Silver Fox . . . a view from above

As the U.S. began preparing its forces for Operation Iraqi Freedom, the Department of the Navy called on the Office of Naval Research (ONR) to help find immediately deployable solutions for some Navy and Marine Corps needs. ONR's Tech Solutions office, which finds quick technology solutions for the Navy and Marine Corps, identified a small unmanned aerial vehicle (UAV) that could give Marines on the battlefield up-to-date intelligence about what lies ahead of their advance. The Silver Fox UAV was originally developed to give the Navy a bird's eye view during maneuvers, to assist in avoiding migrating whales. Tucson-based Advanced Ceramics Research, in collaboration with multiple research universities, used funding from several Small Business Technology Transfer (STTR) contracts to develop the low-cost AUV. With its new mission of supporting Marines on the ground, Silver Fox comes ready for the hunt.

Photo of Silver Fox

Built as a small tactical UAV, Silver Fox uses off-the-shelf avionics and can fly autonomously using differential Global Positioning System (GPS). Weighing only 22 pounds, it can be launched by hand or catapult from various platforms. Once airborne, Silver Fox uses an infra-red and high-resolution color zoom camera to relay reconnaissance information instantaneously to a remote laptop computer. Powered by a 0.91 cubic inch engine, this fixed-winged aircraft can reach speeds close to 65 miles per hour and operate at an altitude of 1,000 feet with a range of up to 150 miles. It has a flight endurance of 10 hours, a payload capacity of 4 pounds for small state-of-the-art detection systems, and uses combat aircraft avoidance protocols. Silver Fox's 5-foot fuselage, detachable wings, and tail fins fit into a super-sized golf bag making storage and transportation simple and efficient. Unlike other UAV systems, which require a skilled radio-control operator or pilot, Silver Fox is easy to fly and allows the operator to program routes into a laptop computer.

Development on the Silver Fox continues, showcasing ONR's ability to rapidly develop, enhance, and deliver products for immediate integration into the Fleet/Force. Advancements to the flight control software have been developed, successfully tested, and are being implemented. These upgrades will allow the Silver Fox to fly autonomously, in line with and forward of a Humvee or other military ground vehicle equipped with a GPS ground control station, to provide convoy reconnaissance. The ability to control several Silver Fox systems at the same time from a single GPS ground control station is also being implemented. The UAV will soon use diesel engine fuel (JP-8), rather than its current gasoline. Flight endurance is expected to increase to 20 or more hours. Additional upgrades to Silver Fox's surveillance and intelligence systems are also being developed. These upgrades will include high quality camcorders with Zeiss lenses and up to 120x zoom, gimbaled cameras, chemical and biological sensors, navigation lights, and range finders. The camera controller will allow the operator to remotely turn the camera on and off, record and transmit live video, zoom in and out, and take high resolution pictures of up to 4 megabytes. The cameras will also feature a fully-autonomous mode and can be pre-programmed to begin recording at a specified time. The advantage of this function is that it will enable Silver Fox to fly stealthy missions, meaning no radio emissions, hundreds of miles away from the operator.

Silver Fox Specifications

Dimensions:
Fuselage: 5 ft.
Wingspan: 7 ft.
Weight: 22 lbs.

Performance:
Max Speed: 65 mph
Max Altitude: 1000 ft.
Max Range: 150 miles
Flight Endurance: 10 hrs

Engine:
Displacement: 0.91 Cubic Inches
Fuel: Regular gasoline