

Unmanned Surface Vehicle (USV) Design Reference Missions (DRMs) and Key Performance Parameters (KPPs) Assessment Criteria

1. Purpose

SOFWERX, in coordination with U.S. Special Operations Command (USSOCOM) Program Executive Office–Maritime (PEO-M), seeks commercially mature Unmanned Surface Vehicle (USV) platforms aligned to one or both of two Design Reference Missions (DRMs):

- Escort
- Interceptor

The Government anticipates selecting up to three platforms for the Escort DRM and up to three platforms for the Interceptor DRM, for a total of up to six platforms for further assessment.

Data collected during proposal review and assessment execution will inform development of the USV Mission-Aligned Reference Architecture (MARA).

2. Operational Context

The Government seeks expeditionary USV platforms suitable for near-term assessment in representative maritime conditions.

Proposed platforms should be reliable, supportable, and practical to transport, launch, operate, recover where applicable, maintain, and re-task. Vendors should identify platform-specific personnel, support equipment, facilities, consumables, and Government-furnished support required for assessment participation.

Industry responses should address DRM alignment, applicable KPP performance, platform maturity, payload integration, and readiness to participate in an assessment event.

3. Design Reference Missions

3.1 Escort

The Escort DRM seeks a USV able to accompany and support a manned vessel during maritime transit and maneuver, maintain relative position, and contribute to the awareness, tracking, response, and defense of the supported vessel.

The USV should be configurable for **US Navy RIB cradle and davit launch/recovery** and modular to accept a wide variety of Government-furnished payloads.

Relevant Escort considerations include supported-vessel operations, maritime awareness, tracking, payload integration, communications, safe maneuver, and practical operation by a small crew.

3.2 Interceptor

The Interceptor DRM seeks a USV capable of rapid launch and high-speed transit toward an objective area.

The USV should be modular to accept a wide variety of Government-furnished payloads. **Compatibility with the USSOCOM Universal Launch and Recovery System (ULRS) is desired but not required.**

Relevant Interceptor considerations include rapid launch, speed, range, payload integration, command and control, navigation, reliability, and practical pre-launch support.

4. Enhancing Electronic Support/Electronic Attack Considerations

The Government is interested in Electronic Support/Electronic Attack (ES/EA)-enabling platform characteristics for future mission applications.

ES/EA considerations are enhancing only. They are not a separate DRM, are not primary Escort or Interceptor selection criteria, and will not offset failure to meet applicable Escort or Interceptor threshold requirements.

Vendors may identify demonstrated or readily integrable ES/EA-enabling features, limitations, required modifications, and tradeoffs. Relevant information may include available payload capacity, electrical power, thermal capacity, topside space, communications, data interfaces, and electromagnetic compatibility.

Information provided on ES/EA characteristics will inform MARA development and future assessment planning. It does not constitute a Government commitment to furnish, integrate, procure, or employ a specific ES/EA payload.

5. Integrated KPP Matrix

KPP/DRM		Interceptor		Escort	
		Threshold	Objective	Threshold	Objective
Range (nmi) / Endurance (hr)		200 / 10	600 / 30	400 / 20	800 / 27
Cruise Speed (kn)		20	O = T	20	30
Sprint Speed (kn) (1NM dist)		30	45	30	45
Payload (lb)		50	500	2 x Altius 600 or comparable	4 x Altius 700 or comparable
Other Considerations	Launch and Recovery	Shore/ Crane	CCM ULRS	US Navy RIB cradle and davit launch/recovery, Shore/ Crane	O=T
	Tow Speed (being towed) (kn)	20	35	20	40
	Towing Capacity (lbs)	Self	70,000 CCM	Self	Self
	Survive Sea State	6	7	6	8

	Operational Sea State	5	6	5	6
	Reliability (MTBMF hr)	200	250	140	300
	Life Cycle (hr)	1,000	3,000	1,500	6,000
	Hull Type	-	-	-	-
	Size Limitation	39ft	39ft	-	-
	Other Payloads	-	FPV + OWA UAS	-	FPV + OWA UAS
General System Considerations					
Area		Threshold		Objective	
Sense	360 EO/IR	Single color 360 deg awareness		Hyperspectral 360 awareness	
	PTZ EO/IR	-Native 720p HD or greater sensor with continuous optical zoom. IR: Mid-grade commercial/civilian thermal core (e.g., LWIR 640x512 class) with 2x or greater optical or digital zoom. Stabilization: - Dedicated 2-axis gyro-stabilized gimbal with active marine environmental sealing (IP67 / salt-fog rated). - Video Encoding: Onboard hardware H.264/H.265 video compression with dynamic adaptive bitrate		-Military-grade 4K UHD sensor with high-magnification optical zoom (30x or greater). IR: High-definition military-grade thermal sensor (native 1024x1024 resolution or greater) with multi-step continuous optical zoom. Stabilization: 3+ axis gyro-stabilized gimbal with automated target tracking (ATR) and line-of-sight stabilization in Sea	

