WAAS approaches coming to heliports

by Jennifer Harrington

The FAA last month approved GPS wide-area augmentation system (WAAS) LPV instrument approach criteria for helicopters, opening the floodgates for the new lateral precision/vertical guidance procedures at heliports and landing pads across the country.

Stephen Hickok, president of Orange Beach, Ala.-based Hickok and Associates, and the company's senior engineer, Edwin McConkey, developed the user-defined criteria for 20 WAAS approach procedures for the Cleveland Clinic Foundation in Ohio. The organization owns a network of hospitals and outlying facilities in the Cleveland area.

Hickok said the FAA approved the criteria on January 17 and should begin the flight testing phase in as little two to three months, pending coordination and approval by local and regional ATC and approach facilities. The biggest challenge so far in developing the WAAS LPV approaches, Hickok said, has been the fact that few ATC facilities have experience managing helicopter IFR procedures. "This is not uncommon," he said. "Air traffic control facilities know airplanes, but they know nothing about helicopters. I essentially had to build a stand-alone helicopter airspace system [so as not to interfere with airplane traffic]. It's incredibly complex."

Hickok added, however, that the benefits far outweigh the challenges and extra time and effort needed to develop WAAS procedures. WAAS allows for lower and more operationally effective minimums, down to a couple hundred feet above the touchdown zone, for example. "I was surprised at how phenomenally good WAAS approaches are," he said. "It will give helicopters ILS-like precision."

In addition, Hickok and Associates is now the only developer of approaches in the country that is in compliance with the latest flight standards policies, according to Hickok. The FAA in September signed off on Order 8260.19D, a new flight procedures policy that requires that a 200-foot adverse assumption obstacle (AAO) be applied to the highest terrain point on any surface found outside a CFR Part 77 airport. In other words, a pilot must conduct an approach procedure "as though at the very worst possible location, at the highest terrain point within the final approach segment, someone has built a 199-foot cell tower," Hickok said.

"With our user-defined criteria, a pilot will able to manipulate that slope to accommodate this new 200-foot obstacle and still provide the required obstacle clearances," he said. "The result, with the provisions of WAAS, is that we're able not only to sustain and maintain these lower operationally effective minimums, we're also able to lower minimums more than we've ever been able to. That illustrates how important WAAS is going to be for the industry."

Before the order was even signed, however, Hickok began developing his GPS procedures as though the order were already in effect. "Every approach I've designed since December 2006, when I first learned that the FAA was dead serious about requiring the 200-foot AAO, I've designed with that in mind," he said. "But there are others who are not applying the 200-foot AAO. They're not even applying basic tree height information."

Hickok added that the FAA reevaluates approach procedures every two years to determine if changes or amendments are needed. "All the procedures developed prior to the AAO will need to be amended," he said. "I developed the WAAS criteria in a way that will allow it to be overlaid directly onto existing Rnav/GPS approaches. I can convert any GPS approach into a WAAS procedure to maintain the minimums that pilots will need. My goal has always been to ensure that we will be in total compliance with FAA requirements."

Hickok conceded, however, that some customers aren't willing to equip their helicopters for WAAS procedures. In such cases, Hickok and Associates will still offer Rnav/GPS approaches.

Approaches in Europe

In addition to developing the first WAAS instrument approach procedures for the U.S., Hickok and McConkey recently developed the first helicopter GNSS instrument approach procedure in Europe, for Insel Hospital in Berne, Switzerland. There are approximately 300 GNSS approaches in the U.S., Hickok said. "Europe has been a bit slower in adopting GPS technology," he explained.

Hickok said it was "quite a challenge" to develop the procedures, not only because of the mountainous terrain, but also because much of Europe lacks the infrastructure to handle complex procedures. The Europeans have also delayed the development of GPS procedures while waiting on the development of their own satellite navigation system. Many governments did not want to rely on the U.S. GPS system, Hickok explained. Now that the Galileo system is in the first stages of development, more Europeans are willing to develop GPS procedures. ❑