DEPARTMENT OF THE NAVY

PROGRAM EXECUTIVE OFFICER FOR UNMANNED AVIATION AND STRIKE WEAPONS
NAVY AND MARINE CORPS SMALL TACTICAL UNMANNED AIR SYSTEMS
PEO (U&W) PMA-263
PATUXENT RIVER, MD 20670

PERFORMANCE-BASED WORK-STATEMENT (PBWS) Revision 0

FOR THE

SEA-BASED UNMANNED AIRCRAFT SYSTEMS INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE SERVICES (UAS ISR-SERVICES)

REDACTED VERSION

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1.0 SCOPE

This Performance Based Work Statement (PBWS) details United States Naval Air Systems Command (NAVAIR) requirements for world-wide, 24 hours per day, seven days per week (24/7) availability of Unmanned Aircraft System (UAS) Intelligence, Surveillance, and Reconnaissance (ISR) services. The Contractor shall provide all required resources and personnel to perform all efforts necessary to execute pre-deployment, deployment, and post-deployment activities as defined herein. The Contractor shall utilize a UAS that provides ISR capability to USN and USNS ships, and other vessels designated by the US Government.

2.0 SYSTEM REQUIREMENTS

Unless otherwise noted herein, all requirements in this PBWS are mandatory requirements. Exceeding these requirements is generally acceptable and improved performance as a result of technology advancements that is of benefit to the UAS/ISR mission and can be rapidly integrated is generally desired. Specifically-desired objective requirements are identified as such. Additionally, open architecture design that enables system modifications for future requirements is encouraged.

2.1 Air Vehicle (AV)

2.1.1 The AV shall be capable of executing a preprogrammed flight plan.

2.1.2 AV External Lighting: Night Vision Device (NVD)-Compatible Anti-Collision Lighting: The AV shall have an Infrared (IR) anti-collision lighting subsystem (providing a night visibility range of 3+ statute miles) producing energy emitted in a 360 degree pattern around the AV +30 degrees (above) and -30 degrees (below) the horizontal plane of the AV. The IR-light intensity shall be at least of a Class B Night Vision Imaging System (NVIS) radiant intensity (NRIb) of 2.31 E-04 NRI. The Ground Control Station shall have the capability to turn the IR anti-collision light on or off.

2.1.3 Each AV shall be capable of accurately adapting to dynamic, in-flight re-tasking instructions.

2.1.4 The AV shall possess autonomous Loss of Link (LOL) behaviors to include loiter for a predetermined length of time in the event of sustained loss of control link. If the control link cannot be reacquired, the AV shall execute preprogrammed instructions resulting in a control-link recovery at a pre-determined end point. If control-link cannot be recovered, a mission termination maneuver shall be executed, such that the AV is destroyed without risk to friendly forces or non-combatant personnel.

2.1.5 The table (Table 1) below outlines the performance that the AV shall be capable of achieving to fulfill the required ISR services. The AV with full fuel and payload shall be capable of takeoff, operation, and recovery while operating in the environmental conditions described in Table 1.

Airspeed	Minimum 50 KTAS[1]		
Service Ceiling[2]	Minimum 10,000 Feet MSL[3]		
Takeoff & Recovery Wind Limits	Maximum Headwind 30 Knots	Crosswind 10 Knots	Maximum Gust 15 Knots
Takeoff, Operations and Recovery	Temperature Range 0 to +120F	Density Altitude (DA) 4800 Feet for Takeoff and Recovery	Rainfall Maximum 0.25 Inches/Hour
Endurance	Threshold: 10 Hours Continuous Sensor Data Objective: 18 Hours Continuous Sensor Data		

Table 1 Air Vehicle Performance Specifications

2.1.6 The AV shall be capable of launch and recovery from a deck space the size of an Arleigh Burke Class Destroyer (DDG 51) flight deck, or larger. The nominal dimensions for DDG Flight I and II flight decks are; Flights I & II: 43' W x 49' L, and Flight IIA: 41' W x 54' L. Ship-motion parameters for launch and recovery are based on Sea State 4 (4-8’ seas) with calculated parameters given in Table 2, immediately below:

[1]50 KTAS - 50 Knots of True Airspeed – Minimum airspeed necessary to meet the requirement to fly to the 50 Nautical Mile maximum radius of GCS within one hour after launch.

[2] Service ceiling is the altitude at which the AV’s vertical rate of climb performance is equal to 100 feet/minute.

[3] MSL Mean Sea Level

Parameter	Estimated Maximum
Pitch Attitude (degrees)	**1**
Roll Attitude (degrees)	**3**
Pitch Rate (degrees /second)	**1**
Roll Rate (degrees /second)	**2**
Lateral Displacement[4] (feet)	**1**
Vertical Displacement (feet)	**2**
Lateral Acceleration (feet/second^2)	**2**
Vertical Acceleration (feet/second^2)	**7**

Table 2 Ship-Motion Parameters

2.1.7 The AV shall be configurable with Electro-Optical (EO) and Infrared (IR) payloads. The AV is not required to be simultaneously configurable with both payloads.

2.1.7.1 It is desired that the AV be simultaneously configurable with both Electro-Optical (EO) and Infrared (IR) payloads/sensors. Only one of these two optical payloads/sensors shall be required to be operating/active at any given point in time. The active payload/sensor shall be selectable from the GCS while the AV is in-flight, including the capability to switch between active payloads/sensors from among those with which the AV is configured. (Objective)

2.1.7.2 The AV shall capable of accepting modular payloads. Modular payloads are defined as payloads that can be replaced or interchanged with the previously-installed EO or IR payload(s) within one to two hours (elapsed time). Modular payloads may be government provided.

2.1.7.2.1 It is desired that the AV be simultaneously configurable with both an optical payload/sensor (either EO or IR) and an additional modular payload. (Objective)

2.1.8 At steady-state cruise power setting, the AV shall provide sensor data IAW paragraph 2.6.2.4, at an altitude of 3000 feet above the ground and slant angle of 45 degrees. At the stated flight conditions the AV shall remain acoustically non-detectable

[4] Where applicable to location on-board the ship, the ship-motion parameter is relative to the center of the flight-deck.

per MIL-STD-1474D, Level 1, Requirement 2 conditions (quiet rural area with the closest heavily used highway and community noises at least 2.5 miles away).

