

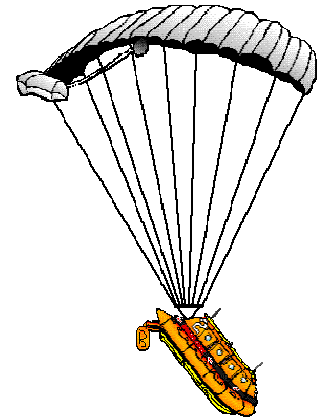


## CEROS Project Description

**Project:** *Marine Air-Deployed Rescue Vehicle (MARV)*<sup>1</sup>

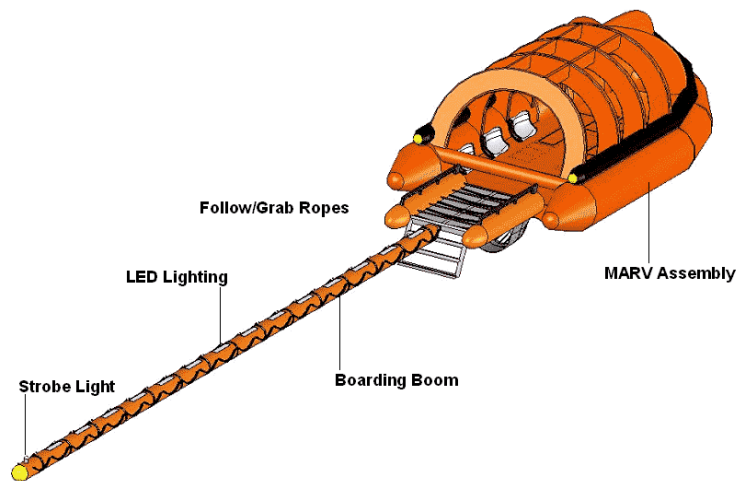
**Contractor:** Aero Union Marine Systems Corporation, Honolulu HI

**Summary:** It is generally desirable to seek and extract downed pilots, persons overboard, combat evaders, or other persons in peril in the marine environment without introducing additional rescue personnel into hostile circumstances. This contract will design, fabricate, and demonstrate an autonomous, air-deployable, all-weather, self-righting, self-propelled rescue vessel that incorporates two-way audio, video, and data telemetry capabilities. The maximum use of commercial off-the-shelf components is expected to produce an affordable solution to marine search and rescue (SAR) operations.



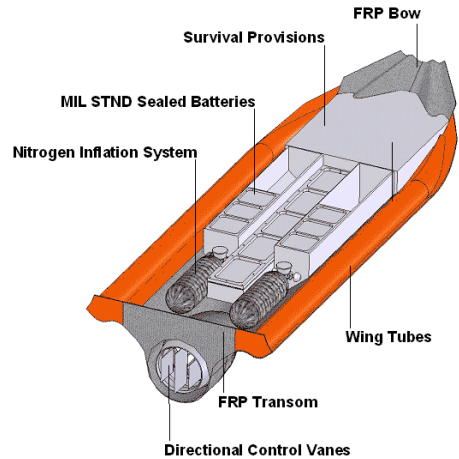
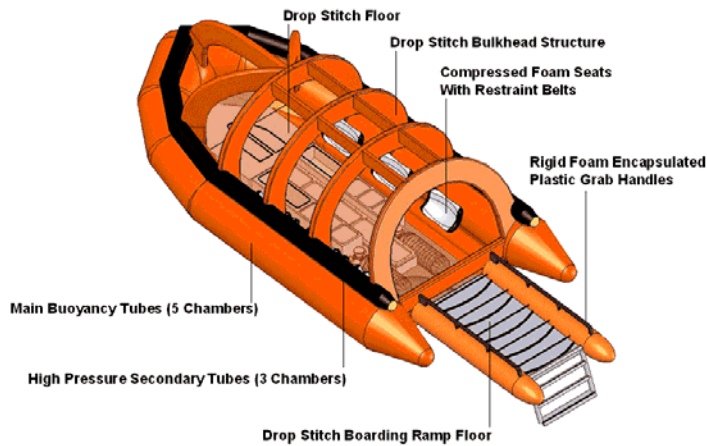
**Description:** Marine rescue operations have historically been hampered by extreme sea states, adverse weather conditions, combat situations, and long transit distances for fixed and rotary wing aircraft. In addition, the use of SAR technicians (flight crews and para-rescue jumpers) puts additional rescue personnel into inherently life-threatening situations.

The rescue vessel to be developed in this effort is based on a commercially available inflatable boat with the addition of a rigid hull that will contain power systems, electronics, gas cylinders, medical supplies, desalination system, and provisions. An inflatable upper structure will support a weather shroud to protect survivors from the elements.



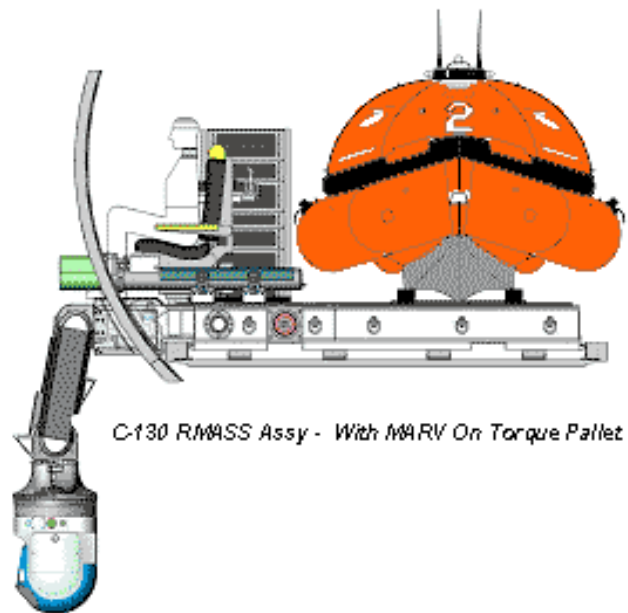
Propulsion will be provided by an electric thruster running off batteries replenished by photo-voltaic arrays located on top of the weather shroud. The MARV can be controlled by onboard occupants, or remotely from a control station in an air or water craft, or remotely from a shore station (potentially thousands of miles away), or it can automatically follow a pre-programmed course based on GPS waypoints.

<sup>1</sup> CEROS FY04 contract 51944.



The MARV will be designed to have line-of-sight communications provided by bi-directional VHF radio, and over-the-horizon communications provided by satellite telemetry; it will also be capable of transmitting real-time or near real-time streaming video images from one or more internal and/or external onboard cameras.

Current development is focused on a MARV version that is air-deployable and controllable from C-130 aircraft. There are other possible military and commercial use scenarios, which include pod-containment and deployment from other aircraft, and use as a rescue craft on military and commercial vessels and offshore platforms. Deployment from large vessels could include automatic programming of GPS waypoints to backtrack the vessel's course for recovery of personnel lost overboard.



This contract was performed under the sponsorship of the Defense Advanced Research Projects Agency. The content of this document does not necessarily reflect the position of the Federal Government, and no official endorsement should be inferred.