Exeter Airport and Aviation SouthWest: another success story for EGNOS in aviation

EGNOS

It's there. Use it.

Exeter Airport (EGTE) is the busiest airport in the south west peninsula of Great Britain and is operated by Exeter and Devon Airport Ltd, part of the Rigby Group. It is home to FlyBE, one of Europe's largest low cost carrier and to Aviation South West (ASW), one of the first Flight Training Organisations (FTOs) to provide professional pilot training to include RNAV approaches and now RNP training. It is used by many other airlines such as Thomson, Thomas Cook, Air Malta, Isles of Scilly Skybus and by business jets and commercial flight training schools from all over England as well as extensively used by military aircraft for training.

The airport's existing LNAV approaches are extensively used by commercial, military and training operators but suffer from the high MDA limits inherent in that system. This has encouraged the airport managers to seek other types of approach which are also based on GNSS technology but achieve lower MDA and provide vertical guidance similar to an ILS but without any ground infrastructure. These are the so called RNP approach procedures down to LPV minima (250ft) which make use of a GPS augmentation system called EGNOS, similar to WAAS in the USA.

In the frame of the ACCEPTA project, Exeter Airport received funding from the European GNSS Agency for the upgrade of runways 26 and 08 from their current GNSS (RNAV) AIP certification to include LPV SBAS capability. The project also included complementary LNAV/VNAV procedures with barometric vertical guidance.

In December 2011 Exeter started preliminary negotiations with the UK CAA. The procedure designs were completed by Davidson Ltd in January 2013 and flight validated by ASW in December 2013. The airport is currently working on the training of ATC and the Safety Assessment to comply with CAP 670 "Air Traffic Services Safety Requirements" with the firm intention of being the first UK airport to publish LPV APCH procedures, which is scheduled for 21st of August 2014.

Exeter Airport is pleased to be at the forefront of this exciting and innovative period for aviation navigation. Until now, Exeter has counted on GNSS (LNAV), ILS and NDB approaches. The main benefit of LPV is to improve safety and to have adequate back up procedures in case of ILS outages without the need for extra ground navaid infrastructure. In addition, the airport is also considering the possibility of withdrawing non-precision approaches when some conventional navaids reach the end of their natural life.

***"We are considering the possibility of withdrawing non-precision approaches when some conventional navaids reach the end of their life now that LPV is available"*. David Burrows,** Air Traffic Services Manager at Exeter International Airport

"The LPV avalanche may start slow but it gains momentum and is unstoppable. Proper training is absolutely essential. ", **Richard Bristowe,** Head of Training at Aviation SouthWest and certifying pilot for the introduction of six LPV approaches in the UK**.**

Aviation South West Ltd (ASW) is a professional flight training school based at Exeter Airport. Among many achievements it was the first in UK to train commercial pilots to RNAV LNAV approach standards and was the certifying organisation for the installation of three RNAV VNAV approaches in the UK. ASW has been used as an advisory and training organisation for the UK NAA's own examiners corps.

Flight training is considered as a key instrument to consolidate the long-term penetration strategy of EGNOS within civil aviation. Furthermore, the development of the LPV system relies not only on training pilots in its use but also the Industry Examiners so the procedure can be included in the relevant flight tests.

As a joint participant with Exeter Airport in the ACCEPTA project, ASW received funding from the European GNSS Agency for the upgrade of one Beechcraft BE76 (G-BXWA) and one Piper P28A (G-BTID) from RNAV Approach certification to achieve certification & operational approval to perform EGNOS-based LPV approaches and for the upgrade of its FNPT II simulator to match.

Both aircraft were already equipped and EASA approved for LNAV approaches using Garmin 155XL GPS units which interconnected to the HSI and RMI via MD11 annunciators and selector boxes. The upgrade to Garmin 530Ws involved a change of equipment trays and aerials plus a small amount to wiring. The 530W was chosen in preference to the new GTN 650 and 750 touch-screen GPS units because ASW felt that the learning curve for IR students on GTN series might be too high. Both aircraft, the BE76 and the P28A, are now fully certified and operating.

The FNPT II simulator was more of a challenge. Modifying it to fly RNAVLNAV approaches was straightforward with re-certification being confirmed through a satisfactory flight test by one of the UK CAA inspectors. The request to add an LPV capability was countered by the manufacturer with a request for 23,000€ which has not been pursued. In practice it has been found that the LNAV capability provides ample pilot training in the procedures, the additional LPV glide-path training is easily accomplished in the aircraft. The total cost of for the upgrade of the two aircraft and the simulator, including purchase and installation of the new Garmin avionics and the approvals was around 35,000€.

Unlike commercial operators, flight training schools do not require additional operational approval to fly PBN approaches beyond their NAA approved training manual, but as yet the UK CAA is unable to authorise the examining of the LPV approach on an initial IR test, so examining is limited to Licensing Proficiency Checks. (EASA NPA2013-25, when adopted, will mandate LPV approaches as part of IR training and testing routine).

Training is less of an issue. LNAV approach training has already been in ASW's approved IR training manual for 6 years; the manual has now been amended to incorporate LPV training as part of the IR course. A total of 10 Instrument Rating Instructors and 3 IR NAA (Civil Aviation Authority) examiners have been trained to date (June 2014).

For ASW, the UKCAA and the students the learning curve has been quite steep. Nevertheless, the school recognises how vital LPV work is in the training syllabus for future pilots. PBN approaches in their various guises are being introduced all over the aviation world – the avalanche may start slow but it gains momentum and is unstoppable. Proper training is absolutely essential.

For questions & information

EGNOS HELPDESK

+34 911 236 555

egnos-helpdesk@essp-sas.eu

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