2.1.9 If the AV uses an internal combustion engine, then the AV shall operate on JP-5 Aviation Grade Turbine Fuel per MIL-DTL-5624U. Note that the JP-5 specification includes a range of technical parameters and the powerplant/engine must be able to operate using fuel from throughout these ranges.

2.1.9.1 Fuel Additives:

2.1.9.1.1 Lubricant Engine Additives: Engine lubricants are allowed and must be provided by the Contractor. No limitations are placed upon the quantity/volume of engine lubricants required for a complete (~7 month) deployment.

2.1.9.1.2 Non-Lubricant Additives: Additives other than engine-lubricants must be provided by the Contractor and are only allowed if the following criteria are met. If the following criteria are met, there are no explicit quantity limitations as to shipboard storage of additives (although total shipboard space for the UAS is defined elsewhere within this PBWS):

2.1.9.1.2.1 The flash point of the additive(s) must be above 140 degrees F.

2.1.9.1.2.2 The additive(s) must be compatible with JP-5 fuel, all approved Specification MIL-DTL-5624 JP-5 fuel additives, and all materials they come into contact with in the UAV and propulsion system.

2.1.9.2 All additives and their related systems must be capable of being approved via the NAVAIR Flight Clearance and NAVSEA Ship-Integration processes (see paragraph 4.1.1.1).

2.1.9.2.1 IAW OPNAVINST 5100.19E, all additives shall be assessed as potential hazardous materials to determine the risk to the UAS, ship and ship systems, personnel and the environment during stowage, handling, operations, and disposal.

2.1.10 The UAS shall possess an autonomous recovery wave-off feature, with operator-override capability. When threshold conditions required for successful recovery cannot be achieved, the UAS autonomously commands the AV to wave-off (abort its recovery).

2.1.11 The UAS shall possess adequate airworthiness to ensure integrity and control of the air vehicle during launch and recovery phases, to confine the air vehicle flight path to within suitable operational areas and to reliably terminate the air vehicle

within a suitable crash zone. For rotary wing aircraft, the air vehicle shall be free from ground resonance and have sufficient dynamic system and airframe integrity to preclude catastrophic failure during ground operations. Evidence that the UAS meets the aforementioned airworthiness criteria shall be documented as part of the Category 3 Interim Flight Clearance (IFC) data cited in paragraph 4.8.

2.2 System Footprint/Mobility and Transportation Requirements

Physical space for the system and ancillary support equipment is extremely limited. The flight deck of the DDG 51 class ship is available for launch and recovery of the AV; however, the flight deck must be able to be cleared and made available for helicopter operations with a 30-minute notification.

2.2.1 System Footprint

This information is located in PBWS Version 3.0 (Restricted Access) and can be obtained with permission from NAVAIR Contracting WEB Page.

2.2.2 Mobility and Transportation Requirements

2.2.2.1 The AV shall be air-transportable by C-130 and H-60 (internally or externally loaded, for the H-60) aircraft. The Contractor shall be responsible for any required shipping containers.

2.2.2.1.1 MTMCTEA[5] Pamphlet 70-1 Transportability for Better Deployability is provided for guidance.

2.2.2.1.2 MIL-STD-209K, Interface Standard for Lifting and Tie down Provisions is provided for guidance.

2.2.2.2 LRE shall not interfere with flight-operations. LRE shall be maintained and operated by Contractor embarked resources, including optional use of the Government Furnished Equipment UAV Handler or similar Contractor provided equipment.

2.2.2.3 A UAV LRE Handler may be made available aboard DDG Flt IIA ships, if the contractor selects to use the GFE handler.[6]

2.3 Hub or Hub and Spoke Operations

2.3.1 A hub and spoke operational model has the hub as the center of operations and the spoke as the downrange extension which allows the system to continue to operate

[5] Military Traffic Management Command Transportation Engineering Agency

[6] Note to Offerors: More detailed information on this is available via the UAV Handler Technical Data Package (TDP), which is available on the solicitation website.

at a distance from the central hub. The HUB is defined as a location wherein the contractor shall be responsible for all activities necessary for UAS operations, including but not limited to: Administration, Mission Planning, AV Launch and Recovery, AV Command & Control (C2), Networked Data Dissemination, and Maintenance and Logistics Support. The SPOKE has the identical C2 capabilities of the hub but lacks the capabilities of AV Launch and Recovery, Networked Data Dissemination, and Maintenance and Logistics Support. The spoke will participate in the administration and mission planning processes, but will not have the same stand-alone capabilities as the hub.

2.3.2 ISR-Services operations shall be primarily of a "Hub" nature, where the AV is launched, operated/controlled and recovered from a single GCS or hub. The Contractor shall provide the capability to employ ISR-services using a hub and spoke configuration, and coordinate the requirement with the Contracting Officer's Representative (COR) and the Liaison Officer (LNO).

2.4 Ground Control Station (GCS) Requirements

The GCS shall be installed within the Combat Information Center (CIC) Annex or the Combat Operations Center (COC). Short length cable runs to areas such as the CIC, and the Captain's Cabin should be expected and will be specified during the ship check. *This information is located in PBWS Version 3.0 (Restricted Access) and can be obtained with permission from NAVAIR Contracting WEB Page.*

2.4.1 The Contractor shall provide the ability to maintain simultaneous positive control of both the AV and the payload.

2.4.2 The Contractor shall have the capability of directing in-flight re-tasking and controlling payload sensors.

2.4.3 The Contractor shall have the ability to provide full motion video feeds directly to a contractor-provided display within the CIC Annex/COC and other specified locations on the ship.

2.4.4 The Contractor shall have the ability to operate with its antenna located anywhere on the ship, though typically within a 300 foot cable run.