		streaming for transmission over low speed BLOS C2 data links.	State 4. Integrated Laser Rangefinder (LRF) / target coordinate generation displaying in the C2 GUI. System supports automatic cueing, as designated by onboard RADAR system ("slew to cue").
	RADAR	N/A	Commercial solid-state marine RADAR (e.g., solid-state Doppler/pulse compression dome or open-array, sized for under 40 ft SWaP envelope). Automated RADAR target tracking (MARPA/ARPA) with direct hardware/software data feed into onboard autonomy computer for dynamic COLREGs and collision avoidance. RADAR data is natively streamed to the operator C2 GUI. RADAR supports cued EO/IR sensor tracking ("slew to cue" capability).
	Positioning	L1/L2 GPS, INS to mitigate link loss for less than 1 hour	L1/L2/L5, M-Code compliant GPS, INS to mitigate link loss for less than 4 hours

Communicate	Communication Management	Pre-programmed communications plan with limited hand-over capability (i.e. fixed PACE Plan)	Dynamic communication routing and monitoring to maintain mission C2 (Dynamic PACE Plan)
	LOS	1 LOS communications link	3 LOS communications links
	BLOS	1 BLOS communications link	3 BLOS communications links
Act	Manual/RC Control	Full system control from GCS	Full system control from handheld
	Waypoint Navigation	Crosstrack error not to exceed 25m	Crosstrack error not to exceed 5m
	Stationkeeping	Can maintain hold a position to 50m in operational sea states	Can maintain hold a position to 10m in operational sea states
	Obstacle Detection	Utilizes onboard sensors to detect and track surface obstacles	Utilizes onboard sensors to detect, classify, and track surface obstacles
	Obstacle Avoidance	N/A	Autonomously avoids and navigates around obstacles
	COLREG Compliance	N/A	Meet minimum COLREG compliance for safe transit in commercial waterways
	Self Preservation	During normal operations (non-intercept operations), systems controls will not allow for maneuvers that	T = O

		would result in catastrophic damage or stability issues to the platform	
Security		Compliant with Navy ATO baseline standard	T = O Built – in anti-tamper and zeroize
Handling equipment	Lifting	Lifting points/eyes rated for soft sling crane operations.	Central single-point crane lift eye; integrated remote quick-release towing pintle mechanism.
	Tow point	- Bow tow point rated - All towing points are capable of accepting a 1.25" shackle or using a short soft-sling that can attach to a 1.25" shackle. - Vendor must supply short towing sling, if required.	T = O
EA/ES Enhancing Considerations (<i>NOT a DRM</i>)			
		Threshold	Objective
	Payload	See SWaP	See SWaP
	SWaP	12 U, 200lb, 1.2kW, 0.8kW (cooling)	24 U, 800lb, 2.4kW, 1.6kW (cooling)

How to Read the KPP Matrix

The matrix identifies threshold and objective performance for Escort and Interceptor configurations.

- **Threshold:** Minimum performance sought for the applicable DRM configuration.

- **Objective:** Higher performance that may improve mission suitability and assessment value.
- **ES/EA Enhancing:** Characteristics of interest for future integration and MARA development. ES/EA entries are not a separate DRM and are not primary down-select criteria.
- **Not Applicable:** The KPP does not apply to that configuration.

Vendors should identify the platform configuration proposed for assessment and provide the basis for all claimed performance values. This includes the relevant payload condition, fuel or energy condition, operating profile, and test or demonstration data.

6. Vendor Response Requirements

Vendors should provide a concise response addressing the following:

1. **DRM Alignment:** Identify whether the proposed platform is aligned to Escort, Interceptor, or both.
2. **Platform Configuration:** Identify whether the proposal uses a common baseline platform, modular reconfiguration, mission-specific variant, or combination of these approaches.
3. **KPP Compliance:** Complete the Government-provided KPP compliance matrix and identify threshold and objective performance for the applicable configuration.
4. **Payload Integration:** Describe the approach to Government-furnished payload integration, including applicable physical, electrical, data, cooling, topside, communications, and support interfaces.

5. DRM-Specific Considerations

- **Escort:** Describe supported-vessel operations, relative-position keeping, DDG RHIB davit launch and recovery, and payload integration assumptions.
- **Interceptor:** Describe rapid-launch, high-speed-transit, payload-integration, pre-launch-support, and ULRS-compatibility assumptions.

6. **ES/EA Enhancing Characteristics:** Identify relevant ES/EA integration potential, limitations, required modifications, and tradeoffs. Clearly distinguish between demonstrated capability, capability available with modification, and future concept.
7. **Maturity and Supportability:** Describe platform maturity, production readiness, delivery lead time, personnel requirements, training, spare parts, maintenance, support equipment, and other material assumptions or constraints