Heli-Expo 2007

Gulf of Mexico Helo Ops Ready for ADS-B

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HAI members and FAA work to adapt next-gen 'backbone' in Gulf of Mexico

Printed headline: **Helo Ops Ready for ADS-B**

Helicopter operators are moving closer to reaping the benefits of ADS-B--a system that will "take the National Air Space and extend it out over the Gulf of Mexico."

At least that's how Vincent Capezzuto likes to describe the capability of Automatic Dependent Surveillance-Broadcast, which the FAA calls "the backbone" of the Next-Generation Air Transportation System. Capezzuto is FAA program manager for the FAA's national ADS-B office. For Gulf of Mexico operators, ADS-B means real-time ATC surveillance, communications and weather data--which, in effect, translate to conducting safe, low-altitude IFR operations in the gulf.

That's in sharp contrast to current operating conditions in the region, an area roughly 994 mi. (1,600 km.) east to west and 559 mi. from north to south, with a surface area spanning 579,153 sq. mi. Thousands of rigs offshore mine oil and gas riches round-the-clock in water with an average depth of 1,615 meters.

Approximately 650 helicopters and 2,000 pilots operate 7,500 shore-to-platform trips daily to fulfill their primary mission of ferrying personnel and equipment to thousands of platforms located about 150-200 mi. out from the Texas, Louisiana, Mississippi coastline. And all of this is accomplished while flying below 5,000 ft.

Once the flights leave the shore, "They operate in an environment devoid of the normal infrastructure found over land," says Helicopter Assn. International President Matt Zuccaro.

Radars cannot be installed on oil platforms, Capezzuto says. "It's a very harsh environment. Electromechanical devices don't like the salt water."

And Houston Center, which provides coverage of what is now classified as Oceanic airspace, can't see or talk to the helicopter operators--and as a result cannot provide direct surveillance, adds Zuccaro. Nor can pilots obtain real-time weather services.

But that will change. Under a May 2006 Memorandum of Agreement (MOA) with the FAA, the Gulf region, Louisville, Ky., Juneau, Alaska, and Philadelphia were selected to participate in "Segment One" ADS-B implementation. This involves initial installation of ground infrastructure that will support the system--and for which the FAA requested $80 million in the Fiscal 2007 budget.

Implementation committees are now assessing ground infrastructure and equipment and fielding of services. Zuccaro says the first platform site, conducted this month, was successful. Certain oil platforms will house ADS-B receivers. Under ADS-B , satellites provide GPS information to the aircraft avionics, which emit the data to ground-based receivers. Then these would couple the information to shore--in this case, Houston Center controller automation platforms. Eventually, weather-sensing devices will be installed on the platforms.

By the end of 2010, FAA expects to have the ADS-B system tested and operationally acceptable for the NAS, with Houston Center providing services in the Gulf region. By 2013, all of the U.S. is scheduled to be covered with ground infrastructure.

The avionics installation will take longer, says Capezzuto, because we will be dealing with a larger aircraft population--20,000 or more general aircraft and about 35,000 transport aircraft, all of which will have to be retro- or forward-fitted with ADS-B equipment (AW&ST Feb. 17, 2006, p. 52).

Subsequent program phases include HAI members voluntarily equipping aircraft with traffic display capability so pilots can self-separate from other aircraft. This ability, according to Capezzuto, leads to shared pilot-controller situational awareness, and therefore enhanced safety.

"The Gulf is probably the perfect implementation area for ADS-B. It's a clean slate. There's nothing down there," says Zuccaro. "Segment One is 'the true test' of ADS-B implementation in an area without support or infrastructure."

The Gulf of Mexico's area of coverage will extend to 25 deg. N. Lat. in the Gulf (see map). In about 5-10 years, it will extend to 26 deg. N. Lat., based on planned expansion of oil platform infrastructure, according to the FAA.

Zuccaro says that in the next decade activities in the gulf are expected to grow 25%, move into deeper water and extend toward the Florida coastline.

"This is a win-win situation for all stakeholders," says Capezzuto. "The operators not only get [ADS-B] service, [they also] provide FAA with data required to validate the service and get it certified."

ADS-B's precision is also seen as a way to improve capacity in the future NAS via streamlining separation standards. "Today's established standards--3 mi. to terminal and 5 mi. en route--are based on the traditional radars' infrastructure," says Capezzuto. "The reality is, everyone puts a little buffer around it . . . and the FAA is interested in removing those buffers. Its hope is to project forward as air traffic increases and start looking at reducing those separation standards," he says.

To accomplish that wouldn't require more air traffic controllers, Capezzuto says. Rather, ADS-B would increase situational awareness of pilots by putting information in the cockpit, and controllers can then shift more toward air traffic management function.

The nation's more crowded airspace of the future could and would be kept safe under current infrastructure, but ATC would not be able to accommodate traffic at the times airlines want to fly, says Capezzuto. And the Next-Gen system must be able to handle future growth.

Under the MOA, the FAA will fund, install and operate the ADS-B network in the gulf. The helicopter industry and platform operators will prove platform space for installation of system equipment. HAI's efforts in a 20-year period to provide transportation of personnel to the platform, along with power and telecommunications as well as the voluntary installation of the avionics equipment for their IFR fleet, is valued at more than $100 million.

The minimum equipment required on the aircraft would be a transmitter, which would allow ATC to "see" and control the aircraft. The next upgrade, the display unit, would open up available uplink data so pilots can visually monitor traffic on the panel and self-separate. When that will occur will depend on the completion of the evaluation of transmitters and equipment operation.

Louisville, Philadelphia and Juneau were selected for Segment One because they all pose a unique set of problems. Each Tracon or Center has different computer interfaces with the NAS, which would require the FAA to build and test new infrastructure to interface with various automation platforms.

The challenge at Philadelphia, a UPS hub, is in validating ADS-B within terminal airspace that has a high RF interference environment. The New York-Philadelphia region is rife with various types of radars and other devices that emit RF energy, says Capezzuto.

Louisville, UPS's main hub, is a "petri dish" in which the FAA will validate separation standards involving a large number of UPS aircraft operating within certain timeframes, similar to most major hubs.

Juneau offers the challenge of a mixture of equipment including multiple types of transponder devices, not to mention robust mountainous areas where radars are especially challenged.

Some general aviation sectors are exercising caution in fully embracing ADS-B. The National Business Aviation Assn. is in support of the system, but wants the FAA to set a firm plan for certification of equipment. The Aircraft Owners and Pilots Assn. also supports implementation of ADS-B, but is concerned about the affordability of equipment.
