicable topics to be addressed consistent with meeting the requirements of the program. Unless otherwise specified, the applicable version of the document is the most current version in effect at the time of contract award, except for Contract Data Requirements List (CDRL) item deliverables from other contracts being referenced, which will be the latest U.S.G. approved version. In the event of a conflict between the documents referenced herein or the contents of this SOW, the SOW shall apply.

## Government Documents

|  |  |  |
| --- | --- | --- |
| **Document Number** | **Date** | **Document Title** |
| DoD Manual 5000.04 | 07 May 2021 | Cost and Software Data Reporting (CSDR)Manual |
| APSD Document No. 06524M1300 | 30 Jul 2024 | FLIR Turret Envelope CH-53K Nose Turret |
| NAVAIRINST 4355.19E | 06-FEB-2015 | Systems Engineering Technical Review Process |
| SECNAV INS 5239.3C | 02-May-2016 | DON Information Assurance Policy |
| DOD 8570.01-M | 19-DEC-2005 | Information Assurance Workforce Improvement Program |
| DoDI 5230.24 | 10-JAN-2023 | Distribution Statements on Technical Documents |
| PPP |  | Unclassified Program Protection Plan |
| NAVAIRINST 13034.D | 15 MAR 2010 | Flight Clearance Policy for Air Vehicles and Aircraft Systems |
| NAVAIRINST 13034.1F | 30-JUN-2016 | Airworthiness And Cybersecurity Safety Policies For Air Vehicles And Aircraft Systems |
| OPNAVINST 5100.27/MCO 5104.1C | 02 MAY 2008 | Navy Laser Hazard Control Program |
| OPNAVINST 5239.1D | 18 JUL 2018 | U.S. Navy Cybersecurity Program |
| DoDI 5200.48 | 06 MAR 2020 | Controlled Unclassified Information (CUI) |
| National Security Decision Directive (NSDD) | 09 DEC 2019 | National Operations Security Program |
| NAVAIRINST 4200.56 AIR-4.1.9 | 24 APR 2013 | Aviation Critical Safety Items |
| NAVAIRINST 5000.21B | 24 Jan 2008 | Naval SYSCOM Risk Management Policy |
| AS9100D Rev D | 20 Sep 2016 | Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations |
| PMA261 CMP Rev 11 | Apr 2023 | PMA261 Configuration Management Plan |
| SECNAVINST 5510.36B | 23 Aug 2022 | DON Information Security Program |
| SECNAVINST 5510.30C | 24 Jan 2020 | DON Personnel Security Program |

## Government Handbooks, Standards, and Guidelines

|  |  |  |
| --- | --- | --- |
| **Document Number** | **Date** | **Document Title** |
| IEEE/EIA 12207-0 | APR 1998 | Software life cycle processes Implementation considerations |
| MIL-HDBK-61B | 07-APR-2020 | Configuration Management Guidance |
| MIL-HDBK-217F, Notice 2 | 02-Dec-1991 | Military Handbook: Reliability Prediction Of Electronic Equipment (02-Dec-1991) |
| MIL-HDBK-502A | 30-MAY-1997 | Product Support Analysis |
| MIL-HDBK-1467 | 28-Jun-2023 | Acquisition of Software Environments and Support Software |
| MIL-HDBK 300P | 08-AUG-2019 | Technical Information File of Support Equipment |
| MIL-STD-130N | 17 Dec 2007 | Identification Marking of U.S. Military Property |
| MIL-STD- 31000B | 31 OCT 2018 | DoD Standard Practice Technical Data Packages |
| TA-STD-0017 | 01 MAR 2022 | Product Support Analysis |
| GEIA-STD-0007B | 01 May 2013 | Logistical Product Database |

## Prime Contractor Documents

|  |  |  |
| --- | --- | --- |
| **Document Number** | **Date** | **Document Title** |
|  |  |  |

## Other Documents

|  |  |  |
| --- | --- | --- |
| **Document Number** | **Date** | **Document Title** |
| ASME Y14.24 | 23 OCT 2020 | American Society of Mechanical Engineers: Types and Applications of Engineering Drawings |
| ANSI/EIA-649 Rev C | Feb 2019 | Configuration Management Standard Rev. C |
| Manufacturing Readiness Level (MRL) Desk book | 01 OCT 2022 | Manufacturing Readiness Level (MRL) Desk book |
| National Industrial Security Program Operating Manual (NISPOM) | 21 Dec 2020 | National Industrial Security Program Operating Manual |

# Requirements

## General Requirements

The Contractor shall provide a FLIR system for integration into the CH-53K and provide data necessary to support the FLIR system’s operation, maintenance, installation, calibration, testing and platform software development. The contractor shall provide support to the Government during CH-53K integration and testing. The FLIR system shall meet the performance requirements as described in “CH53K\_EOSMS\_Performance\_Specification”, Attachment X.

## Program Management (All CLINS)

### Post Award Conference (PAC)

The Contractor shall host a post contract award conference (PAC) at the contractor location. The PAC should occur within 30 calendar days of the contract award. The purpose of the PAC is for both parties to review all sections of the bi-laterally signed contract and for the Contractor to review and demonstrate to the Government the management procedures, provide progress assessments, review of technical and other specialty area status, and to establish schedule dates for near term critical meetings/actions. The Contractor shall present management, subcontractors, and program implementation processes in accordance with Data Accession List (DAL) (**CDRL A019).**

CDRL A019: Data Accession List (DAL)

### Cost and Software Data Reporting (CSDR)

The Contractor shall use a documented standard Cost and Software Data Reporting (CSDR) process that satisfies the guidelines contained in the DoD 5000.04, CSDR Manual.

#### Contractor Cost Data Reporting (CCDR)

The Reporting Entity shall:

1. Use the Government-approved Contract Cost and Software Data Reporting (CSDR) Plan, DD Form 2794, and the related Resource Distribution Table (RDT) as the baseline for reporting provided as contract attachment (X and Y);
2. Prepare and deliver to the Government a Cost and Hour Report (FlexFile) (**CDRL A001**) for every indicated data element (Data Group B) within the Government-approved Contract CSDR Plan;
3. Provide a Work Breakdown Structure (WBS) Dictionary and Remarks as a part of the FlexFile format (Data Group B) for every data element identified within the approved Contract CSDR Plan;
4. Prepare and deliver to the Government a Quantity Data Report **(CDRL A002**) for every indicated data element (Data Group B) within the Government-approved Contract CSDR Plan;
5. Prepare and deliver to the Government DD Form Cost Business Data Report (CBDR) 1921-3 (**CDRL A003**).
6. Provide updates to the Government-approved Contract CSDR Plan and related RDT for Government approval. Updates include: aligning the Subcontractor effort to a single WBS element and updating the RDT as new Subcontracts are awarded;
7. If a submission event slips, the Contractor must notify the Government Program Office that a date change is needed. It is the responsibility of the Government Program Office to submit a date change request for the event-driven date through the CSDR Submit-Review (CSDR-SR) system for approval by the Defense Cost and Resource Center (DCARC) before the date reflected in the Office of the Secretary of Defense, Deputy Director Cost Assessment (OSD DDCA) approved Contract CSDR Plan occurs.
8. Hold a Cost and Software Data Reporting-Readiness Review (CSDR-RR) after contract award to include a discussion of the Contractor’s standard cost and software data reporting process that satisfies the guidelines contained in the DoD 5000.04 (CSDR Manual) and the requirements in the Government-approved Contract CSDR Plan and related RDT.

CDRL A001: Cost and Hour Report (FlexFile)

CDRL A002: Quantity Data Report

CDRL A003: Cost Business Data Report (CBDR)

#### Subcontractor Cost Data Reporting

The Prime Reporting Entity shall:

1. Flow-down Contractor Cost and Software Data Reporting (CSDR) requirements to any Subcontracts valued over $50 million or any Subcontracts valued between $20 million and $50 million that are designated by the Cost Working Integrated Product Team (CWIPT) as high risk, high value, high technical interest or a middle-tier acquisition (804);
2. Notify the Government of any Subcontract changes or new subcontracts awarded for subcontracts that exceeds $50 million;
3. Flow-down DD Form 1921-3 (**CDRL A003**) to any Subcontractor required to submit Cost and Software Data Reporting.

### Schedule Management

The Integrated Program Management Data and Analysis Report (IPMDAR) (DI-MGMT-81861C) shall be developed, maintained, updated/statused and reported on a monthly basis per (**CDRL A01H)** (per IPMDAR\_CDRL\_IMS Only\_Template\_5.31.24).

CDRL A01H: Integrated Program Management Data and Analysis Report (IPMDAR)

#### Reporting

The Contractor shall provide monthly IPMDARs per (**CDRL A01H**) except as modified and specified per the following:

* Contract Performance Dataset (CPD): Contract Performance Dataset (CPD) is not applicable to this CDRL.
* Schedule (Comprised of both the Native Schedule File and the Schedule Performance Dataset (SPD)): Schedule Performance Dataset (SPD) is not applicable to this CDRL. The Native Schedule File remains applicable to this CDRL.
* Performance Narrative Report (Comprised of both the Executive Summary and the Detailed Analysis Report): Only narrative analysis of data provided in the Schedule is applicable to this CDRL.

