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Transforming Warfare with Unamanned Aerial Vehicles

Lab's Spy Ships Would Operate in No-Man's-Land

by Paulette Campbell

APL has embarked on a demonstration project to build a disposable surveillance aircraft that would operate in near space, the "no-man's-land" above 65,000 feet but below outer space orbit. If successfully developed, the airship could play a very important role in surveillance over trouble spots.

"Near space is an area that's long been neglected," said **Bob Behler**, Precision Engagement's business area executive and the project lead. "We think that a platform in that area, a lighter-than-air vehicle that stays in place for about two weeks to 30 days, could give military leaders round-the-clock coverage of select areas."

Except for very few unmanned reconnaissance vehicles, Behler says, existing aircraft can provide persistent surveillance. "Satellites orbit, but they don't stay put," he says. "So we want something that can stay right over the target for at least two weeks. For instance, if we think there are bad guys driving around in the desert, holed up in a house, we want to be able to stand there and stare at them, so if they come out of that building we *know* they came out of that building."

The HARVe

Armed with an independent research and development grant, Behler and his team are building a prototype of the High Altitude Reconnaissance Vehicle (HARVe), an inexpensive vehicle costing less than $100,000 apiece and capable of carrying a 50-to 100-pound sensor.

The HARVe would be ejected from either a cruise missile or possibly a reusable rocket, Behler says. A second "booster" would propel the vehicle to about 300,000 feet above sea level, and then the ship would inflate and descend to hover over a target area at about 100,000 feet.

Such aircraft could carry out radar and imaging missions, protect and track friendly forces, review battle damage and carry communications nodes. After two weeks to 30 days, the vehicle would either disintegrate or be destroyed.

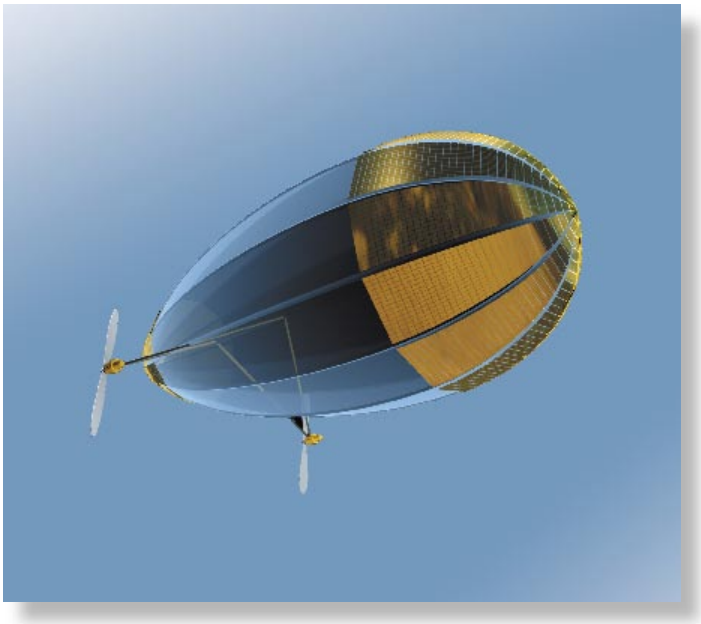
Behler says the sensors will drive the design of the vehicle. And as the project enters its third year in 2006 his team will explore what sensors will be onboard.

"We are facing many technical challenges," he says. For instance: How do you build a vehicle capable of collapsing into a cruise missile shell and deploying with its sensors intact? How do you generate power? What kinds of materials do you need? What kinds of sensors should be carried? "But we have not found any of these technical challenges to be showstoppers," he says.

Industry Interest

The technology could greatly expand the military's ability to seamlessly survey large areas of land, Behler says. Both Air Force Space Command and Lockheed Martin are working on similar projects, but Behler says he's not competing with industry.

"I wouldn't build 1,000 of these," he says. "I just want to build a prototype to prove the concept. And if it's worthy, then a sponsor will say, 'I want 1,000 of those,' and we will transition the technology to industry and help industry build it." ◆



Artist's concept of the HARVe airship.

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