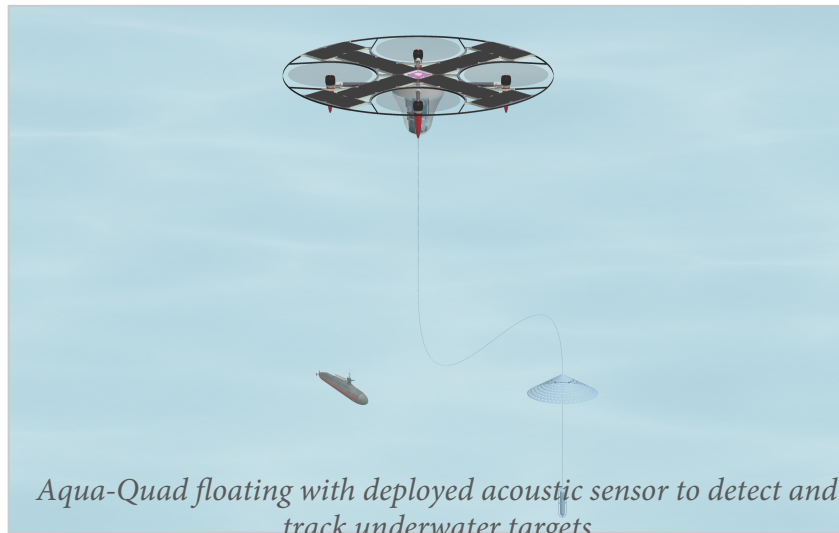
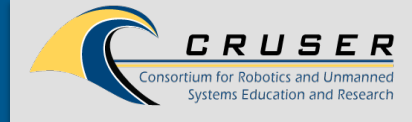


Environmental Hardening and At-Sea Testing of the Aqua-Quad Hybrid Platform



- In this phase both hardware and software modifications are planned:
 - Environmental hardening of the prototype for the marine environment, to include reliable lightweight sealing techniques and hydrophobic materials.
 - Modify mass/buoyancy distribution to ensure self-righting capability.
 - Design/fabricate a new power-distribution/sensing circuit.
 - Develop software to process real-time power flow/storage data to be used for mission planning.
 - Perform long-term nonflying tests of the power system to evaluate component and system lifespan.
 - Perform outdoor flight testing to evaluate hover/cruise performance.
 - Conduct initial autonomous flights from water.

- An optimized Aqua-Quad design with sufficient environmental hardened to survive for extended periods at sea.
- Long-term electrical system charge/discharge data under natural lighting and environmental conditions.
- Experimental data for system degradation under long-term exposure to sea water.
- Flight data including hover and cruise performance and initial flights from water.

The original objective was to develop a proof-of-concept fleet of hybrid, ultra-long endurance, air/sea/surface vehicles with the particular goal of underwater acoustic sensing in support of USW. This FY there are several linked proposals addressing many of the outstanding technology areas. Key objectives in this proposal include:

- Proving reliability in the marine environment.
- Optimizing reliability in various sea-states.
- Improving system efficiency to increase endurance and/or payload capacity.
- Developing algorithms to assess system health and optimize unattended operations.



FY19 Call for Proposals

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