#### Joint Baseline Review

After Government receives the baselined integrated master schedule, the contractor shall host a joint baseline review to discuss the following items: schedule construction rationale, key schedule assumptions, review justification fields (for constraints, leads, and lags), review schedule margin approach, and other schedule concern areas identified such as areas of high free float, tasks with long duration, missing logic, or other identified areas.

#### Schedule Validation Deep Dive

If required, the Government may request a Schedule Validation Deep Dive (i.e. Schedule Scrub) be conducted. The purpose of a Schedule Validation Deep Dive is to ensure the IMS is constructed consistent with IPMDAR (**CDRL A01H**) requirements to include all authorized work, relationships and durations representing a realistic plan forward through contracted completion. The NAVAIR Program Schedule Assessment guidance shall be provided as GFI when conducting a Schedule Validation Deep Dive.

3.2.3.4 **Status Reviews**

The Contractor shall conduct monthly program management and IPT status update meetings. Meetings shall coincide with, and leverage to the maximum extent practicable, the technical interchange meetings. The information supporting the meeting shall be available to the Government Team no later than close of business the day prior to the meeting. At a minimum, the following information should discussed:

1. CDRL Look-ahead. Status of CDRLs which have delivery or Government response due dates within a six (6) week rolling wave of the weekly meeting. Delinquent contractor deliveries and Government responses shall be reported.

2. Critical Path. Briefing of any issues or concerns with tasks on the critical or driving paths

a. Overall program critical path

b. Near critical path (float/slack value is 22 days or less.)

c. The current driving paths to selected Events and/or major milestones as determined by the Government Program Manager.

3. Risks. For risks pertaining to schedule, status of Estimated Completion Date (ECD)s on all risk mitigation steps overdue and due prior to the next Program Risk Advisory Board (PRAB) and potential candidate risks. Updated projections of schedule impacts should also be addressed.

5. Schedule Status for the following:

a. Slack/Float to next major milestone

i. For all tasks discussed, include Task Name, Unique Identification (UID), Baseline Start/Finish and Forecast Start/Finish as reflected in the latest IMS

b. Critical/near-critical delinquent task identification.

i. For any tasks discussed, include Task Name, Unique Identification (UID), Baseline Start/Finish and Forecast Start/Finish as reflected in the latest IMS

ii. Associated comments related to missed task starts/finishes (and the impact of those to the overall program).

6. Issues/Help Needed.

7. Subcontractor Critical Task Status.

8. Action Items. This shall include status of all program action items

## Engineering (CLIN 0001)

### Systems Engineering

#### Systems Engineering Requirements

The Contractor shall utilize systems engineering processes and plans in the execution for the tasks outlined in this SOW. The Contractor shall plan and conduct system requirements analyses, functional analysis, and allocations to translate the requirements identified in the CH-53K FLIR specification and this SOW into their lower-level functional specifications. The Contractor shall recommend and substantiate tailoring of the applicable specifications, standards, and Government documents referenced in this SOW.

#### Requirements Management

The Contractor shall utilize a requirements management process throughout the period of performance of this contract. The Contractor shall maintain traceability among the requirements and work products. The Contractor shall track all changes to requirements. The Contractor shall deliver the Requirements Traceability Verification Matrix (RTVM) **(CDRL A004)** as described in this SOW. The contractor shall provide status of their requirements management process at the established technical interchange meetings.

* CDRL A004: Requirements Traceability Verification Matrix (RTVM)

#### Interface Requirements Specification

The Contractor shall deliver an Interface Requirements Specification (IRS) in accordance with (**CDRL A005**). This specifies the requirements imposed on the system Hardware Configuration Items (HWCIs), Computer Software Configuration Items (CSCIs), manual operations, or other system components to achieve one or more interfaces among these entities. The IRS shall document all external and internal interfaces of the FLIR.

* CDRL A005: Interface Requirement Specification (IRS)

#### Interface Design Description / Interface Control Document (IDD / ICD)

The Contractor shall deliver an Interface Design Description (**CDRL A006**) and an Interface Control Document (**CDRL A007**) for the FLIR. The Interface Design Description shall define all hardware and software interfaces of the FLIR. The Contractor shall provide interface description material in the form of Software Develop Kit (SDK), Application Programing Interface (API), or eXtended Markup Language (XML) message format, and source code examples for use by platform software developers. The Contractor shall provide message use cases and sequence diagram as part of the software message IDD. The Contractor shall provide software application or utilities to exercise functionality as a standalone, or partially integrated subsystem. The communications protocol between FLIR and platform shall be documented as described in this SOW.

* CDRL A006: Interface Design Description (IDD)
* CDRL A007: Interface Control Documents (ICD)

#### FLIR Installation and Control

The FLIR shall mechanically and electrically attach within the existing CH-53K physical location, provisions, and existing structure IAW CH-53K FLIR Specification and APSD Document No. 06524M1300, Attachment XX. Installation adapters may be used but modifications to the airframe are not permitted. Wiring connecter locations are defined but new connecters may be specified by the new system.

The CH-53K has existing user interfaces for FLIR control via the Multi-Function Control Unit (MFCU) and Multi-Function Display (MFD). The Contractor shall implement the MFCU controls as defined in the CH-53K FLIR specification. The Contractor shall use 1553B or Ethernet as the primary interface for command and control from/to the mission computer system.

#### Installation Interfaces and Procedures

The Contractor shall develop preliminary and final installation procedures and installation data products. The procedures shall include installation alignment instructions, attachment methods, cabling, mounting, and clearance information. The Contractor shall identify system installation procedures that include verification of mechanical and electrical installation. The Contractor shall deliver an Installation Control Drawing (ICD) IAW **CDRL (A008)**. An ICD shall contain FLIR weight and center of gravity (CG), mounting locations, electrical connection details, cooling, power, and all data required to install the FLIR system.

* CDRL A008: Installation Control Drawing

#### Systems Engineering Technical Interchange Meetings (SETIM)

The Contractor shall conduct the SETIMs in accordance with NAVAIRINST 4355.19E. The data provided will be tailored to only the specifics relevant to the project and these events are intended to be a maximum of one day. SETIMs may be combined with other program events with Government approval.

The System Requirements Review (SRR) shall present the Contractor’s understanding of the requirements and assess their translation into the system technical baseline. The Preliminary Design Review (PDR)/Architectural Design Review (ADR) shall be a Contractor presentation of the proposed design concept identifying risks and challenges. The Critical Design Review (CDR)/Detailed Design Review (DDR) shall present the final design configuration and supporting data prior to build. The Test Readiness Review (TRR) shall present readiness to enter test. The System Verification Review (SVR) shall present post-test results, confirm that performance requirements have been satisfied, and assess program completion.

The SETIM shall be considered complete when all Requests for Action (RFAs) have been closed. The Contractor shall deliver the final presentation materials including official action items in accordance with (**CDRL A009**) Presentation Materials and Action Items.

* CDRL A009: Presentation Material and Action Items

|  |  |  |
| --- | --- | --- |
| Event | Planned Location | Duration |
| Kick off Meeting - System Requirements Review (SRR) | Virtual | 1 |
| Preliminary Design Review (PDR)/ Architectural Design Review (ADR) | Virtual | 1 |
| Critical Design Review (CDR)/Detailed Design Review (DDR) | Contractor Facility | 1 |
| Test Readiness Review (TRR)/ | Contractor Facility | 1 |
| System Verification Review (SVR)/ | Contractor Facility | 1 |
| Production Readiness Review (PRR) | Contractor Facility | 1 |

#### Production Readiness Review

The Contractor shall conduct a Production Readiness Review (PRR) for the Prime Contractor and subcontractors as jointly agreed upon between the Contractor and the Government. The Contractor shall conduct the PRR using the definitions, criteria, and processes defined in the Manufacturing Readiness Level (MRL) Desk book. (Current revision). The contractor shall plan for the participation of subject matter experts to represent the following areas: Technology and Industrial base, Design, Cost and Funding, Materials, process capability and control, quality, manufacturing workforce, facilities, and manufacturing management. The Contractors and Sub-Contractors shall deliver the MRL assessment areas checklist (**CDRL A00A**). The Contractor shall invite the Government to participate in PRRs for the Prime and Sub-Contractors with a minimum of 30 days advance notice. The Contractor shall host the Government review of the Contractor’s self PRR at the primary manufacturing or integration facility. The Contractor shall present the MRL status at the program CDR. The PRR shall be used to assess the Contractors MRL 9 readiness.

