

2 December 2005

Under Secretary commends NOAA, NASA and industry for completing UAS missions aimed at filling critical research and operational data gaps. ALTAIR, the unmanned aircraft employed for these missions was operated under this nation's first experimental certification. See press release issued by FAA and joint release by General Atomics Aeronautical Systems and NASA on this aviation breakthrough.

Message from the Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator

Bridging the Gap Between Earth and Space

With a scientific payload developed by NOAA, an Unmanned Aircraft System (UAS) took off twice last week in the southern California desert on the final segments of a successful demonstration mission. This demonstration marked the first time our [NOAA] agency has funded a UAS mission aimed at filling critical research and operational data gaps in several areas, including climate, weather and water, ecosystem monitoring and management, and coastal mapping. NOAA collaborated with NASA and industry to develop the mission.

UASs offer tremendous potential, and I am excited that our first-ever demonstration mission worked well. The aircraft can be a vital aspect of the emerging Global Earth Observation System of Systems (GEOSS). Making integrated Earth observation data readily available for mitigating natural disasters, managing water resources, fostering sustainable development, and addressing a broad range of other high-priority, socio-economic benefit areas will greatly improve the quality of life on our planet.

The ALTAIR UAS completed 5 flights for NOAA's demonstration mission. The most recent flights were on Nov 14-15 (18.4 hours) and Nov 16 (7.7 hours). Both fulfilled major goals. The 18+-hour flight demonstrated the potential of a UAS to fly long missions to remote areas. The last flight, over the Channel Islands National Marine Sanctuary, demonstrated the surveillance capabilities of the platform and the ability of the platform to perform coastal remote sensing missions. It further demonstrated the capability to safely integrate into the National Airspace System down to altitudes of 7000 ft.

With an 86-foot wingspan, the ALTAIR's endurance, reliability and payload capacity provide the capability to improve mapping, charting and other vital environmental forecasting in remote areas, such as the NW Hawaiian Islands and Alaska. In California, the aircraft's capabilities will improve forecasts and warnings of natural disasters, such as winter flash floods and related fatal mudslides. Real-time imagery is fed to the aircraft's ground command center, from which the aircraft is piloted.

UASs will allow us to see weather before it happens, detect toxins before we breathe them, and discover harmful and costly algal blooms before the fish do.

There is an urgency to address such issues. In the U.S., annual damage from tornadoes, hurricanes and floods averages \$11.4 billion. Asthma affects over 31 million Americans, about one-third of them children, and the rate has jumped 25 percent since 1999. Over the last two decades, outbreaks of *Pfiesteria* and other harmful algal blooms have caused about \$1 billion in economic losses.

UASs have been called the best choice for dirty, dull and dangerous missions: dirty because they can be sent to contaminated areas; dull because they allow for long transit times opening new dimensions of persistent surveillance and tracking; and dangerous because they can go into hazardous areas with no threat to human life.

A primary goal of this first demonstration is to evaluate UASs for future scientific and operational requirements related to NOAA's oceanic and atmospheric research, climate research, marine sanctuary mapping and enforcement, nautical charting, and fisheries assessment and enforcement. The ALTAIR can carry an internal 660-pound payload to 52,000 feet for over 30 hours.

The payload of sensors included:

Ocean Color Sensor / images to improve fisheries management through better assessment of eco-system health, including improved forecasting and warnings of harmful algal blooms.

Ozone Sensor Measurements / to help determine ultraviolet vulnerability.

Gas Chromatograph Measurements / to help scientists estimate greenhouse gases potentially associated with climate change and global warming.

Passive Microwave Vertical Sounder / to help determine when flash flood warnings must be issued.

Digital Camera System / to facilitate shoreline mapping, habitat mapping and ecosystem monitoring, including spill and aquatic disease tracking and assessing land-based discharges and marine mammal distribution and abundance.

Electro Optical/Infrared Sensor /to provide non-intrusive, maritime surveillance for fishery and marine sanctuary enforcement. Current aerial surveillance has a short survey range and is noisy, dangerous, infrequent and not cost-effective.

Thanks to a terrific NOAA team for conceptualizing and making this demonstration fly! Thank you, Sandy MacDonald, Mike Aslaksen, Sara Summers, Jim Churnside, Geoff Dutton, Jim Elkins, Dave Fahey, Al Gasiewski, Harris Halverson, Dale Hurst, Vladimir Irisov, Todd Jacobs, Marian Klein, Marty Ralph, David Kraft, Wendy Madsen, Fred Moore, J. David Nance, Paul Neiman, William Odell, Samuel Oltmans, Eric Ray, Ron Richter, Karen Rosenlof, Robert Sears, Jon Sellars, Boba Stankov, Brian Taggart, Jennifer Valdez, Brian Vasel, Ben Waltenberger, Gary Wick, and Jim Wilson.

[Diagram showing ocean color sensor](#)

[Diagram showing ozone sensor](#)

[Diagram showing gas chromatograph](#)

[Diagram showing passive microwave vertical sounder](#)

[Diagram showing digital camera system](#)

[Diagram showing electro optical/infrared sensor](#)

More about this first mission: <http://uav.noaa.gov/index.html>

Global Earth Observation System of Systems: <http://www.noaa.gov/eos.html>

conrad lautenbacher signature

Conrad C. Lautenbacher, Jr.

Vice Admiral, U.S. Navy (Ret.)

Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator

This message was generated for the Under Secretary of Commerce for
Oceans and Atmosphere by the NOAA Information Technology
Center/Financial and Administrative Computing Division