2.4.5 The GCS shall provide the capability to display and output video imagery, and metadata into a classified network (low-to-high) via the government provided Cross Domain Solution (CDS) (See paragraph 2.6.5).

2.4.6 The Contractor shall have the ability to operate their non-AV systems with ship-provided electrical-power.

2.4.6.1 Neither hydraulic nor pneumatic power will be provided directly from the ship.

2.4.6.1.1 If any non-AV internal combustion engine powered equipment is used by the Contractor then the equipment shall operate on JP-5 Aviation Grade Turbine Fuel per the latest revision of MIL-DTL-5624U. Note that the JP-5 specification includes a range of technical parameters and the powerplant/engine must be able to operate using fuel from throughout these ranges.

2.4.6.2 Existing electrical power availability is as defined below. However, this should not necessarily be considered as a design-constraint, as other configurations of electrical power can likely be provided as needed:

This information is located in PBWS Version 3.0 (Restricted Access) and can be obtained with permission from NAVAIR Contracting WEB Page.

2.4.7 As applicable, the Contractor shall use a GCS at each spoke. The GCS may be either sea-based or land-based. The spoke-based GCS shall provide Level 4 interoperability per STANAG 4586 and shall have human-interface characteristics identical to that of the hub-based GCS.

2.4.8 Positive Control: The UAS shall provide for a qualified operator to be in control of the UAV, at any time that intent-for-flight exists (intent-for-flight shall be as defined in the respective UAS' operating manual / Standard Operating Procedures (SOP)).

2.4.8.1 The operator shall be capable of expeditiously responding to system malfunctions, emergencies and Air Traffic Control (ATC) direction.

2.4.8.2 A UAS with an autopilot or programmable mode capability can be considered under control with such mode engaged provided the responsible and qualified operator maintains continuous situational awareness, and can alter the UAV's airspeed, altitude and heading by their specific actions."

2.5 Communication, Navigation, and Identification Systems (CNI)

2.5.1 Communications (Datalinks Operation)

2.5.1.1 The Contractor shall utilize either L-3 Communications' Bandit or Vortex radios for video downlink.

2.5.1.2 The Contractor provided Datalinks shall be capable of operating at a minimum range of 50 NM with unobstructed Line of Sight (LOS).

2.5.1.3 The Contractor provided Datalink shall provide hemispherical, 360 degrees of coverage, to maintain direct unobstructed LOS communications. A single antenna-location with 360 degree coverage will not be made available on the ship. Multiple antennae solutions may be acceptable.

2.5.2 Communications (Spectrum): Specific bands and/or frequencies required will be defined within the TO or as part of the pre-deployment work-ups.

2.5.2.1 The Contractor shall provide a field configurable Command and Control (C2) communications architecture that allows, at a minimum, L, S, and C Band configuration.

2.5.2.2 The Contractor shall provide a field configurable sensors payload communications architecture that allows, at a minimum, L and S Band configuration if the sensors require a separate datalink.

2.5.3 Communications (Encryption)

2.5.3.1 The Contractor shall utilize FIPS-197 compliant Advanced Encryption Standard (AES) encryption on the command and control links; Electronic Code Book (ECB) mode shall not be used.

2.5.3.2 The system shall be able to enable/disable AV datalink encryption from the GCS, while the AV is airborne.

2.5.4 Communications (Remote Video Terminals (RVT))

2.5.4.1 The AV shall provide EO/IR video, with Key Length Variable (KLV) metadata, to an RVT at a minimum range of 5 NM from the AV.

2.5.4.2 The Contractor shall provide a communications architecture that allows for the Rover (IV+) Series, VideoScout or OSRVT system to be selected for a particular Task Order (TO).

2.5.5 Navigation (Global Positioning System (GPS))

2.5.5.1 The Contractor shall only use Selective Availability Anti-Spoofing Module (SAASM)-compliant Precise-Positioning System (PPS) GPS.

2.5.5.2 The Contractor shall utilize DS101 port(s) to receive SAASM encryption keys.

2.5.5.3 The contractor shall incorporate a method for the user interface to manually select C/A mode (L1) on the receiver.

2.5.5.4 The contractor shall utilize a GPS receiver that will automatically select C/A mode (L1) on the receiver when the GPS cryptographic keys are not loaded or are expired.

2.5.6 Identification (Transponder/Identification)

The AV shall have a Mode 3/C transponder with “IDENT” capability, controllable from the GCS.

2.6 Data Product

2.6.1 Full Motion Video (FMV) & Still Imagery

2.6.1.1 The Contractor shall be capable of injecting UAS sensor data into host unit's PED system(s).

2.6.1.2 The system shall be able to autonomously maintain uninterrupted tracking of a stationary or moving object, while in visual contact.

2.6.2 Full Motion Video Output & Quality

2.6.2.1 The Contractor shall provide an output of Motion Imagery Standards Profile (MISP) MPEG-2, and/or H.264 format FMV, through an MPEG 2 transport stream.

2.6.2.2 If standard definition motion imagery is used then it shall be Motion Imagery System Matrix (MISM) Level 3 compliant to MISP recommended practice 9720d.

2.6.2.3 If high definition motion imagery is used then it shall be MISM Level 9 compliant to MISP recommended practice 9720b.

2.6.3 Still Imagery Output and Quality

2.6.3.1 The Contractor shall provide EO still images in NITF 2.1 format, captured from the FMV stream. The Contractor-provided system shall be capable of producing EO output meeting or exceeding the rating of 7.5, when taken from the UAV at an altitude of 3000 ft AGL at a 45 degree slant range and viewed via a VideoScout MC2 PED.

2.6.3.2 The Contractor shall provide IR still images in NITF 2.1 format, captured from the FMV stream. The Contractor-provided system shall be capable of producing IR output meeting or exceeding the rating of 6.5, when taken from the UAV at an altitude of 3000 ft AGL at a 45 degree slant range and viewed via a VideoScout MC2 PED.

The NVTherm IP model shall incorporate the assumptions that video is taken an altitude of 3000 ft AGL at a 45 degree slant range and viewed via a VideoScout MC2 PED.