* CDRL A00A: Assessment of Manufacturing Risk and Readiness

#### Other Meetings

The Contractor shall host and participate in a bi-weekly one-hour phone conference with the Government team. The purpose of this meeting is to discuss technical issues, interface issues, progress, status, lessons learned and risks.

The Contractor shall provide technical test support during FLIR system integration and CH-53K flight testing. The Contractor shall be available by phone for teleconference for test meetings.

#### Configuration Audit

The Contractor shall conduct a Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) in accordance with the approved IMS and after having met all entrance criteria as specified in NAVAIR Instruction 4355.19E. The PCA shall ensure that the related design documentation matches the system under review. In addition to the standard practice of assuring product verification, the PCA confirms that the manufacturing processes, quality control system, measurement and test equipment, and training are adequately planned, followed and controlled. It is also used to validate many of the supporting processes used by the Contractor in the production of the item and to verify other elements of the item that may have been impacted/redesigned after completion of the System Verification Review/Production Readiness Review (SVR/PRR).

##### Functional Configuration Audit (FCA)

The contractor shall support a PMA-261 l FLIR kit FCA at the contractor’s facility. The FCA will be conducted at contractor’s facility using the CM principles stated in ANSI/EIA-649, consistent with the guidelines stated in MIL-HDBK-61.

This Audit will review and validate that the product requirements are achieved by the product’s design in the applicable product definition information. Conduct of the audit essentially encompasses a review of the results of the tests, analyses, inspections, demonstrations and simulations performed to prove specified performance requirements were achieved. The tests include verification/qualification and acceptance tests verifying all hardware and software functions.

A cognizant engineering representative shall be available to answer questions during the FCA. The contractor shall be responsible for delivering a comprehensive Functional Configuration Audit (FCA) plan in accordance with (**CDRL A01K**). The FCA plan should outline the necessary steps and procedures to conduct a thorough audit of the functional configuration of the system. It should include details on the scope, objectives, criteria, and methodology for performing the audit. The contractor shall ensure that the FCA plan complies with all applicable regulations, standards, and contractual requirements. Questions or comments regarding this plan will be covered by a joint working group.

CDRL A01K: Functional Configuration Audit (FCA)

All RFAs, RFIs and Actions to Minutes are assigned, resolved and approved by PMA-261 and to be delivered in accordance with (**CDRL A009**), in compliance with Computer Access Agreement, Attachment 3.

##### Physical Configuration Audit (PCA)

The contractor shall support a PMA-261 FLIR kit PCA at the contractor’s facility. The PCA will be conducted at contractor’s facility using the CM principles stated in ANSI/EIA-649, consistent with the guidelines stated in MIL-HDBK-61.

This audit will review the kits content to ensure conformity to the contractor’s engineering documentation, and manufacturing documentation. The contractor shall make available Technical Data Package (TDP) that define the FLIR kit. Contractor owned information, including Certificates of Conformance (CoCs) and First Article Inspection Reports (FAIRs) will be provided by the supplier. PMA-261 will arrange with the supplier directly to make their documentation available for review at the PCA, and to have FLIR kits present to be physically inspected.

A cognizant engineering representative shall be available to answer questions during the PCA. The PMA-261 PCA will validate the kits against the kit parts list, and piece parts against the part drawings. The contractor shall be responsible for delivering a comprehensive Physical Configuration Audit (PCA) plan in accordance with (**CDRL A01L**). The PCA plan should outline the necessary steps and procedures to conduct a thorough audit of the physical configuration of the system. It should include details on the scope, objectives, criteria, and methodology for performing the audit. The contractor must ensure that the PCA plan is in compliance with the requirements specified in the CDRL. The PCA plan must be delivered within the agreed-upon timeframe and shall meet all applicable regulations, standards, and contractual requirements. Questions or comments regarding this plan will be covered by a joint working group.

CDRL A01L: Physical Configuration Audit (PCA)

Entrance Criteria:

• The kit parts list and all piece part drawings are released and available for review.

• Kit physically available for inspection.

Exit Criteria:

• The kit parts list is determined to be accurate, all piece parts are supported by documentation and match the engineering design

• All RFAs, RFIs and Actions to Minutes are assigned, resolved and approved by PMA-261 and to be delivered by IDE in accordance with (**CDRL A009)**, in compliance with Computer Access Agreement, Attachment 3.

#### Airworthiness Support

The Contractor shall provide assistance to the Government team conducting the airworthiness process. The purpose of this assistance is to ensure engineering data requirements, operating limitations, and restrictions for the specific configuration are available to NAVAIR so that the Interim Flight Clearance (IFC) process can be performed in accordance with NAVAIRINST 13034.1D. The Contractor shall make available to the Government all data on: changes to hardware, configuration reports, component performance, maintenance procedures, operating procedures, and Acceptance Test Procedures (ATPs) in accordance with the DAL (**CDRL A019**).

### Software Engineering

The Contractor shall manage the program Software Engineering life cycle tasking.

These processes shall meet best commercial practices as defined by IEEE/EIA 12207-0 Capability Maturity Model® Integration (CMMI) Level 3 (or higher), or an equivalent model-based maturity model.

#### Software Requirements Management

The Contractor shall distribute the requirements analysis for the individual Computer Software Configuration Item (CSCIs) Software based on the existing CH-53K software to allocate requirements to CSCI and shall develop, manage, and deliver a Software Requirements Specification (SRS) (**CDRL A00B**) for the relevant individual CSCIs based on the existing CH-53K Software Requirements Specification (SRS). Traceability shall be documented from the Support System Specification (SSS) to the relevant individual CSCIs and included in each of the SRSs. The Contractor shall plan a Software Specification Review (SSR) at the CSCI level IAW the SDP.

• CDRL A00B: Software Requirements Specification

#### Software Design Management

The Contractor shall deliver a Software Design Description (SDD) (**CDRL A00C**). The Contractor shall plan software Architecture Design Reviews (ADRs) and Software Detailed Design Reviews (DDRs) at the CSCI level IAW the SDP.

• CDRL A00C: Software Design Description

#### Software Test Plan

The Contractor shall develop and submit a Software Test Plan (STP) in accordance with (**CDRL** **A00D)**.

* CDRL A00D: Software Test Plan

#### Software Test Report

The Contractor shall develop and submit a Software Test Report (STR) in accordance with (**CDRL A00E**).

* CDRL A00E: Software Test Report

#### Software Product Specification

The Contractor shall develop and submit a Software Product Specification (SPS) in accordance with (**CDRL A00F)** that contains or references the executable software, source files, & support software information, included as compilation, build, & modification procedures for a CSCI.

* CDRL A00F: Software Product Specification

#### Software Version Description

The Contractor shall develop and submit a Software Version Description (SVD). The Contractor shall provide a SVD with each SPS delivery. The Contractor shall provide documentation for installation and verification of the FLIR software and firmware in accordance with (**CDRL A00G**).

* CDRL A00G: Software Version Description

#### Software User Manual

The Contractor shall develop and submit a Software User Manual (SUM). The SUM shall specifically address the software configuration of the FLIR during installation and describe the user interface and operation of the software in accordance with (**CDRL A00H**).

* CDRL A00H: Software User Manual

#### Subcontractor Software Developers

If a subcontractor is utilized for software development, all requirements, design, development, quality assurance and configuration management shall be managed by the prime Contractor software lead and delivered as an integrated product.

#### Software Licensing

The Contractor shall document the procurement requirements of runtime software licenses, e.g. recurring, perpetual and/or subscriptions, required by the Government to operate the FLIR system. Transferable software licenses, purchased on this contract, for operator use, shall convey with FLIR system delivery.

#### Software Loading

The FLIR system shall be capable of being field loadable via the Program Loader Set (PLS) and capable of being stored on Naval Data Distribution System (NDDS). The contractor shall use the Program Loader Set (PLS, AN/USQ-203, part number-4032AS100-1) Common Support Equipment or be loadable through 1553/Ethernet via CH-53K Advanced Data transfer System (ADTS).

### System Safety

The Contractor shall provide a safety assessment that reviews/analyzes existing hazards and/or identifies new hazards associated with the design and functionality changes introduced. Analysis shall include identification and assessment of new or changed causal factors and controls, system response, and the mishap risk contribution (severity/probability) of each hazard/change. An initial safety assessment shall be provided as part of the SRR package, and the final assessment shall be provided as part of the Critical Design Review (CDR) in accordance with System Safety Assessment (**CDRL A00J**).

* CDRL A00J: System Safety Assessment

#### LASER Hazards

The Contractor shall provide safety information relative to the LASER systems with the turreted package and the systems safety features and architecture. The Contractor shall generate and submit a Laser Hazard Analysis Report (**CDRL A00K**). As part of this report the contractor shall add portions of data required under OPNAVINST 5100.27B/MCO 51041.C as follows:

* Appendix A Laser Design Requirements Checklist
* Appendix B Support Equipment Design Requirements Checklist
* Data to support generating Enclosure (4) Package for LSRB which includes:
  1. System Safety Features
  2. Laser Masking Area Graphic Illustration with Aircraft Boundaries Referenced
* CDRL A00K Laser Hazard Analysis Report.

