

# PREPARING FOR THE FUTURE OF

# AIR TRAVEL

**F**AA Administrator Marion Blakey announced in May that Automatic Dependent Surveillance-Broadcast (ADS-B) would be the centerpiece of the future U.S. air traffic control system. ADS-B, which has been in development for years, is one of the key elements in the Next-Generation Air Transportation System (NGATS), the FAA's plan to phase out the current out-of-date radar-based infrastructure and modernize the National Airspace System (NAS) over the next two decades. ALPA, through the efforts of the Association's National Airspace System Modernization (NASMOD) Committee, has played a significant role in advancing both ADS-B and NGATS.

The FAA launched the NGATS initiative to deal with the many challenges of future air travel. In the coming decades, passenger and cargo airliners will likely compete for airspace in skies crowded with new generations of aircraft, including micro jets and unmanned aerial vehicles. This will considerably increase the burden on the ATC system, which hasn't changed substantially in the last 40 years.

With U.S. air traffic expected to triple within the next 20 years, demand is rapidly outpacing capacity. An estimated 718 million passengers currently travel through U.S. airspace every year, with approximately 600,000 U.S. air traffic operations each day. By 2015, passenger traffic is expected to increase to more than 1 billion passengers per year. NGATS will significantly enhance safety and add capacity at a rate that will more closely match demand.

"The NAS is past due for an upgrade," says ALPA's president, Capt. Duane Woerth. "There's just no way that the current air traffic system can handle the increase in traffic that is anticipated in the years to come. It's just not structured to adapt to that level of change."

The U.S. government is spending a significant amount of money to keep the outdated legacy ATC system running. In fact, just maintaining the system over the next 10 years will cost approximately \$30 billion by some estimates—costs that continue to rise every year. The NGATS initiative will replace expensive and antiquated ground infrastructure with newer, more cost-effective, space-based navigation and position-reporting systems that promise to save billions of dollars for both the government and the airline industry. But to capture that savings, a significant investment in NGATS must be made now.

ALPA has been working to promote adoption of NGATS and to find viable funding sources for the initiative. Many fear that insufficient funding will jeopardize efforts to deliver a system that meets future demands for air travel.

Some airlines that might have picked up the tab to equip their fleets with state-of-the-art avionics in the past are now cautious about making such investments after losing money when operations using those avionics were either never implemented or were overtaken by advances in technology. Certainly, obtaining the necessary funding is important to the success of the program.



## ALPA and other stakeholders collaborate on NASMOD.

By Gavin Francis  
Staff Writer

## Core technologies

The architects of NGATS will build their system on the foundation of two essential technologies. The first, ADS-B, uses the global positioning system (GPS) to accurately determine an aircraft's position, which ADS-B broadcasts once per second. Ground stations, which cost a fraction of what radar stations cost, receive the broadcasts and relay information to air traffic controllers. That same information is rebroadcast to other aircraft in the vicinity, improving pilots' traffic situational awareness if their cockpit is equipped with a cockpit display of traffic information (CDTI).

The FAA believes that it can save money in the long run by investing in ADS-B and replacing older radar systems with the newer technology. ADS-B has already been used successfully in Alaska to surveil airspace where radar is impractical because of terrain, and the FAA expects to introduce it in the Gulf of Mexico, another nonradar environment, within the next several years. Already, UPS has equipped some of its fleet with ADS-B and CDTIs, relying on the system to streamline operations into its Louisville, Ky., hub. UPS says that ADS-B allows the carrier to operate more efficiently, saving it an estimated \$2 million per year.

"The true benefits of ADS-B will not be completely realized until the air-to-air applications of shared informational services can be applied to day-to-day operations," says Capt. Brian Townsend (America West), chairman of ALPA's NASMOD Team. "ALPA safety volunteers are providing their expertise in FAA and industry work groups to develop CDTI applications and standards, which will increase safety by reducing runway incursions and facilitate limited self-separation that will produce efficiency gains and increase capacity."

The second piece of the NGATS puzzle is systemwide information management (SWIM), information-

management architecture for sharing data among airspace users. SWIM will manage real-time information, including surveillance, flight data, weather, and airspace status, and provide it to users in a usable format. SWIM will improve current air traffic operations by integrating systems and standardizing information products, allowing decision-makers, including pilots, to

in developing NGATS, ensuring that the needs of a broad spectrum of airspace users are addressed.

Congress also mandated that the JPDO work with industry stakeholders to achieve NGATS objectives. In March 2005, the NGATS Institute was established (through a contract between the FAA and the National Center for Advanced Technologies, a non-

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—Capt. Duane Woerth, ALPA President

access the same information to create a "shared situational awareness" and a common operating picture.

Positioned solidly on the dual technologies of ADS-B and SWIM, NGATS has the potential to revolutionize the U.S. air transportation structure, making that system safer and more able to accommodate the future demands of U.S. airspace users.

## Implementing the program

In 2003, Congress created the Joint Planning and Development Office (JPDO) as part of the Vision 100—Century of Aviation Reauthorization Act to manage the monumental task of developing and implementing NGATS by 2025. JPDO facilitates collaboration among the FAA, the White House Office of Science and Technology Policy, the Departments of Transportation, Defense, Homeland Security, and Commerce, and the National Aeronautics and Space Administration to integrate the resources and talent necessary to enhance U.S. air transportation for the 21st century. Each of these agencies will play an important role

in developing NGATS, ensuring that the needs of a broad spectrum of airspace users are addressed. The Institute serves as a mechanism by which private industry can participate in JPDO activities, offering its recommendations and expertise on matters relating to NGATS. Overseeing the Institute is a 15-member management council made up of representatives from a variety of stakeholder groups. Capt. Woerth serves as co-chairman of the organization's Institute Management Committee.

"The future of air traffic control demands substantial investment," says Capt. Woerth. "Unfortunately, the plan that Congress created does not include a practical method for funding NGATS. Most of the FAA's current budget pays to keep the present ATC system operational, but it doesn't provide very much for new initiatives. Finding a way to pay for these urgent improvements to the National Airspace System is crucial to the future of our industry. We need to make implementing the Next-Generation Air Transportation System a national priority." 🌐