2.6.4 Metadata

2.6.4.1 The Contractor shall provide metadata in compliance with MISP Minimum Metadata Set Standard 0902, with all digital FMV.

2.6.4.2 The Contractor shall provide metadata in compliance with MISP Standard 102 "Security Metadata Universal and Local Sets for Digital Motion Imagery."

2.6.4.3 The Contractor shall provide any metadata not covered in MISP 902 or 102 via MISP Standard 0601 "UAS Datalink Local Metadata Set."

2.6.5 Cross Domain Solution (CDS) Interface

2.6.5.1 The contractor shall provide for a single Cat 6a cable with a male RJ45 connector to serve as the connecting element from the GCS to the government provided CDS.

2.6.5.2 The contractor shall provide a data flow from the GCS to the government provided cross domain solution that adheres to the following:

2.6.5.2.1 FMV must be in the form of MPEG-2 and H.264 AVC4 compliant FMV.

2.6.5.2.2 FMV must be use the MPEG-2 transport stream.

2.6.5.2.3 FMV must use the User Diagram Protocol.

2.6.5.2.4 All metadata must follow the KLV standard.

2.6.5.2.5 The GCS must have the ability to configure the port on which the FMV and metadata traverses.

2.6.6 Sensor Point of Interest (SPOI)

2.6.6.1 The Contractor shall provide SPOI spatial location accuracy for a stationary object of 20 meters Circular Error (CE), at accuracy of 90%, and from an altitude of 3000 ft AGL at a 45 degree slant range, within 60 seconds.

2.6.7 Data Dissemination & Storage Requirements

2.6.7.1 The video and metadata recorded from each mission shall be stored by the Contractor for one week.

2.6.7.2 The video/metadata shall be fed directly to the Government-provided CDS via direct-data-transmission in real-time. Video/metadata shall also be consolidated on Digital Video Disks (DVD), or suitable storage device (external hard drive) and provided weekly to the LNO.

2.6.7.3 All data, video, and information collected shall be considered the property of the Government.

2.6.7.4 After the video/metadata is turned over to the Government, via DVD, Hard Disk Drive (HDD), and/or via direct-data-transmission, the Contractor shall destroy/delete the data on the contractor system upon direction from the Government. The data destruction/deletion should occur on a periodic basis; however, at the end of the deployment the government shall confirm that all data has been deleted/destroyed from the contractors' systems.

2.6.7.5 The Contractor shall have no rights to use the video imagery, metadata, or specifics of the operation (expressed or implied).

2.7 Automatic Identification System (AIS)

2.7.1 The Contractor shall equip each AV with an AIS relay to provide input to the ship's AIS system, and shall be compatible with TransView 32 (TV32) software.

2.7.2 The AIS shall have a minimum effective range of 60 NM.

2.8 Recommended Best Practices

2.8.1 MIL-STD-1472F; Human Engineering, Design Criteria for Military Systems, Equipment, and Facilities, is provided for guidance and as a recommended best practice.

2.8.2 MIL-STD-810G; DOD Test Method Standard for Environmental Engineering Considerations and Laboratory Tests, is provided for guidance and as a recommended best practice.

3.0 RESERVED

4.0 CONTRACTOR PROVIDED SERVICES

4.1 PRE-DEPLOYMENT REQUIREMENTS

4.1.1 System Certification: Prior to deployment, the Contractor shall support the following essential certifications/qualifications necessary to deploy and operate the system. Specific support requirements will be determined based upon the individual Contractor's technical solution, but will likely include data, hardware, and personnel. The Contractor shall utilize at a minimum two "work-up" periods which have been incorporated into the schedule to conduct flight operations to support a complete system Ready for Operations (RFO) test that includes range, EMC Safety-Of-Flight (SOF) test, crew coordination between FSR's and ships company to include Operations, Intel, mission planning and deck crew coordination. Work-up period number two will be used as a pre-deployment training period utilized to conduct operations to support simulated situations the system may encounter during real world situations. The contractor shall provide a Flight Test team to conduct at-sea flight trials in support of the Government ship suitability process as coordinated with the Government representative if the

Government deems it necessary to conduct sea trials. Note that travel for the Flight Test team upon completion of sea trials may require international travel, thus requiring all Flight Test team members to have a current and valid US passport.

Certifications/qualifications shall include (but not necessarily be limited to) the following:

4.1.1.1 The Contractor shall submit System Description Documents (SDD) containing engineering data necessary to support a Category 3 Interim Flight Clearance IAW NAVAIRINST 13034.1D (CDRL A001). See section 4.8 of this PBWS.

4.1.1.1.1 As an element of the SDD, the Contractor shall submit a System Safety Plan and Hazard Analysis IAW NAVAIRINST 5000.21B, Naval SYSCOM Risk Management Policy, and NAVAIRSYSCOM Letter 5100/Ser AIR-4.0/026 of 14FEB2011, Incorporation of Revised Cost Threshold for Catastrophic Severity into System Safety Risk Assessments (see appendix 5).

4.1.1.2 The contractor shall provide Electromagnetic Environmental Effects (E3) and ElectroMagnetic Interference (EMI) data to demonstrate their design practices pertinent to MIL-STD-464A requirements (CDRL A002) as follows:

4.1.1.2.1 Intra-system ElectroMagnetic Compatibility (EMC) shall be maintained between AV, GCS, and CNI and between the individual subsystems and equipment of each.

4.1.1.2.2 The AV shall be compatible with its external radio-frequency (RF) ElectroMagnetic Environment (EME), during both shipboard and off-ship operations.

4.1.1.2.3 CNI equipment shall be compatible with its shipboard external RF EME or shipboard internal EME, as applicable.

4.1.1.2.4 The GCS shall be compatible with the shipboard internal EME.

4.1.1.2.5 The UAS shall not present an electromagnetic radiation hazard to personnel, ordnance, or fuel.

4.1.1.2.6 The UAS shall not present an electrostatic discharge hazard to personnel, ordnance, fuel, electronics or the proper operation of radio receivers.