##### Laser Safety Measurement

The Navy’s Laser Safety Review Board (LSRB) measurement team will take measurement of the 1st article under test at the contractor’s facility. The Contractor shall provide testing space and support for this testing. Design/manufacturing changes shall be implemented by the contractor to successfully alter the system to overcome deficiencies cited by the LSRB. Additional testing maybe be required to confirm the changes.

#### Structural Design

The contractor shall provide a structural load analysis to ensure it meets the structural design load requirements as directed in the Specification in accordance with Structural Load Analysis (**CDRL A01J**).

CDRL A01J: Structural Load Analysis

### System Test and Qualification

The Contractor shall test and evaluate the FLIR system and deliver data products that show compliance with performance and environmental requirements in the CH-53K FLIR Specification and this SOW. The Contractor shall coordinate testing and make such testing open to the Government as required.

#### Design Verification and Reporting

For each qualification effort, the Contractor shall develop and deliver a Qualification Test Plan and Procedure (QTP). The Contractor shall include test success criteria and verification methods, utilizing MIL-STD-810F as reference. Prior to System Requirements Review (SRR), the Contractor shall identify, using a verification matrix, whether verification compliance will be by analysis, inspection, test, similarity, or demonstration. The Contractor shall develop and deliver Qualification Test Report(s) (QTR). Reports may be combined by component or test activity. The Contractor shall include test success criteria, data, and analysis supporting requirement verification. QTR(s) shall state whether verification compliance was by analysis, inspection, test, similarity, or demonstration. If verified by similarity, the similar components’ test data/report shall be included. Testing required to meet specification in accordance with **CDRLs A00L** and **A00M**.

* CDRL A00L: Qualification Test Plan and Procedures
* CDRL A00M: Qualification Test Report

#### Test Equipment

The Contractor shall provide all necessary test equipment required to properly execute environmental and performance testing in accordance with the FLIR SPEC. The Contractor shall be responsible for maintaining calibration of all test and measurement equipment.

#### Manufacturing Acceptance Test Procedures (ATP)

The Contractor shall modify and perform Manufacturing Acceptance Test Procedures (ATP) for the FLIR system. The Manufacturing ATPs shall describe the inspection and testing required ensuring manufacturing quality of the componentin accordance with **CDRL A00N.**

* CDRL A00N, Manufacturing Acceptance Test Procedures

#### Manufacturing Acceptance Test Report (ATR)

The Contractor shall deliver the Manufacturing Acceptance Test Report (ATR) for the FLIR system. The Manufacturing ATRs shall describe how the FLIR system meets the requirements and documents any anomalies or discrepancies with their associated dispositions ensuring manufacturing quality of the componentin accordance with **CDRL A01M.**

* CDRL A01M, Manufacturing Acceptance Test Report

## Reliability and Maintainability

### Subcontractor and Vendor Reliability

The Contractor shall ensure products obtained from suppliers, vendors and subcontractors meet reliability requirements by establishing, implementing, and maintaining documented procedures which detect and/or preclude the use of substandard or counterfeit parts in the production process.

### Reliability and Maintainability Program

The Contractor shall develop and deliver a Reliability and Maintainability (R&M) program plan and ensure the design of the FLIR satisfies the R&M performance requirements of this SOW and the APSD Document No. 06524M1300, Attachment X. Where increased reliability is a project objective or opportunity the Contractor shall identify components that are changing as a part of this engineering change and shall utilize the existing Failure Reporting, Analysis, and Corrective Action System (FRACAS) process and System Inquiry Report (SIR) data to identify root causes and corrective actions and report these at CDR. The Contractor shall deliver R&M plan in accordance with Reliability and Maintainability Program Plan (**CDRL A00P**).

* CDRL A00P: Reliability and Maintainability Program Plan

### Reliability Modeling and Predictions

The Contractor shall perform reliability and maintainability predictions, which can utilize analytical, test, or field data. The data source and methodologies for each prediction shall be included in the Reliability and Maintainability Predictions Report. Predictions shall be done for continuous operation under a worst-case environment. Reliability block diagrams and mathematical models shall be used as part of the allocation and prediction process. The Contractor shall utilize MIL-HDBK-217F, Notice 2 for guidance in the development of the analytical predictions. The Contractor shall deliver the Reliability and Maintainability Predictions Report in accordance with **CDRL A00Q**.

* CDRL A00Q: Reliability Modeling and Prediction Report

### Built in Test (BIT) Description Document & Assessment Procedures

The Contractor shall prepare and deliver a BIT Description Document that describes the BIT system to include the methodologies of implementation, coverage plan, and planned architecture of the BIT system. The Contractor shall develop and deliver a BIT Assessment procedures document, to include a list of all potential faults. The Contractor shall perform a BIT Assessment of the FLIR system to demonstrate compliance with the BIT requirements. The contractor shall ensure all levels of BIT are tested. The Contractor shall describe the method of fault insertion in the BIT Assessment procedures. The contractor shall document the result of the assessment in a report and deliver the report in accordance with Built in Test Assessment (**CDRL A00R**)

* CDRL A00R: Built in Test Assessment

### Reliability Test Report

The Contractor shall describe and summarize the results of all reliability testing and provide all data acquired during the reliability test program in accordance with (**CDRL A00S)**.

* CDRL A00S: Reliability Test Report

### Integrated Logistics Support (ILS) Planning & Management

The Contractor shall provide an ILS Manager to communicate, report and interface with the PMA-261, Avionics Integrated Product Team (IPT) for this effort. As a part of this function, the Contractor shall:

1. Ensure execution of Product Support Analysis (PSA) required to field and maintain the readiness and operational capability of the FLIR including all functions related to weapon system readiness.
2. Interface with their engineering to support system design.
3. Ensure that logistics review of Engineering Change Notices (ECNs) or Engineering Change Proposals (ECPs) is accomplished prior to release of ECNs. The review shall consist of, the inclusion of interchangeability codes and maintenance plans, supply support and spares, publications, training, and support equipment.
4. Provide timely responses to communications received from the Government related to ILS specific issues and communications addressed to logistics functional departments.
5. Be an integral part of the (Government and Contractor) change process to ensure that logistics engineers review the drawings, and that supportability and maintainability concepts, along with all Logistics elements are taken into consideration.
6. Maintain communications with other qualified Contractors, sub-Contractors, and vendors, to ensure effective management of the program.
7. Participate in IPT teleconferences and meetings related to the FLIR integration.

This shall be achieved by an Integrated Product Support/Engineering partnership throughout the design review process.

### Product Support Analysis (PSA) Database

The Contractor shall develop the PSA Database utilizing PSA repository software SLICWave, compliant with the requirements of SAE GEIA-STD-0007 utilizing the companion document SAE TA-HB-0007.The contractor shall use SLICWave LPD software in accordance with the GEIA-STD-0007B. The Contractor shall ensure the Logistic Product Database (LPD) has the capability to receive and transfer data compliant with SAE GEIA-STD-0007. The Contractor shall reference MIL-HDBK-502A. The Contractor shall deliver a SLICwave XML file consisting of the complete copy of the Logistics Product Database in accordance with Logistics Product Database (**CDRL A00T**).

* CDRL A00T: Logistics Product Database

### Product Support Analysis (PSA)

The Contractor shall perform the following analysis required to field and maintain the readiness and operational capability of CH-53K weapon systems, subsystems, and components, including all functions related to weapon system readiness.

### Failure Mode, Effects, and Criticality Analysis (FMECA)

The Contractor shall conduct and document a FMECA that shall be completed at the level of each Shop Repairable Assembly (SRA) and evaluate the worst potential effects of each SRA failure mode at the assembly level, at the next higher level of indenture, and at the level of the entire unit. The scope of the analytical results shall also provide all data and information required for inputs to other reliability, maintainability, logistics related tasks, databases, and documents required herein. The Contractor shall use this information as the basis for developing fault isolation procedures; corrective and preventive maintenance tasks as it correlates with Reliability Centered Maintenance (RCM) concept and safety hazard analyses. Results shall also be input in the Logistics Product Database (LPD) record. The FMECA data shall be submitted to the government for review and updated as necessary to reflect changes in the end item under analysis in accordance with Failure Mode, Effects, and Criticality Analysis (FMECA) (**CDRL A00U**).

* CDRL A00U: Failure Mode, Effects, and Criticality Analysis (FMECA)

### Reliability Center Maintenance (RCM)

The Contractor shall conduct and document an RCM analysis from information identified in the FMECA and Fault Tree Analysis (FTA) to define and balance “Condition-based”, “Interval-based”, and “Run-To-Failure” maintenance requirements balancing availability and risk in an efficient and cost-effective manner. The RCM data shall be submitted to the government for review and updated as necessary to reflect changes in the end item under analysis in accordance with (**CDRL A00V)** Reliability Center Maintenance via Integrated Reliability-Centered Maintenance System (IRCMS) Data File or submit via the web-based IRCMS.

