

In 2006, the U.S. Department of Homeland Security (DHS) began flying a Predator unmanned aerial vehicle (UAV) in Temporary Flight Restriction (TFR) airspace along the Arizona/Mexico border. Many of our fellow general/commercial aviation pilots were greatly disturbed that this large semi-permanent TFR had been established. The Predator B crashed in April 2006, and according to preliminary information from the NTSB, the cause of the crash may have been pilot error—the UAV's fuel was cut off when control was transferred to the second UAV control station.

Just a year later, UAVs, also called unmanned aircraft systems (UAS), are flying regularly in the U.S. national airspace system (NAS). This year will see increased pressure by industry for UAS access to the NAS because of the increasing variety of roles and missions proposed for these systems.

Why is ALPA monitoring UAV/UAS operations in the NAS? For more than 75 years, ALPA has been a strong advocate for preserving and improving the level of safety of the NAS. To a large extent, this advocacy has been responsible for the enviable safety record the public expects and receives when they fly.

The implications for the safety of all NAS operations of introducing UAVs into the NAS are not yet entirely clear and must be resolved. But the fact remains that ALPA wants to make sure that these new flying machines do not reduce the current level of safety of the NAS.

The FAA is working with aviation industry groups to tackle the complex problem of developing the rules and standards for UAS. ALPA is providing line pilot experience and expertise and highlighting issues when disconnects appear. The Association is not advocating unrestricted UAS access to civil airspace, but ALPA must be a part of the process to make certain that UAS access is accomplished safely.

The Department of Defense is the biggest operator of UAVs, but the University of Florida, the University of New Mexico, the University of North Dakota, and Brigham Young University are all heavily involved in UAS opera-

tions. From education to platform development to partnerships, the universities are eager to participate in the expanding use of this "next generation" of aerial vehicles.

Industry and government are promoting a variety of commercial platforms, running the gamut from police urban surveillance to agricultural and pipeline inspection. NOAA, in

announced it will begin surveillance along the Canadian border in August or September using a Predator B system. CBP also is looking at using UAVs to patrol the Caribbean region.

In November 2006, the U.S. Air Force flew a Global Hawk UAV from Beale AFB in California, marking the beginning of domestic training operations from Beale. The Air Force plans to open another Global Hawk unit at Grand Forks AFB, N.D. The CBP Predator missions on the Canadian border will be flown from Grand Forks AFB this fall.

The FAA is under intense internal and external pressure to allow UAVs to fly. Invoking the need for national security is a very powerful argument; moreover, a lot of money is at stake in the ever-proliferating proposals to expand use of UAVs.

ALPA just doesn't want the zeal for secure borders to diminish NAS safety.

ALPA has a strong working relationship with the FAA regarding airspace safety issues. Your ALPA UAS Project Team members—First Officers Ellis Chernoff (FedEx) and Ben Ratliff (Northwest), and I, the author of this article—are committed to ensuring that line pilots' concerns are heard loud and clear. ALPA staff engineers Mark Cato and Jim Duke provided critical staff support to the Project Team, and Russell Gold recently joined the project as primary staff engineer.

Many of the initial tasks slated for UAS are "dark, dirty, and dangerous" missions. The U.S. Army, Navy, and Marine Corps are all conducting UAS missions. The U.S. Coast Guard will use the tilt-rotor Bell Eagle Eye UAS in support of its Deepwater Interdiction and Surveillance programs.

The Eagle Eye's use in uncontrolled international airspace could be of great concern to general aviation and other non-airway operations that might not know where the vehicle is operating. As these programs continue to gain funding and technological advancement, their development will accelerate, and the push for routine NAS access, or "file and fly," can be expected to follow.

As far as industry-specific UAVs are concerned, if you can dream about it, it has been proposed. Two of the most interesting concepts that the UAS

**'LOOK, MA,
NO PILOT'**



**UAVS ARE IN YOUR
AIRSPACE, NOW.**

By F/O Robert Englehart (America West), ALPA UAS Project Team

partnership with NASA, plans to use UAVs for hurricane surveillance this summer, flying in warning area airspace in the Gulf of Mexico. In 2006, NOAA joined the state of Alaska in using an Altair UAV to support research on arctic ice melting and associated global warming issues. The Altair has an airworthiness certificate from the FAA.