4.1.1.2.7 The UAS shall comply with OPNAV Instruction 2400.20F, Electromagnetic Environmental Effects (E3) and Spectrum Supportability Policy and Procedures.

4.1.1.3 The contractor shall provide Material Safety Data Sheets and identification IAW FED-STD-313D (CDRL A003).

4.1.1.4 Personnel Considerations

4.1.1.4.1 Contractor personnel must meet the medical requirements as stated in DoDI 3020.41, DoD Instruction "Critical Program Information (CPI) Protection Within the Department of Defense" and as required the requirements addressed in Contract Clauses 5252.225-9515 “Fitness for Duty and Medical/Dental Care Limitations”; 252.225-7040 “Contractor Personnel Authorized to Accompany U.S. Armed Forces Deployed Outside The United States” and KSCR1-5 “Fitness for Duty and Medical Care Limitations”. In addition copies of Medical records / physicals shall be provided by the Contractor to the ship’s Senior Medical Officer for review.

4.1.1.4.2 ISOPREP: All personnel traveling OCONUS are required to complete a DD Form 1833, Isolated Personnel Report (ISOPREP). This applies to all military, civilian, and contractor personnel supporting forces in CENTCOM AOR. Forces under the Operational Control of USASOC or USSOCOM are exempt from this requirement and will follow USSOCOM guidance to meet the pre-deployment requirement. ISOPREPs may be submitted either on-line via the Pre-OCONUS travel File (PRO-File) system or via paper form. The PRO-File system is available at the following site: < http://www.jrtc-polk.army.mil/Transition_team/Files_&_Images/files/ISOPREP.pdf >. The ISOPREP form is available at the following site: < http://www.dtic.mil/whs/directives/infomgt/forms/eforms/dd1833t.pdf >

4.1.1.5 The UAS shall conform to DoD security guidance regarding Information Assurance (IA), including all appropriate controls as defined by the Mission Assurance Category, and Data Classification of the system in accordance with DoD Directive 8500.1, DoD INST 8500.2, DoDI 8510.01, and CJCSI 6510.01.

4.1.1.5.1 The UAS shall protect Critical Program Information (CPI) from reverse engineering exploitation and incorporate Anti-Tamper features as required by DoDD 5200.39, DoDI 5000.2, and DoD Interim Defense Acquisition Guidebook. Protection measures implemented must ensure that reverse engineering, replication, modification by an unauthorized nation or organization would require a capability comparable to a US National Laboratory with significant time and funding. The protection capabilities must prevent unauthorized access to critical

software functionality regardless of the system configuration. Source readable software is not to be in deployed systems

4.1.1.5.2 The UAS shall adhere to the encryption requirements as defined in the "Encryption of Sensitive Unclassified Data at Rest on Mobile Computing Devices and Removable Storage Media" Memo issued by the DoD CIO on July 03, 2007 (CDRL A007).

4.1.1.5.3 The Contractor shall provide data, engineering, and test support for Authority to Operate (ATO).

4.1.1.6 The UAS shall comply with OPNAV Instruction 2400.20F, Electromagnetic Environmental Effects (E3) and Spectrum Supportability Policy and Procedures. The Contractor shall provide the Application for Equipment Frequency Allocation spectrum analysis and allocation IAW DD1494 "Application for Equipment Frequency Allocation" detailed to the stage 2 level.

4.1.1.7 The Contractor shall support a Ship Shock Assessment (Grade B) IAW MIL-S-901D of 17MAR89 and NAVSEAINST 9072.1A of 24NOV89.

4.1.1.8 The Contractor shall support an assessment of shipboard RCS compliance and impact-minimization.

4.1.1.9 The contractor shall provide data, engineering, and test support for Ship Suitability.

4.1.1.10 System Description Documents (SDD): The contractor shall provide detailed and comprehensive system description documentation data-package including both physical and communications/data-aspects of the system. This data-package shall contain the information necessary to validate the ability of their systems to comply with the ship-integration and interface requirements listed within this PBWS. The contractor shall provide a detailed SDD including data necessary to support the Category 3 IFC as well as the Ship Installation Drawing (SID) package preparation (CDRL A004).

4.1.1.10.1 Description of Physical System & Interfaces: This documentation shall completely describe the contractor's technical solution. Data shall be sufficient to ensure that the UAS shall interface effectively with the ship and her systems. This shall include all mechanical, electrical, environmental and other interfaces.

4.1.1.10.2 Description of Electronic Data System and Interfaces: This documentation shall completely describe the contractor's technical solution to ensuring that data flows from the contractor's GCS to the program-provided CDS. The documentation shall include a detailed description of all physical connections/interface(s) and any data flow(s) to include data format descriptions and port/protocol information for all data elements. The contractor shall also provide a sample data message of their metadata as part of the SDD.

4.1.1.11 Payload Interface & Flexibility: The Contractor shall provide a detailed payload Interface Control Document (ICD) describing the payload interface with the AV and UAS, including the following minimum data (CDRL A004).

4.1.1.11.1 Maximum payload weight.

4.1.1.11.2 Maximum payload volume.

4.1.1.11.3 Electrical power available to payload.

4.1.1.11.4 Definition of the electronic data/control interfaces/connectors between payload and AV.

4.1.1.11.5 Maximum volume and shape-of-space available for payload.

4.1.1.11.6 Any other significant parameters that may affect the integration of new/alternative payloads into the AV.

4.1.2 Standard Operating Procedures

4.1.2.1 The Contractor shall develop with the Contracting Officers Representative (COR) and LNO a site specific Standard Operating Procedures (SOP) prior to activation of the site. The SOP will serve as a living document outlining daily operations procedures, flight planning resources, frequency coordination and deconfliction procedures, personnel, responsibilities, contact information, and other vital information to assist mission accomplishment at the specific operating location.

4.1.2.2 The Contractor shall perform site surveys at ordered deployment locations to implement integration/installation.

4.1.2.3 The Contractor shall coordinate equipment needs, proposed locations, and shipping protocols to support the deployment and operations.