* CDRL A00V: Reliability Center Maintenance (RCM) Analysis

### Level of Repair Analysis (LORA)

The Contractor shall conduct and document a LORA for the FLIR in accordance with TA-STD-0017 activity 11.7. The LORA is used to identify feasible least cost repair or discard decision alternatives for maintenance for the FLIR system leveraging from the existing actual failure data and logistics documentation to the maximum extent possible. The LORA shall be one of the main documents that shall determine the maintenance concept, provisioning, training, IETM, configuration items, and support equipment. The LORA shall be submitted to the government for review and updated as necessary to reflect changes in the end item under analysis in accordance with Level of Repair Analysis (LORA) (**CDRL A00W**).

* CDRL A00W: Level of Repair Analysis (LORA)

### Maintenance Task Analysis (MTA)

The Contractor shall perform MTA for the FLIR IAW TA-STD-0017 activity 12 and documented in the Logistics Product Database (LPD) in accordance with GEIA-STD-0007B. The Contractor shall support and participate in the joint review and resolution of Government comments. The MTA shall include the following:

1. Maintenance tasks required to correct each failure mode.
2. Personnel and support requirements for each subtask.
3. Support Equipment, test equipment, tools and training equipment required for each subtask.
4. Support Equipment is required for the Support Equipment itself (SE for SE).
5. Support Equipment Recommendation Data (SERD) is required.
6. The subtask requires off-equipment use of test equipment.
7. A Test Program is required.
8. Calibration is required.
9. Spares and repair parts, including mandatory replacement parts.
10. All part numbers and associated procurement information.
11. Part numbers on the HA Entity shall be linked with Logistics Support Analysis (LSA), Logistics Control Numbers (LCNs) on the XB Entity along with applicable information about how the item is used in the system and requirements for the supply of the item to support each subtask.

The Contractor shall submit LSA-019 MTA reports using TA-HB-0007-1 as guidance in accordance with the Maintenance Task Analysis (MTA) (**CDRL A00X**).

* CDRL A00X: Maintenance Task Analysis (MTA).

### Maintenance Plan

The Contractor shall develop and deliver a Maintenance Plan for the FLIR. The Maintenance Plan shall consist of three parts: Part I is the summary of the system and shall include the items that make up the system in a top down indenture; Part II should include Nomenclature, technical factors, Source Maintenance and Recoverability (SM&R) codes, Work Unit Code (WUCs), part numbers and stock numbers (if available); Part III shall include fault isolation tasks with appropriate support equipment to perform the task at each maintenance level. The Contractor shall submit LSA-024 MP reports using TA-HB-0007-1 as guidance in accordance with Maintenance Plan (**CDRL A00Y**) as required. The Contractor shall support and participate in the joint review and resolution of Government comments. It is the Government’s intent to minimize depot level maintenance or Original Equipment Manufacturer (OEM) level maintenance for the FLIR system.

* CDRL A00Y: Maintenance Plan

## Supply

### Interim Support Items List (ISIL)

The ISIL shall contain the recommended items and quantities determined to be required by the Organizational and Intermediate Levels of maintenance for the removal and replacement of spares and repair parts between the Initial Operational Capability (IOC) date and Material Support Date (MSD). The NSNs assigned to ISIL approved items shall be considered as new peculiar items to the end item for the purposes of Maintenance Planning and during subsequent provisioning screening effort until final Provisioning Technical Data (PTD) and Engineering Data for Provisioning (EDFP) delivery. The ISIL shall include Part Number, Nomenclature, SM&R codes, Cage, Mean Time between Failure (MTBF), and Quantity per end item, unit price, Production Lead Time, shelf life, quantity per aircraft, next higher assembly, and recommended quantity. The Contractor shall review GEIA-HB-0007B, appendix D and deliver the Interim Support Item List (ISIL) in accordance with (**CDRL A00Z**) (GEIA-HB-0007B, appendix D).

* CDRL A00Z: Interim Support Items List

### Parts Provisioning List (PPL)

The Contractor shall deliver a Provisioning Parts List (PPL). The PPL shall contain the end item, component or assembly and all support items which can be disassembled, reassembled, or replaced, and which when combined, constitute the end item, component or assembly. The PPL shall include:

* 1. Part Number
  2. CAGE Code
  3. Item Name
  4. Source, Maintenance and Recoverability (SM&R) Code
  5. Full Reference Designator (each occurrence)
  6. Shelf Life (if applicable)
  7. Production Lead Time
  8. Quantity
  9. Unit of Issue
  10. Unit Price

The Contractor shall deliver in accordance with Parts Provisioning List (**CDRL A010**).

* CDRL A010: Parts Provisioning List

### Design Change Notice (DCN) Development and Instructions

The Contractor shall submit DCNs utilizing the existing Provisioning Contract Control Number (PCCN) and Provisioning List Item Sequence Number (PLISN) structure that was established in the original Provisioning Parts List (PPL). DCNs will identify all unique and common items in the changed system or component and will identify changes relative to the new Next Higher Assembly. When additions are required in the breakdown of a new assembly, available PLISNs within the existing PCCN shall be used. The Data Product Deliverables worksheet details all of the required data elements for a DCN submittal.

Each PLISN shall consist of four characters, A001 through Z999. The first position will always be alphabetic, excluding alphabetic I and O. The second through fourth positions will always be numeric.

The fifth position of the PLISN will be used for new, superseding configurations. For this purpose, letters A through Z shall be used starting with the letter A for the first addition and continuing sequentially through the alphabet.

The variable quantity, "V" shall not be used for Quantity per Assembly or for Quantity per End Item.

For each new "P" source-coded item, the Contractor shall determine a realistic unit price in US dollars. This price shall approximate the actual acquisition unit cost to the US Navy at the time of initial procurement and in consideration of the projected procurement quantity. The Contractor shall require that the vendors also provide realistic unit prices, with the above rationale. Unit prices for NSN-assigned items may be obtained from the Segment H provisioning screening results available through the Defense Logistics Information Service (DLIS).

Item introduction of Critical Application Items including Critical Safety Items will be processed in accordance with NAVAIRINS 4200.56 AIR-4.1.9 24 April 2013. If the instruction is not in the Contractor’s possession, it will be provided upon request.

### Design Change Notices (DCNs)

The Contractor shall prepare DCNs and deliver in accordance with Design Change Notice (**CDRL A011**). The Contractor shall prepare DCNs for all parts, assemblies and components incorporated into any production/post production end item or support item that adds, deletes, supersedes or modifies items listed on previously accepted Provisioning Parts Lists (PPLs) and which results from NAVAIR approved Engineering Change Proposal (ECPs).

* CDRL A011: Design Change Notice

### Engineering Data for Provisioning (EDFP)

The Contractor shall develop and deliver FLIR EDFP in digital form compatible with Gov’t/PMA specific IT system, i.e. Joint Engineering Data Management Information Control Systems (JEDMICS) PDF ISO 32000. EDFP is Provisioning Technical Data (PTD) and provides definitive identification of dimensions, materials, mechanical, electrical or other characteristics adequate for provisioning of support items of the end items on contract. The Contractor shall deliver the EDFP in accordance with Engineering Data for Provisioning (**CDRL A012**).

* CDRL A012: Engineering Data for Provisioning

### Obsolescence Management/ Diminishing Manufacturing Sources and Material Shortages (DMSMS) Plan

The Contractor shall assess the expected useful life of the FLIR and identify support items associated with system/equipment that will present potential problems due to inadequate sources of supply for production and post-production. The Contractor shall identify parts and components with short technology development cycles such as Light-emitting diodes (LEDs). The Contractor shall develop and analyze alternative solutions for anticipated support difficulties, including obsolescence during the remaining life of the FLIR and develop a plan that assures effective support during the system’s total life along with the estimated funding requirements to implement the plan. The Contractor shall describe their design approach and how it mitigates futures obsolescence issues. The Contractor shall describe how the use of Open Architecture and any design techniques that aid in mitigating obsolescence issues.

The plan should address design and logistic support elements and include the following:

a. Supply and repair factors.

b. Components/parts selection and availability.

c. System/life expectations.

d. Pre-planned product improvement.

e. Modification forecasts.

f. Support equipment deterioration.

g. Support equipment tools and test fixtures.

h. Commercial and Non-Developmental Items.

i. Diminishing Manufacturing Sources/Materiel Shortage (DMSMS).

j. Software improvements and updates.

The Contractor shall utilize a predictive tool, such as Q-Star, Tactrac or Total Parts Plus, to identify and forecast DMSMS program impacts. The Contract shall submit Obsolescence/DMSMS plan in accordance with Obsolescence Management/Diminishing Manufacturing Sources and Material Shortages (DMSMS) Plan (**CDRL A013**).

