Northern Flights

Alaska suggested as ideal location to test UAVs' entry into National Airspace System

JOHN M. DOYLE and JEFFERSON MORRIS/WASHINGTON

Congress should increase the National Oceanic and Atmospheric Administration's (NOAA) budget for unmanned aircraft and create a testbed in Alaska for integrating them into the national air space, argues the American Institute for Aeronautics and Astronautics (AIAA).

In a white paper prepared for a Senate hearing this week on unmanned aircraft operations in Alaska and Hawaii, AIAA urges Congress to appropriate $90 million per year for NOAA to buy unmanned aerial system (UAS) services starting in Fiscal 2007.

Alaska's remoteness, its many military bases and airfields and proximity to certain high-value operating areas make it an "ideal location" to fly unmanned aircraft, according to the AIAA.

The group says unmanned aircraft stationed in Alaska could perform several functions for NOAA including: measure the melting of the Arctic ice cap from high and low altitudes to improve climate change modeling; monitor hurricanes and other natural disasters like forest fires and floods; keep watch over Pacific Coast fisheries and fly homeland security missions over energy pipelines.

The AIAA believes larger UAVs such as the Predator B and Global Hawk could provide long-range storm observations, improving forecasters' ability to track storms 4-5 days before landfall.

AN ALASKAN UAS operations center, possibly at Eielson AFB 23 mi. south of Fairbanks, also could support a broad range of tests and evaluations needed by the FAA to help resolve UAS certification challenges, AIAA says. Hawaii's Pacific Missile Range Facility on Kauai could be a staging center for Pacific Rim missions, the white paper adds.

Congress should "work very closely with the FAA to ensure that the opportunity to mature UAS operations in the national airspace system is fully exploited, while simultaneously enabling NOAA to conduct its important UAS missions," says AIAA President Roger Simpson.

Under a congressional mandate, NOAA scientists have been working with NASA for four years to integrate UAS technology into their atmospheric science programs.

"Boy, do we see the value of this type of technology," says Alexander MacDonald, acting director of NOAA's Earth System Research Laboratory in Boulder, Colo. For example, he says, a UAV can take a consistent measurement at the same point in space. But the ice monitoring stations that NOAA has periodically set up move with the shifting polar ice cap. "So you're never taking the observation at the same place, which is not good for climate measurements," he says.

USAF MAJ. DAVID KURLE

NOAA tested the Navy's Manta UAV and the smaller Silver Fox for their ability to locate, identify and track small vessels and whales.

A major advantage of UAVs, says NOAA Administrator Vice Adm. (ret.) Conrad Lautenbacher,"is that you don't have pilots at risk in severe weather."

NOAA began testing unmanned aircraft in April 2005 with a General Atomics Aeronautical Systems Altair UAV. The flights had to be extended into November of that year because of satellite link problems between the Altair and the operations center at General Atomics' facility in Gray Butte, Calif. The flights monitored weather, water, climate and ecosystem changes off the California coast. The Altair, a high-altitude prototype of the Predator B with an 86-ft. wingspan, carried a 252-lb. NOAA payload that included an ocean color sensor to track plankton and algae and a passive microwave vertical sounder to determine humidity at different altitudes (*AW&ST* June 27, 2005, p. 54).

On Sept. 16, 2005, hurricane researchers at NOAA's Atlantic Oceanographic and Meteorological Laboratory in Miami completed the first UAV flight through a tropical storm. The 28-lb. UAV with a 9.5-ft. wingspan is made by Aerosonde Pty. Ltd. of Australia (*AW&ST* Oct. 3, 2005, p. 53). Launched from NASA Goddard's flight facility at Wallops Island, Va., the drone flew 10 hr. in Tropical Storm Ophelia, providing detailed observations of the near-surface, high-wind hurricane environment, a risky area for manned aircraft like NOAA's WP-3D Orion and the Air Force Reserve's WC-130H hurricane hunters.

In its most recent test, NOAA evaluated the 94-in.-wide Silver Fox, developed by the Office of Naval Research, and the slightly larger Manta, both UAVs manufactured by Advanced Ceramics Research. NOAA tested the small Navy-owned UAVs Feb. 13-19 at Upolo Point Airport at Hawi, Hawaii. The optical and infrared surveillance system-equipped UAVs were tested for their ability to track small vessels, identify and document the activities and locations of individual vessels and locate and track whales.

NOAA planned to test a shipboard UAV launch, but wasn't able to get FAA certification in time for the flight.

"That would be a big part of what we're looking at in the future: how fast these systems can be certified for the kind of work we want to do in the normal airspace and over the oceans," Lautenbacher told *Aviation Week & Space Technology*.

MacDonald says NOAA's next UAV project will be to fly an Aerosonde out of the Florida Keys into a hurricane during the current Atlantic storm season. If NOAA were to take an active role in UAS certification, it could help fill the gap left by NASA's departure from the now-defunct Access Five initiative, a government-industry effort to enable routine UAV operations in the National Airspace System through technology development and regulatory work.