4.1.2.4 The Contractor shall communicate any deficiencies to the designated COR and LNO.

4.1.2.5 The Contractor shall have all Contractor Furnished Equipment (CFE) inventoried and accounted for.

4.1.2.6 The Contractor operators will develop and maintain qualification and proficiency levels IAW the site specific SOP.

4.1.2.7 The Contractor shall be responsible for system set-up and checkout at the operational site prior to commencing the deployment phase.

4.1.2.8 Pre-Deployment shall be complete upon acceptance of the final checkout conducted via the at-sea workup.

4.1.2.9 Contractor's SOP shall address the applicable elements of OPNAVINST 3710.7U, Chapter 14, that apply to daily flight operations.

4.2 Deployment

4.2.1 The Contractor shall meet or exceed a Mission Reliability Rate (MRR) of 95% as defined in the RFP Section H.

4.2.2 The Contractor shall be capable of providing UAS/ISR services 24 hours a day, 7 days per week. Operations shall be conducted IAW Contractor's SOP. Individual TOs' Section B shall specify data sensor hours required per month.

4.2.3 The Contractor shall be able to execute the routine daily flight operations with 8 hours of advance notification.

4.2.4 The Contractor shall respond to a launch request for a non-scheduled mission within 30 minutes, weather conditions permitting, when the site is operational and in an active standby status[7].

4.2.5 Mission Duration

4.2.5.1 Mission Definition – Threshold & Definition

4.2.5.1.1 The Contractor shall support mission requirements of up to 10 continuous on-station sensor data hours per mission of ISR services in daylight and/or darkness. A typical 12 hour mission includes up to 1 hour of flight time to station, 10 continuous hours of on-station sensor data, and up to 1 hour of flight time back to the recovery site. This may vary depending on the target location and operational needs. The LNO and Mission Commander will determine the point when sensor data is required. The average duty day includes the mission, refueling, LRE set-up and take-down, and pre-/post-flight maintenance. The daily flight schedule will be coordinated with the LNO.

4.2.5.1.2 It is desired that the Contractor be capable of supporting mission requirements of up to 18 continuous on-station sensor data hours per mission of ISR services in daylight and/or darkness. (Objective)

[7] Active Standby Status means the contractor is on duty and the GCS is operational and manned.

4.2.5.2 Surge Capabilities: The contractor shall be able to respond to urgent requests for surge services. Surge services may require operations beyond the typical mission, and continue for several consecutive days. Following surge flight operations the contractor shall be provided a corresponding recovery period by the LNO upon consultation with the site representative which will be reasonable to ensure deferred maintenance actions are completed to include all maintenance and log book documentation and status reporting, personnel rest, and overall safety of operations.

4.3 Post-Deployment Requirements

4.3.1 Upon completion of the ISR performance/task order, including any extensions or follow-on orders, the Contractor shall disassemble and prepare for shipment all Contractor-Owned and Contractor-Operated (COCO) systems, equipment and spares and return all Government Furnished Equipment (GFE) to the Government to include Common Access Cards for accountability.

4.3.2 Upon completion of ISR performance/task order, any Contractor-owned data-storage media shall be turned-over to the Government for deletion/destruction of all data.

4.3.3 Shipping of the Contractor's equipment from port-of-embarkation/debarkation back to the Contractor's point-of-origin will be at the Contractor’s expense.

4.4 STAFFING REQUIREMENTS

4.4.1 The Contractor shall staff each operational deployment with a team sufficient to provide the UAS/ISR Services. The number of billeting spaces shall typically be limited to 5 persons per ship. If an option for increased support is exercised, additional billeting spaces may be made available upon Government approval. The Contractor shall utilize professional and technically qualified personnel to perform the tasks outlined herein.

4.4.2 The Contractor shall provide a CONUS-based Project Manager as the single point of contact with the authority to act on behalf of the Contractor on all matters as they relate to this contract including all administrative matters.

4.4.3 The Contractor shall provide a Site Lead who will be responsible for support and management of this contract. The Site Lead shall also liaise with the COR/ LNO for fulfillment of contractual requirements. The Site Lead shall provide supervision for all employees and will be responsible for the safety and accountability of all Contractor employees.

4.4.4 The Contractor shall provide system familiarization training to Government host unit in the areas of safety, emergency procedures, flight planning and airspace de-confliction and data dissemination.

4.5 Reporting Requirements

4.5.1 The Contractor shall prepare and submit, to the designated Site LNO /COR, the following reports:

4.5.1.1 A consolidated Daily Report shall be submitted IAW (CDRL A005). This Daily Report shall include the following elements:

4.5.1.1.1 Service Hour Summary / System Status Report

4.5.1.1.2 Brief description of all incidents and mishaps

4.5.1.1.3 Personnel Report

4.5.1.1.4 Tracking of all equipment and parts shipments to and from theater.

4.5.2 The Contractor shall provide a root-cause failure analysis of any system mishap or operational incident. The compliance-time for the final Root Cause Analysis (RCA) of the mishap/incident shall be within 120-days of the incident. In the event of any formal US government investigation(s) (e.g. JAGMAN, NAVSAFECEN, etc.), the Contractor shall support the effort as required (CDRL A006).

4.5.3 The Contractor shall brief the Government via VTC/teleconference once per week with a focus on parts required for all down aircraft or equipment and the usage and status of mission critical spare parts, including tracking of all equipment and parts shipments to and from theater. VTC/teleconference may also encompass discussion of technical issues affecting UAS operations.

4.6 Transportation

4.6.1 The Contractor will transport CFE from Contractor’s facility to port-of-embarkation within CONUS. The Contractor shall make in-theater parts and sparing provisions to sustain normal operations in light of possible government transportation delays of up to 90 days. At the end of the deployment, the Contractor will transport CFE from the port-of-debarkation to the Contractor’s facility.

4.6.2 The Contractor shall be responsible for arranging transportation of Contractor personnel to/from the port-of-embarkation/debarkation for the deployment. The Contractor shall be responsible for arranging transportation of Contractor personnel from the point of debarkation to home station.