* CDRL A013: Diminishing Manufacturing and Material Shortage (DMSMS) Program Plan and Obsolescence Plan Update

#### Obsolescence Status Summary Report

The Contractor shall deliver an Obsolescence Status Summary Report (OSSR) quarterly for the FLIR. The OSSR combines the analysis results of the suppliers Bill of Materials (BOM) and/or an Obsolescence Critical Component List (OCCL), and the output details of a DMSMS predictive tool addressing the results of the on-going review and identification of new, on-going, and potential issues within Contractor and Subcontractors for all parts, components, and Commercial off-the-Shelf (COTS) assemblies. The report will address the current and future technologies and provide for an initial technology assessment with updates to include recommendation for future-year procurement End of Life (EOL) buy, redesign, and/or replacement. The report will detail the date that the assembly and its related higher assemblies will most likely become unsupportable taking into account inventories, usage, repair capability, funded upgrades, redesigns, and similar attributes or actions. The Contractor will support design reviews and technical interchange meetings to assess DMSMS considerations for items being acquired within this SOW.

The Contractor shall perform research and analysis of each DMSMS issue to ensure that resolutions recommended to the Government consider total Life Cycle Cost (LCC) and sustainability in accordance with Obsolescence Status Summary Report (**CDRL A014**)

* CDRL A014: Obsolescence Status Summary Report

#### Bill of Materials (BOM)

The Contractor shall develop and deliver a DMSMS non-indentured BOM for the FLIR and sub-assembly components to include parts considered, SRAs, Assemblies, Components, and COTS to the lowest level item in accordance with Bill of Materials (**CDRL A015**). The Contractor shall enter the BOM information and data in a commercial DMSMS tracking service of their choice which is described and outlined in their DMSMS Management Plan. The Contractor shall maintain an accurate, complete, and concurrent manufacturer Bill of Material (BOM) for the FLIR.

The Contractor shall flow-down all BOM development and monitoring responsibilities to all parts suppliers, sub-contractors, vendors, sub-vendors and COTS Manufacturers and Suppliers. The Contractor shall deliver all BOM data covering the entire FLIR system configuration to the piece-part level, including manufacturer and vendor part numbers. If sharing of proprietary BOM data is a concern of the subcontractor, the Government shall be afforded the opportunity to discuss direct delivery of the data from the subcontractor to the Government.

* CDRL A015: Bill of Materials

### Individual Unique Item Identification (IUID)

The Contractor shall submit Item Unique Identification Marking Plan (**CDRL A016**) that details the Contractor’s strategy to execute marking requirements.

* CDRL A016: Item Unique Identification Marking Plan

### Packaging, Handling, Storage & Transportation (PHS&T)

The Contractor shall develop and deliver the FLIR Packaging, Handling, Storage, and Transportation (PHS&T) summaries to identify packaging, handling, storage and transportation requirements in accordance with Packaging, Handling, Storage & Transportation (PHS&T) (**CDRL A017**). The PHS&T summaries shall comply with all DoD policies, rules, and regulations concerning the packaging, handling, storage, marking, shipment and transportation of classified materials. The Contractor shall deliver reusable, multi-application containers for packaging in support of units delivered during Non-Recurring Engineering (NRE) period. For production deliveries, the Contractor shall deliver in accordance with best commercial practices. The Contractor shall review environmental considerations, equipment preservation for the short and long-term storage, and transportability of all parts, assemblies and components.

* CDRL A017: Packaging, Handling, Storage & Transportation (PHS&T)

#### Support Equipment

The Contractor shall maximize the use of common support equipment, hand tools and facilities already established to minimize the requirement for Peculiar Support Equipment (PSE) and special tooling to support the FLIR System referencing MIL-HDBK-300P, DoD Handbook Support Equipment Data Sources. The Contractor shall identify all required special tooling required to support maintenance for the FLIR in accordance with DAL (**CDRL A019**). This list shall include all materials required to fabricate the part, part number, nomenclature, aircraft part number it is utilized for and what it does. The identified PSE must be traceable to the PSA database and shall be included in the LPD summaries. The Contractor shall provide a Maintenance Test and Support Equipment (MT&SE) requirements list to justify any use of specific/peculiar equipment and tooling.

## Technical Data

### Technical Data Package (TDP)

The Contractor shall deliver a Product Level Technical Data Package (TDP) for PMA-261, CH-53K, in accordance with MIL-STD-31000B, Product Design Data and Associated Lists (**CDRL** **A018)**, Option Selection Worksheet (OSW), and the TDP Contract Requirements (TDPCR). The TDP shall meet the design disclosure requirements necessary for defining and managing the engineering, configuration management, logistics product baselines and shall provide required product definition data to enable and support the sustainment and maintenance requirements. Requirements established in this contract for TDP delivery shall apply to all sub-tier vendors and suppliers to ensure a complete TDP is delivered to the Government. As part of the TDP acceptability review, the TDP shall be assessed by the Government for completeness and adequacy for sustainment through a process of comparison and verification of engineering data to Logistics Product Data (LPD) contained and managed in the LPD database.

Commercial items, as defined in FAR 2.101, used in the system being developed shall have a procurement control drawing (Vendor Item Control Drawing, or Source Control Drawing) developed to define all the FORM, FIT, FUNCTION and performance requirements for the commercial item IAW the current revision of ASME Y14.24 at time of contract award and reviewed at the PAC.

* A018: Product Design Data and Associated Lists

### TDP Metadata

Contract shall Deliver TDP Metadata as defined in the TDP OSW (exhibit XXXX), and TDP Metadata attributes table (Exhibit XXXX) and MIL-STD-31000B as attached to this SOW. Metadata is required to populate the Governments TDP management database and facilitate TDP to LPD assessment. 3.6.3.3 Supplementary Technical Data

The Contractor shall deliver Supplementary Technical Data as part of the Product Design Data and Associated Lists (**CDRL A018**) IAW the OSW (Exhibit XXXX). A complete listing of required supplementary technical data and delivery format requirements are included in the OSW (Exhibit XXXX).

### TDP Guidance Conference and In-Process Reviews

The Contractor shall host a formal TDP Guidance Conference within 30 days of contract award. The Conference shall be held at the Contractor facility to ensure the event is adequately supported and all TDP related issues can be addressed. The Government shall require support from the Contractor Engineering, Logistics, and Configuration Management leads or subject matter experts necessary to represent the Contractor’s TDP development and to ensure complete understanding of the Governments TDP requirements. The Government will provide the Contractor a detailed agenda identifying topics of discussion for the TDP Guidance Conference via e-mail 45 days prior to scheduled conference date. The TDP Guidance Conference shall be held in conjunction with other meetings associated with this effort or with Program Management Reviews.

### Data Accession List (DAL)

The Contractor shall maintain and deliver a Data Accession List (DAL), which includes internally generated data and computer software used by the Contractor (including subcontractor/vendor data) to develop, test, and manage the program (either developed internally or obtained from an outside source, including all non-CDRL data in accordance with Data Accession List (**CDRL A019**).

CDRL A019: Data Accession List (DAL)

### Computer Resources

Computer resources are the information technology resources and infrastructure required to operate and support mission critical systems and support equipment to include hardware, software, and documentation such as licenses and services. The Contractor shall conduct computer resources and software requirement analysis for FLIR to determine operational and maintenance requirements to include software-loading. The Contractor shall provide an assessment of current performance and supportability. The Contractor shall use SAE JA1006 Software Support Concept and SAE JA1004 – Software Supportability Program Standard for reference. The Contractor shall deliver a Software Sustainment Assessment for the FLIR in accordance with (**CDRL A01A)**.

* CDRL A01A: Software Sustainment Assessment

## Government Furnished Information

The Contractor shall provide written request of required GFI with need by date and justification to the Government Furnished Property (GFP)/Government Furnished Information (GFI) representative. The GFI List is provided as Section J, Attachment YY. The Government shall advise the Contractor of any data containing proprietary markings for which the Contractor is required to execute a non-disclosure agreement with the GFP Vendor prior to provision of the data. The Contractor shall notify the Government upon approval of NDA with the GFP Vendor. The Contractor may receive required proprietary GFI directly from the GFP Vendor via Government direction. The Contractor shall notify the Government of the receipt of any GFI received from associated GFP Vendor.

## Travel for Assessment and Test Phase

The Contractor shall be required to travel in the performance of the FLIR contract.

|  |  |
| --- | --- |
| Event | Where |
| SIL Integration | Patuxent River, MD |
| SIL Integration | Stratford, CT |
| Flight Test | Patuxent River, MD |
| SIL Integration | Stratford, CT |

## Configuration Management

The Contractor shall implement and maintain a Configuration Management (CM) program to control products, processes, and related documentation to ensure the integrity of design and supportability for both hardware and software Configuration Items (CIs). The CM program shall include identification and control of all system functional, allocated, and product baselines, establishment of a configuration status accounting system to provide an audit trail of all configuration changes, and identification, documentation, and verification of the functional and physical characteristics of each CI.

