OBJECTIVE: Develop a powered paraglider capable of launching reconnaissance forces from naval shipping and transiting to shore.

DESCRIPTION: Current powered paragliders (PPGs) are generally used as recreational vehicles in the United States and Europe with most of the manufacturing taking place in Europe. Current PPGs are generally either foot or wheel launched. PPGs in the United States are regulated by the Federal Aviation Administration (FAA) under Federal Aviation Regulation (FAR) Part 103: Ultralight Vehicles. FAR Part 103 limits PPGs to operating during hours of daylight, weigh less than 254 pounds empty, have a fuel capacity not exceeding 5 U.S. gallons, are not capable of more than 55 knots of calibrated airspeed at full power in level flight, and have a power off stall speed which does not exceed 24 knots calibrated airspeed.

A PPG’s major components consist of a fabric wing, harness, cage, propeller, and motor. Current commercial PPGs could be improved in various areas to meet the Marine Corps requirements. Technologies from outside the commercial PPG environment could be merged to increase performance and/or automation. Developing a PPG capable of transporting a person and 80 lbs. of equipment could replace current non-powered parachutes. The PPG must include reliability and safety systems for personnel use as well as a methodology for ship launches. Proposed approaches can utilize parameters outside FAA FAR part 103. Proposed PPGs should meet the following performance specifications:

Launch method: Threshold (T) Foot launched, Objective (O) Air launched
Flight ceiling: (T) 5,000 feet Mean Sea Level (MSL), Objective (O) 10,000 ft. MSL
Weight capacity not including PPG: (T) 105-300 lbs., (O) 105-330 lbs.
Range: (T) 165 nautical miles (nm), (O) 220 nm
Propulsion: (T) internal combustion engine, (O) Electric

PHASE I: Develop concepts for a PPG meeting the requirements described above. Demonstrate the feasibility of the concepts in meeting Marine Corps needs and establish the concepts for development into a useful product for the Marine Corps. Establish feasibility through material testing and analytical modeling, as appropriate. Provide a Phase II development plan with performance goals and key technical milestones and that addresses technical risk reduction.

PHASE II: Develop a prototype for evaluation. Evaluate the prototype to determine its capability in meeting the performance goals defined in the Phase II development plan and the Marine Corps requirements for the PPG. Demonstrate system performance through prototype evaluation and modeling or analytical methods over the required range of parameters including numerous deployment cycles. Use evaluation results to refine the prototype into an initial design that will meet Marine Corps requirements. Prepare a Phase III development plan to transition the technology to Marine Corps use.

PHASE III DUAL-USE APPLICATIONS: Support the Marine Corps in transitioning the technology for Marine Corps use. Develop a PPG for evaluation to determine its effectiveness in an operationally relevant environment. Support the Marine Corps for test and validation to certify and qualify the system for Marine Corps use.

PPGs with increased capabilities outside FAA FAR part 103 could be used by other agencies for a less expensive alternative to drones, helicopters, and other aircraft. PPGs with increased capabilities may also have use on the recreational market.

REFERENCES:
2. Nagy, Andras and Rohacs, Jozsef, "UNMANNED MEASUREMENT PLATFORM FOR PARAGLIDERS." 28th International Congress of the


KEYWORDS: Paraglider; Electric; Motor; Ultralight Vehicle; Powered; Engine