4.6.3 The Contractor is responsible for replacement of personnel and coordination of such transport to and from Area of Operations.

4.6.4 The Contractor shall be responsible for all on-site storage management and tracking of spare parts.

4.6.5 The Contractor shall ship ISR systems and equipment in accordance with MIL-STD-2073-1D, MIL-STD-129P, and PAM 70-1.

4.6.6 The Contractor shall notify the NAVAIR PMA-263 Program Office designated Assistant Program Manager Logistics (APML) of all shipping and tracking information. Prior to shipping, the Contractor shall request and obtain a shipping document number from the Government, so as to enable expedited handling of Contractor's shipments.

4.6.7 Contractor or equipment movement shall not be permitted without prior Government authorization.

4.7 Security

4.7.1 The security clearance level will be in accordance with the DD Form 254 Contract Security Classification Specification.

4.7.2 The Contractor shall safeguard classified information and classified materials, obtain and verify personnel security clearances, verify security clearances and indoctrination of visitors, control access to restricted areas, and protect Government property, automated/non-automated management systems and data.

4.7.3 The Contractor's management systems shall prevent the unauthorized disclosure of classified and sensitive unclassified information.

4.7.4 The Government shall be immediately notified if any security incident or indication of a potential unauthorized disclosure or compromise of classified or sensitive information occurs.

4.8 Category 3 Interim Flight Clearance

The Contractor shall provide all information and support necessary to obtain Category 3 IFC approval.

5.0 GOVERNMENT PROVIDED SUPPORT

The Government will provide a military liaison to assist the Contractor to facilitate air space integration, mission coordination and deconfliction.

5.1 The Government will provide all known applicable instructions, regulations, and excerpts as guidance.

5.2 The Government will assist the Contractor with acquiring personnel passes, identification cards, and vehicle permits required in the performance of this contract in accordance with the Contractor provided Personnel Rotation Schedule.

5.3 The Government will provide Contractor personnel with deployment in-processing briefings to ensure understanding and integration into the operational environment.

5.4 The Government will provide transportation within the operating area to assist in the initial setup and relocation of the operational deployments as required. The Government will provide for transportation coordination within Theater.

5.5 The Government will establish a Quality Assurance Surveillance Program; it is not a substitute for quality control by the Contractor.

5.6 The Government will supply COMSEC Electronic Key device and COMSEC security and management as necessary.

5.7 The Government will provide JP-5 fuel, for shipboard operations.

5.8 The Government may provide UAS Payloads to include (Communication Relay, and/or Signals Intelligence).

5.9 The Government will supply KEYMAT for SAASM GPS as necessary.

5.10 The Government will provide the Cross Domain Solution hardware.

5.11 The Government will provide tactical and aeronautical maps/charts and DTED data as required /available prior to deployment.

5.12 The Government may provide technical support on any issues affecting UAS operations.

APPENDICES 1-4

This information is located in PBWS Version 3.0 (Restricted Access) and can be obtained with permission via NAVAIR Contracting WEB Page.

APPENDIX 5 NAVAIRSYSCOM Letter 5100/Ser AIR-4.0/026 of 14FEB2011, Incorporation of Revised Cost Threshold for Catastrophic Severity into System Safety Risk Assessments.

DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND
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47123 BUSE ROAD, BLDG 2272
PATUXENT RIVER, MARYLAND 20670-1547

5100 IN REPLY REFER TO
Ser AIR-4.0/026
14 Feb 2011

From: Assistant Commander for Research and Engineering, Naval Air Systems Command, 22347 Cedar Point Road Unit 6, Patuxent River, MD 20670-1161

Subj: INCORPORATION OF REVISED COST THRESHOLD FOR CATASTROPHIC SEVERITY INTO SYSTEM SAFETY RISK ASSESSMENTS

Ref (a) NAVAIRINST 5100.3C, Naval Aviation System Safety Program
(b) DODINST 5000.02, Operation of the Defense Acquisition System
(c) DODINST 6055.07, Accident Investigation, Reporting, and Record Keeping
(d) USD AT&L Wash DC memo of 5 Oct 09
(e) NAVAIRINST 5000.21B, Naval SYSCOM Risk Management Policy

Encl: (1) NAVAIR System Safety Risk Assessment Matrix

1. This letter changes the cost threshold for entering the catastrophic hazard severity level of a System Safety Risk Assessment (SSRA) from 2 million dollars to 10 million dollars. All other criteria and dollar values remain the same. This change will be incorporated into reference (a) as part of the ongoing major revision of the instruction.

2. Reference (b) directs acceptance of risk by decision makers at appropriate levels based upon technically assessed risk, while leaving the determination of thresholds to the individual services. The SSRA process is used to conduct the technical assessment and assign severity and frequency of occurrence values. Historically, the Naval Air Systems Command (NAVAIR) has used the Class A/B/C mishap definitions in reference (c) to establish thresholds for corresponding severity levels, to include equating catastrophic severity hazards to Class A damage. However, purely due to increasing complexity and material costs, the 2 million dollar threshold is likely to be crossed more frequently in the future, thus driving Risk Assessment Code (RAC) 4 risks (Severity: Catastrophic, Frequency: $1<x\leq10$ per 100,000 flight hours). Financial risk of this magnitude is not on par with loss of life or manned aircraft.

3. Ongoing discussions with the Office of the Secretary of Defense and the Services regarding anticipated cost threshold changes to MIL-STD-882 lead me to set a new cost threshold for catastrophic severity risks at 10 million dollars. This will have the effect of increasing the cost-value at which the risk acceptance can be made by a Program Executive Officer. In practice, this will affect only the risk acceptance level between RAC 4 and RAC 6 risks. Enclosure (1) reflects this newly adjusted dollar threshold and mishap classification changes directed by reference (d). This matrix shall be incorporated in an upcoming revision to reference (e).

Subj: INCORPORATION OF REVISED COST THRESHOLD FOR CATASTROPHIC SEVERITY INTO SYSTEM SAFETY RISK ASSESSMENTS

4. This change is directed to NAVAIR System Safety Risk Assessments starting immediately. Programs with cost thresholds less stringent than the new threshold must obtain formal concurrence to retain their current thresholds. Signed SSRAs will not be reassessed based solely upon this new policy. This guidance will remain in effect until incorporated by change or revision into reference (a).