### Configuration Management Plan

The Contractor shall submit a Configuration Management Plan (CMP) for review and approval by Government (**CDRL A01B**). This CMP shall reflect requisite process changes as a result of this statement of work on all FLIR production efforts by the Contractor to align with the PMA-261 Configuration Management Plan.

* CDRL A01B: Configuration Management Plan

### Engineering Change Proposal (ECP)

The Contractor shall submit a Class 1 Engineering Change Proposal (ECP) for the nonrecurring and recurring efforts associated with this SOW. ECP’s shall be submitted once CDR is final and shall be in accordance with the requirements of the Request for Proposal. Permanent configuration changes will not be implemented until authorized by the Procuring Contracting Officer (PCO). The ECP submission shall be in accordance with (**CDRL A01C)**.

ECP development will be prepared in accordance with the Government-approved Contractor’s CMP, and the PMA-261 CMP. Use of SAE/EIA-649C, MIL-HDBK-61A(SE) as guidance is encouraged.

• CDRL A01C: Engineering Change Proposal

### Request for Variance (RFV)

If deemed necessary to temporarily depart from specified baseline requirements of any drawing in the Bill of Materials (BOM) Attachment 1, a RFV shall be developed, classified, documented, coordinated, evaluated, and dispositioned in accordance with the Contractor’s Government approved CMP. The Contractor shall submit the RFV to PMA-261 for review via the CM Manager for processing through the Government’s Configuration Control Board (CCB). Classification of a proposed Variance (Critical/Major/Minor) shall be in accordance with the criteria set forth in SAE/EIA-649C, MIL-HDBK-61A(SE), the Contractor’s Government-approved CMP and the PMA-261 CMP. Minor RFV’s shall be submitted to the local Defense Contract Management Agency (DCMA) representative for concurrence with classification and disposition.

Upon RFV disposition, the Contractor shall document in the Contractor’s Configuration Status Accounting (CSA) RFV description; the Non-Conforming Material addressed by the RFV; the impact to any additional product/part; the RFV stated corrective action to prevent recurrence; and corrective action taken/accomplished by the Contractor to prevent RFV reoccurrence.

The Contractor shall prepare and submit all Critical/Major RFVs in accordance with (**CDRL A01D)**.

• CDRL A01D: Request for Variance

### Configuration Status Accounting (CSA)

The Contractor shall establish practices to facilitate the CSA of products, systems, and other data and documentation, and to perform configuration status accounting activities throughout the life cycle of the FLIR System in order to support and enable an efficient configuration management process. These practices shall define the process, responsibilities, and accountabilities associated with CSA.

The Contractor shall create and maintain CSA system database in accordance with the policies and procedures outlined in the Contractor’s Government approved Configuration Management Plan (CMP). CSA submission shall be in accordance with (**CDRL A01E**).

* CDRL A01E: Configuration Status Accounting

## Production

### Quality Management System

The Contractor shall maintain a Quality Management System (QMS) in accordance with AS9100D specification(s). The Contractor shall promote the delivery of defect free material and satisfy program objectives, including reducing cost, schedule, and performance risks. The Quality Assurance Program (QAP) shall be subject to review during performance of this contract. The DCMA and the procuring activity shall have the right to review and audit the Contractor quality system for AS9100D compliance. The Contractor shall flow down the requirements of the QAP to suppliers.

### Manufacturing

The Contractor shall manage and control the manufacturing processes, data, tooling, facilities, material, and labor. The Contractor shall make internal manufacturing planning and control documents and systems used in the performance of this contract available to the Government upon request.

### Material Review

The Contractor shall maintain records of nonconforming material. The Contractor shall identify and keep separate all nonconforming material from the production process until disposition.

The Contractor shall conduct a Material Review Board (MRB) to disposition nonconforming material.  The Government will have access to participate in the MRB. The Contractor shall obtain Government (Program Office) approval for “use as is” or repair dispositions of major non-conformances prior to delivery of affected hardware. The Contractor shall obtain DCMA approval of “use as is” or repair dispositions of minor non-conformances.

### Forward Fit Production

The Contractor shall manufacture the FLIR Kits and associated hardware for installation on to CH-53K Heavy lift Helicopter. The aircraft Installation B-Kit includes FLIR system, hardware components and associated cabling/wiring, mount(s), and connectors required to physically and electrically interface avionics hardware and software configuration items to/from aircraft.

### Retrofit Production

The Contractor shall manufacture the FLIR Kits and associated hardware for installation on to CH-53K Heavy lift Helicopter. The aircraft Installation B-Kit includes FLIR system, hardware components and associated cabling/wiring, mount(s), and connectors required to physically and electrically interface avionics hardware and software configuration items to/from aircraft.

## Risk Management

The Contractor shall participate in PMA-261 Risk Management process to help identify, assess, and effectively reduce program, production, and sustainment risks in accordance with the Government risk management plan. A quarterly risk assessment shall update the status of risk items, add and retire risks as appropriate and adjust risk mitigation activities and schedules as necessary in accordance with DAL (**CDRL A019**). The Contractor shall participate in risk meetings and be responsible for identifying risk items and proposing and executing risk mitigation activities. Risk management activities will be in accordance with NAVAIRINST 5000.21, and Contractors shall be prepared to assess the likelihood and consequence of each identified risk. Risk status shall be presented by the Contractor at all reviews.

## Security

### Security Requirements

All Contractor personnel must be eligible to perform Non-Critical Sensitive work as defined by SECNAVINST 5510.30C. All Contractor personnel are required to have a favorably adjudicated Tier-3 investigation from the Office of Personnel Management. The Contractor shall submit a request for personnel security investigation to the Government Security Office. The Government Security Office shall initiate the Contractor's Electronic Application (eApp), shall do a preliminary screening of the Contractor's eApp for suitability and derogatory information. The Contractor employee shall provide all requested information pursuant to the Privacy Act of 1974. The Government Security Office may deny the Contractor access to Government facilities and information and may prohibit the Contractor from performance of sensitive duties for failure to provide requested information or when derogatory or adverse information is present on the Contractor's eApp. In such cases, the Contractor employee may not perform on the Contract.

The Contractor shall implement and maintain security procedures and controls to prevent unauthorized disclosure of Controlled Unclassified Information (CUI) and to control distribution of CUI in accordance with National Industrial Security Program Operating Manual (NISPOM) codifying 32 Code of Federal Regulation Part 117, NISPOM Rule and SECNAVINST 5510.36B. All Contractor facilities shall provide an appropriate means of storage for controlled unclassified information and materials. All controlled unclassified information shall be appropriately identified and marked in accordance with DODI 5200.48, Controlled Unclassified Information (CUI).

CUI including Legacy FOUO and Covered Defense Information (meeting the definition of 48 CFR 252.204-7012(a)) generated and/or provided under this contract shall be marked and safeguarded as specified in DoD Instruction 5200.48, Controlled Unclassified Information (CUI) available at <https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/520048p.PDF> . Any product containing Covered Defense Information shall be assigned a distribution statement (distribution statements B through F) using the criterial set forth in DoDI 5230.24 (Distribution Statements on Technical Documents); and have this statement displayed per DoDI 5230.24, Enclosure 3.

All CUI technical information shall be appropriately identified and marked with the following distribution statement(s):

Distribution Statement D: Distribution authorized to Department of Defense and U.S. DoD contractors only (CTI, EXPT, PROCURE) (31 January 2023). Other requests shall be for this document must be referred to the Program Executive Officer, Air ASW Assault and Special Mission Program (PMA-261) 47123 Buse Road, Bldg 2272, Room 155 Patuxent River, MD 20670.

The Contractor shall ensure that all IT systems, software and interfaces that contain Government data meet Government security certification standards in compliance to DFARS clause 252.204-7012 and requirements appropriate to the particular classification level of operation as specified by the US Navy, Department of Defense, or other cognizant government authority for the purposes of the above-mentioned DON goals in accordance with SECNAV Instruction 5239.3C and OPNAVINST 5239.1D.

### Operational Security Program (OPSEC)

The Contractor shall implement and maintain an OPSEC program to protect controlled unclassified and classified activities, information, equipment, and material used or developed by the Contractor and any subcontractor during performance of the contract up to and including the level of SECRET. The Contractor shall be responsible for the subcontractor implementation of the OPSEC requirements. This program may include Information Assurance and Communications Security (COMSEC). The OPSEC program shall be in accordance with National Security Decision Directive (NSDD) 298, and at a minimum shall include:

1. Assignment of responsibility for OPSEC direction and implementation.

2. Issuance of procedures and planning guidance for the use of OPSEC techniques to identify vulnerabilities and apply applicable countermeasures.

