

Long Range Unmanned Surface Vessel (LRUSV)



In FY23, the Long Range Unmanned Surface Vessel (LRUSV) Program conducted an early operational assessment (EOA) of the LRUSV prototype. No preliminary assessment of performance attributes can be made from the EOA as analysis remains in progress. DOT&E expects to deliver an EOA report in 2QFY24.

SYSTEM DESCRIPTION

The LRUSV prototype is an unmanned platform capable of traveling semi-autonomously to and from a designated patrol area where it can then loiter indefinitely (dependent on fuel state) and

launch loitering munitions (LMs) and other payloads to strike maritime targets. The LRUSV rapid prototyping program consisted of the following five major sub-systems:

- Unmanned Surface Vessel (USV): powered vessel that can maneuver autonomously, or as directed by a pilot,

with capability to launch LMs or small, unmanned surface vessels (sUSVs).

- LM System: organic precision fires-mounted (OPF-M) loitering munition system with a munition control interface to launch an all-up round against designated maritime targets.

- sUSV: a small USV that can be carried on the rear deck of the LRUSV to provide extended reach to deliver kinetic and non-kinetic effects.
- Command, Control, Communications, and Computers (C4) System: integrates the functions of the other required subsystems, enabling USV autonomy and deployment of LMs or sUSVs.
- Contact Vessel (CV): a manned version of the USV that provides sustainment.

MISSION

The Marine Corps and joint force commanders will employ the LRUSV to enhance maritime reconnaissance in support of sea denial and sea control operations. LRUSV supports implementation of the Littoral Operations in a Contested Environment concept, the Expeditionary Advanced Base Operations concept, and emerging doctrine defined by the Marine Corp's Force Design 2030.

PROGRAM

The LRUSV was established as a Middle Tier of Acquisition rapid prototyping program, designated by the Marine Corps in May 2021. The Marine Corps approved the LRUSV Master Test Strategy in November 2021 prior to the program being put on DOT&E oversight. In July 2023, the Marine Corps directed a capability requirement change to refine direction for the next phase of acquisition of the LRUSV.

The Marine Corps intends future development of the LRUSV to focus on multi-domain sensor collections in support of the Maritime Reconnaissance Company. In September 2023, the Marine Corps directed the termination of the LRUSV Middle Tier of Acquisition program. The Marine Corps intends to transition the LRUSV to the major capability acquisition pathway at Milestone B in 2QFY27. The LRUSV program was placed on DOT&E oversight in February 2023.

» MAJOR CONTRACTORS

- Metal Shark – Jeanerette, Louisiana (LRUSV)
- HII (formerly Huntington Ingalls Industries) – Newport News, Virginia (autonomy systems)

TEST ADEQUACY

Between April and May 2023, the Marine Corps conducted an EOA with five prototype LRUSVs in accordance with a Marine Corps Operational Test and Evaluation Activity-approved test plan. DOT&E reviewed the test plan, subsequently agreed with it, and observed the test events. Testing was sufficient for operational demonstration of capability of the LRUSV prototype to direct itself to a designated patrol area and fire munitions against simulated maritime targets. The EOA also demonstrated LRUSV capability to autonomously maneuver safely in various navigational scenarios when

encountering another surface vessel during transit operations.

The LRUSV Master Test Strategy did not require a cyber survivability evaluation of the LRUSV prototype.

PERFORMANCE

» EFFECTIVENESS AND SUITABILITY

DOT&E's analysis is ongoing to determine the potential for LRUSV operational effectiveness and suitability. DOT&E expects to deliver an EOA report in 2QFY24.

» SURVIVABILITY

No data were collected to assess LRUSV cyber survivability.

RECOMMENDATIONS

The Marine Corps should:

1. Conduct cyber survivability testing of the LRUSV prototype prior to its use in operations and to support development of the LRUSV and assure its mission survivability.
2. Start development of a Test and Evaluation Master Plan to support entry into Milestone B.