5. The point of contact for this is Mr. James Zidzik (AIR-4.1.6 System Safety Division) at commercial (301) 342-0175, email: james.zidzik@navy.mil.

R. L. MAHR
Rear Admiral, United States Navy

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2

NAVAIR System Safety Risk Assessment Matrix

HAZARD CATEGORIZATION		SEVERITY			
		CATASTROPHIC (I)	CRITICAL (II)	MARGINAL (III)	NEGLIGIBLE (IV)
FREQUENCY	FREQUENT (A) > 100/100K flt hrs	1	3	7	13
	PROBABLE (B) > 10 to ≤ 100/100K flt	2	5	9	16
	OCCASIONAL (C) > 1.0 to ≤ 10/100K flt	4	6	11	18
	REMOTE (D) > 0.1 to ≤ 1.0/100K flt	8	10	14	19
	IMPROBABLE (E) ≤ 0.1/100K flt hrs	12	15	17	20

HIGH	Risk Acceptance: ASN (RDA) User Concurrence (Acquisition): OPNAV Nx User Concurrence (In Service): TYCOM Technical Approval: AIR-00
MEDIUM	Risk Acceptance: PMA Technical Approval: AIR-4.1
SERIOUS	Risk Acceptance: PEO/AIR-00 User Concurrence (Acquisition): OPNAV Nxy User Concurrence (In Service): TYCOM Technical Approval: AIR-4.0
LOW	Risk Acceptance: PMA Technical Approval: AIR-4.1

Severity is the worst credible consequence of a hazard in terms of degree of injury or property damage as defined below:

Catastrophic - Class A* (Equipment/Environment Damage ≥ $10M / DoD aircraft destroyed / fatality / permanent total disability)
Critical - Class B ($500K ≤ Equipment/Environment Damage < $10M / permanent partial disability / hospitalization of 3 or more personnel)
Marginal - Class C ($50K ≤ Equipment/Environment Damage < $500K / injury results in 1 or more lost workdays)
Negligible - Less than Class C (Equipment/Environment Damage < $50K / Injury results with no lost workdays)

* Dollar Threshold for Catastrophic Severity is Tailored for NAVAIR Process

Probability *of occurrence for discrete events may replace* ***Frequency*** *based on the chart below*

Frequent	*Probable*	*Occasional*	*Remote*	*Improbable*
$P > 10^{-3}$	$10^{-3} \geq P > 10^{-4}$	$10^{-4} \geq P > 10^{-5}$	$10^{-5} \geq P > 10^{-6}$	$10^{-6} \geq P$

Enclosure 1

APPENDIX 6 References

CJCSI 6510.01 - Chairman Of The Joint Chiefs Of Staff Instruction "Information Assurance (IA) And Computer Network Defense (CND)"

DD 1494 - DoD Form "Application For Equipment Frequency Allocation"

DD 254 - DoD Form "Contract Security Classification Specification"

DoD Directive 8500.1 - DoD Directive "Information Assurance"

DoD INST 8500.2 - DoD Instruction "Information Assurance (IA) Implementation"

DoDD 5200.39 - DoD Directive "Security, Intelligence, and Counterintelligence Support to Acquisition Program Protection"

DoDI 3020.41 - DoD Instruction "Critical Program Information (CPI) Protection Within the Department of Defense"

DoDI 5000.2 - DoD Instruction "Operation of the Defense Acquisition System"

DoDI 8510.01 - DoD Instruction "Department of Defense Information Assurance Certification and Accreditation Process (DIACAP) Instruction"

FED-STD-313D – Federal Standard "Material Safety Data, Transportation Data, And Disposal Data For Hazardous Materials Furnished To Government Activities"

FIPS-197 - Federal Information Processing Standard "Advanced. Encryption Standard (AES)"

MIL-DTL-5624U – Military Detail Specification "Turbine Fuel, Aviation, Grades JP-4 and JP-5"

MIL-S-901D - Military Specification "Shock Tests. H.I. (High-Impact) Shipboard Machinery, Equipment, And Systems, Requirements For"

MIL-STD-129P - Military Standard "Military Marking for Shipment and Storage"

MIL-STD-1472F - Military Standard "Human Engineering, Design Criteria For Military Systems, Equipment, And Facilities"

MIL-STD-1474D - Military Standard "DoD Design Criteria Standard Noise Limits"

MIL-STD-2073-1D - Military Standard "DoD Standard Practice for Military Packaging"

MIL-STD-209K - Military Standard "DoD Interface Standard for Lifting and Tie- down Provisions"
MIL-STD-464A - Military Standard "DoD Interface Standard Electromagnetic Environmental Effects Requirements For Systems"

MIL-STD-810 - Military Standard "DoD Test Method Standard for Environmental Engineering Considerations and Laboratory Tests"

MIL-STD-882 - Military Standard "DoD Standard Practice For System Safety"

NAVAIRINST 5000.21B - Naval SYSCOM Risk Management Policy

NAVAIRSYSCOM Letter 5100/Ser AIR-4.0/026 of 14FEB2011, Incorporation of Revised Cost Threshold for Catastrophic Severity into System Safety Risk Assessments.

NAVAIRINST 13034.1D – NAVAIR Instruct "Flight Clearance Policy for Air Vehicles and Aircraft Systems"

NAVSEA Prohibited and Controlled Chemical List (PCCL) Ltr 5090/ Ser 04R/138 of 26 Nov 2008

NAVSEAINST 9072.1A - NAVSEA Instruct "Shipboard Shock & Vibration Environmental Monitoring and Recording"

OPNAVINST 5100.23G – Navy Safety and Occupational Health (SOH) Program Manual

OPNAVINST 5100.19E –Navy Safety and Occupational Health (SOH) for Forces Afloat

PAM 70-1 – Army Pamphlet "Transportability For Better Deployability"