3. Establishment of OPSEC education and awareness training.

4. Provisions for management, annual review, and evaluation of OPSEC programs.

5. Flow down of OPSEC requirements to subcontractors when applicable.

While performing aboard NAVAIR or NAVAIR sites, the Contractor shall comply with facility OPSEC program instructions and contribute to organizational-level OPSEC efforts. Include OPSEC as part of its ongoing security awareness program and take all required Agency training. Be responsive to the Supporting OPSEC Manager on a non-interference basis. Protect sensitive unclassified information and activities, which could compromise classified information or operations, or degrade the planning and execution of operations performed by the Requirements Office (RO) and contractor in support of the mission.

### Cyber Security Plan (CSP)

#### Cyber Security Implementation Plan (CSIP)

For Cyber Security (CS) requirements see the Cyber Security Plan (CSP), Attachment X.

Specific mentioned policies in the CS Plan can be accessed via the Cyber Security Policy Chart at the following link: https://dodiac.dtic.mil/dod-cybersecurity-policy-chart/.

The Contractor shall deliver a PMA-261 H-53 Heavy Lift Helicopters Cyber Security Implementation Plan (CSIP) (**CDRL A01F**) or Annex CSIP to address each of the sections of the NAVAIR Cyber Security Plan (CSP). The contractor shall demonstrate its understanding of the CSP and describe how the requirement of each of the sections of the CSP will be achieved by the contractor. Sections of the CSP that are NOT applicable are required to be addressed. The contractor shall describe why a particular section is not applicable. The final CSIP shall be in Adobe Acrobat format with a digital signature from the contractor cognizant authority.

If no approved final CSIP currently exists between the contractor and the Government, then one must be created and submitted. If an approved final CSIP already exists and sufficiently satisfies the CSP requirements for the contract, then no new CSIP delivery is required. In such cases, the Contractor in consultation with the Government Cyber Security Team (APM CS / PISSM / PISSO) shall only submit a Contract Letter to the Government stating that all CSP requirements are satisfied by the existing CSIP in accordance with final Cyber Security Implementation Plan (CSIP) (CDRL A01F).

If CSP requirements are NOT adequately addressed by the existing final CSIP, then an update to the final CSIP or a supplemental CSIP document referred to as an “Annex CSIP” shall be created to satisfy the CSP requirements. An Annex CSIP shall address unique CSP Section "G" Assessment and Authorization requirements if a system is being delivered under the contract and unique Section "Q" Software requirements if software is being delivered. These CSIP updates or Annex CSIPs shall be submitted on a semi-annual (twice per year) basis in accordance with Cyber Security Implementation Plan (CSIP) (**CDRL A01F**).

CDRL A01F: Cyber Security Implementation Plan (CSIP)

#### Cyber Security System/Software Assurance Report

The Contractor shall address these requirements within the Cyber Security System/Software Assurance Report (CS S/SAR) Technical Report Study/Services (**CDRL A01G**)

CDRL: A01G: Cyber Security System/Software Assurance Report (CS S/SAR) Technical Report Study/Services

### Public Release

Any controlled unclassified information pertaining to this contract shall not be released for public dissemination, including posting to any social media sites such as Facebook or X, unless it has been approved for public release by appropriate U.S. Government authority. Proposed public releases shall be submitted for approval prior to release through PEO (A), Public Affairs Office, 47123 Buse Road, RADM William A. Moffett Building 2272, Patuxent River, MD 20670-1547.

# Appendix A Acronym List

|  |  |
| --- | --- |
| ADR | Architectural Design Review |
| ADTS | Advanced Data transfer System |
| API | Application Programing Interface |
| ATP | Acceptance Test Procedures |
| BIT | Built-in Test |
| BOM | Bill of Material |
| CBDR | Cost Business Data Report |
| CCB | Configuration Control Board |
| CCDR | Contractor Cost Data Reporting |
| CDR | Critical Design Review |
| CDRL | Contract Data Requirements List |
| CG | Center of Gravity |
| CI | Configuration Items |
| CM | Configuration Management |
| CMMI | Capability Maturity Model® Integration |
| CMP | Configuration Management Plan |
| CoCs | Certificates of Conformance |
| COMSEC | Communications Security |
| COTS | Commercial off-the-Shelf |
| CPD | Contract Performance Dataset |
| CSA | Configuration Status Accounting |
| CSCI | Computer Software Configuration Item |
| CSDR | Cost and Software Data Reporting |
| CSIP | Cyber Security Implementation Plan |
| CSP | Cyber Security Plan |
| CUI | Controlled Unclassified Information |
| DAL | Data Accession List |
| DCARC | Defense Cost and Resource Center |
| DCMA | Defense Contract Management Agency |
| DCN | Design Change Notice |
| DDR | Detailed Design Review |
| DLIS | Defense Logistics Information Service |
| DMSMS | Diminishing Manufacturing Sources and Material Shortages |
| ECD | Estimated Completion Date |
| ECNs | Engineering Change Notices |
| ECP | Engineering Change Proposal |
| EDFP | Engineering Data for Provisioning |
| EOL | End of Life |
| FAIRs | First Article Inspection Reports |
| FCA | Functional Configuration Audit |
| FLIR | Forward Looking InfraRed |
| FMECA | Failure Mode, Effects, and Criticality Analysis |
| FOUO | For Official Use Only |
| FTA | Fault Tree Analysis |
| GFE | Government Furnished Equipment |
| GFI | Government Furnished Information |
| GFP | Government Furnished Property |
| HA | Database code |
| HWCI | Hardware Configuration Item |
| IAW | In accordance with |
| ICD | Interface Control Document |
| IDD | Interface Design Description |
| IFC | Interim Flight Clearance |
| ILS | Integrated Logistics Support |
| IMS | Integrated Master Schedule |
| IOC | Initial Operational Capability |
| IPMDAR | Integrated Program Management Data and Analysis Report |
| IRCMS | Integrated Reliability-Centered Maintenance System |
| IRS | Interface Requirements Specification |
| ISIL | Interim Support Item List |
| IUID | Individual Unique Item Identification |
| JEDMICS | Joint Engineering Data Management Information Control Systems |
| LCC | Life Cycle Cost |
| LCN | Logistics Control Numbers |
| LED | Light-emitting diode |
| LORA | Level of Repair Analysis |
| LPD | Logistics Product Database |
| LSA | Logistics Support Analysis |
| LSRB | Laser Safety Review Board |
| MFCU | Multi-Function Control Unit |
| MFD | Multi-Function Display |
| MRB | Material Review Board |
| MRL | Manufacturing Readiness Level |
| MSD | Material Support Date |
| MT&SE | maintenance test and support equipment |
| MTA | Maintenance Task Analysis |
| MTBF | Mean Time Between Failure |
| NISPOM | National Industrial Security Program Operating Manual |
| NRE | Non-Recurring Engineering |
| NSN | National Stock Number |
| NSSD | National Security Decision Directive |
| OCCL | Obsolescence Critical Component List |
| OEM | Original Equipment Manufacturer |
| OPSEC | Operational Security Program |
| OSSR | Obsolescence Status Summary Report |
| OSW | Option Selection Worksheet |
| PAC | Post Award Conference |
| PCA | Physical Configuration Audit |
| PCCN | Provisioning Contract Control Number |
| PDR | Preliminary Design Review |
| PHS&T | Packaging, Handling, Storage & Transportation |
| PLISN | Provisioning List Item Sequence Number |
| PPL | Parts Provisioning List |
| PPP | Program Protection Plan |
| PRAB | Program Risk Advisory Board |
| PRR | Production Readiness Review |
| PSA | Product Support Analysis |
| PSE | Peculiar Support Equipment |
| PTD | Provisioning Technical Data |
| QAP | Quality Assurance Program |
| QMS | Quality Management System |
| QTR | Qualification Test Report(s) |
| RCM | Reliability Center Maintenance |
| RDT | Resource Distribution Table |
| RFAs | Requests for Action |
| RFV | Request for Variance |
| RO | Requirements Office |
| RTVM | Requirements Traceability Verification Matrix |
| SDD | Software Design Description |
| SDK | Software Develop Kit |
| SE | Support Equipment |
| SERD | Support Equipment Recommendation Data |
| SETIM | System Engineering Technical Interchange Meetings |
| SETRs | Systems Engineering Technical Reviews |
| SIL | System Integration Laboratory |
| SM&R | Source, Maintenance and Recoverability |
| SM&R | Source Maintenance and Recoverability |
| SOW | Statement of Work |
| SPD | Schedule Performance Dataset |
| SRA | Shop Repairable Assembly |
| SRR | System Requirements Review |
| SRS | Software Requirements Specification |
| SSS | Support System Specification |
| SVD | Software Version Description |
| SVR | System Verification Review |
| TDP | Technical Data Package |
| TDPCR | TDP Contract Requirements |
| TIMs | Technical Interchange Meetings |
| TRR | Test Readiness Review |
| UID | Unique Identification |
| USMC | United States Marine Corps |
| WBS | Work Breakdown Structure |
| WUC | Work Unit Code |
| XB | Database Code |
| XML | eXtended Markup Language |