DHS, Customs and Border Protection, Immigration and Customs Enforcement, and their Secure Border Initiative continue to expand the use of UAVs domestically. In November 2006, these agencies resumed their Predator operations with a new platform in Class A airspace in Arizona. In 2007, the Customs and Border Patrol (CBP)



Almost-worst-case scenario: An airliner on landing approach to Kabul, Afghanistan, almost hits and then tumbles a German UAV that photographs its own demise. OPPOSITE: The USAF MQ-1 Predator weighs more than a ton, spans 49 feet, climbs to 25,000 feet, cruises at 70 knots, and can pack two Hellfire antitank missiles.



Project Team saw in 2006 were demonstrated by Brigham Young University. In one experiment, three UAVs were coordinated to arrive over a specific location at the same time. In another demonstration, miniature sensors were used to allow small UAVs to navigate through city blocks and inside a parking garage. Urban surveillance systems used by local law enforcement agencies continue to receive scrutiny.

The FAA is working hard to develop “best practices” standards for the small UAVs that fall in a gray area that overlaps the category of remote-controlled

The basic idea is to migrate to worldwide air traffic management and move passengers and cargo by fleets of remotely operated or autonomous unmanned airliners. All these airliners would be controlled by a military-style ground control superstation, and the role and number of pilots and air traffic controllers would be combined, reduced or, in some cases, eliminated.

The role of the pilot is a major area of concern within the UAS and piloted aircraft

reports contain irrefutable evidence that flight crews’ immediate and professional responses to emergencies have prevented accidents or significantly reduced loss of life.

According to Capt. Terry McVenes, ALPA Executive Air Safety Chairman, “Success during these events depends on years of training, an ability to quickly

evaluate options, the pilot’s response to hands-on control pressures, effective cockpit resource management, and



USAF Global Hawk UAV (25,600 pounds MGTOW, 116-foot span, 35-hour endurance, 340-knot top speed) is a “spy in the sky” that can cruise at extremely high altitudes. INSET: Altair, a turboprop Predator variant used for research, has an all-up weight of 7,400 pounds, an 86-foot span, a 32-hour endurance, and a max ceiling of 52,000 feet.

PHOTO BY JIM SHRINE

model aircraft. For example, the FAA recently told the Palm Beach (Fla.) Police Department that they could not fly a Cyberbug UAV unless they had an FAA certificate of waiver or authorization.

To their operators, these “small” systems appear simple and pose no threat to either general aviation or the airlines because they fly at low altitude. However, these small UAVs are capable of penetrating navigable airspace or infringing on high-density airports. This has proven to be a challenge for the FAA, and ALPA supports the agency’s efforts to ensure that these aerial vehicles are appropriately regulated.

At the other end of the UAV size spectrum, what about the “ultimate” UAV—an unmanned airliner? It’s just a concept now, but manufacturers and engineers are seriously discussing it.

communities for different reasons. Some argue that UAS, at less cost and less risk, can perform any activity as safely as a human-piloted aircraft.

Some studies of UAV pilots have been conducted to evaluate this concept. One study, the *DOD 2005 UAS Roadmap*, acknowledged that the ability of the pilot on the flight deck to perform many pilot duties exceeded that of a pilot on the ground operating a UAV. In that report, Gen. John P. Jumper, chief of staff of the U.S. Air Force, said, “It’s hard to replace the gray matter that is inherent in every human being. No computer can do it quite that well yet.” Still, strong proponents in the industry are focused on removing restrictions on use of UAS in any segment of aviation, including airline operations.

Aviation accident and incident

critical coordination with the flight attendants.”

Also, while preventing heavy loss of life during an airline accident is a large concern, the crash of a large unmanned freighter in a heavily populated area could be equally disastrous.

ALPA believes that a well-trained and highly qualified flight crew has been, is, and will continue to be the most important safety component of our air transportation system.

ALPA will be there to make sure whatever new rules are developed do not affect the standards that the Association has worked so hard to achieve. Last year was the safest year on record for scheduled U.S. airline operations. ALPA does not intend to stand idly by and watch that hard-earned record erode. 🌐