

### **EGNOS BULLETIN** Issue 15, Q2 2015





European Global Navigation Satellite Systems Agency

Precise navigation, powered by Europe



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# **Upcoming Events**

#### **ION GNSS**

EGNOS will be present at the ION GNSS 2015 event (September 14-18, 2015), the world's largest technical meeting and showcase of GNSS technology, products and services, in Tampa (Florida, USA). EGNOS will be represented at the event by several representatives from European Comission, GSA, ESA and ESSP, including an EGNOS stand at the exhibit which will be hosted by EC.

EGNOS will be present at booth 605/ 607/ 609

14-18 Sept

**5-9** 

Oct



#### **ITS World Congress**

Towards Intelligent Mobility - Better Use of Space

The ITS Congress and Exhibition is the world's largest event in intelligent transport systems and services. Through the main theme "Towards Intelligent Mobility – Better Use of Space", the Bordeaux Congress will focus not only on how achieving intelligent mobility will change our lives but also on the benefits space can bring to ITS applications.

EGNOS will be present at booth D56, D38, D39, D59.

#### Editorial Note: EGNOS Bulletin has evolved in its appearance. Comments and suggestions to keep on improving it are welcomed, please contact egnos-helpdesk@essp-sas.eu

# EGNOS Success Stories

#### **GRANT APPROVED PROJECTS 2014**

The Call for Proposals for the Acceleration of EGNOS adoption in the field of civil aviation launched by the GSA in 2014, announced in previous Issue 12 of the EGNOS Bulletin, has resulted in thirteen awarded projects which kicked off in June.

The granted proposals cover the publication of 68 LPV procedures at 35 different European airports in Austria, Belgium, Slovak Republic, Spain, Sweden and the UK, including challenging scenarios such as airports in Class G airspace and non-instrument runways. Moreover, the first LP and LPV 200 procedures in Europe could be published under this framework. On top of this, other EGNOS-based procedures will be also published for helicopters in four Norwegian and three British helipads.

Regarding operators, a total of 51 regional aircraft from HOP!, Air Baltic and Eastern Airways and 15 HEMS helicopters from NLA and DRF will be retrofitted and certified for the use of these procedures. These include ATR 42-500, Dash 8-400, Jetstream 41, SAAB 2000 and EC135 models. Besides, the upgrade of three flight simulators and the development of a Service Bulletin will be performed by ALSIM.

The duration of these projects will vary from one to three years. For further information, please visit the GSA website.



#### Did you know...?



...that a new Call for Proposals for the Acceleration of EGNOS adoption has already been launched on the 24th June, which will remain open until the end of September. Don't miss out this opportunity. Check out the grants section in the GSA website.

# Talkingabout EGNOS benefits with...

In this edition we speak with LFV, a public enterprise that operates air navigation services for civil and military customers at 26 locations in Sweden. LFV's solutions for safer and more cost-effective air navigation are being noticed. The company has approximately 1200 employees, head office in Norrköping and a turnover of SEK 2.6 billion.

<u>www.lfv.se</u>

The Swedish CAA has mandated the implementation of APVs to all instrument runway ends in accordance with ICAO recommendations. What are, in your opinion, the main operational benefits of EGNOS LPVs for Swedish aerodromes and for LFV?

LFV absolutely agree with the Swedish CAA that we should follow the ICAO recommendation and Resolution 37-11. But most of all it's about flight

It's about flight safety. To replace non-precision procedures with vertical guidance is a great step forward to increase safety.



ht safety.Safety.To replace non-precisionht safety.procedureswithverticalecisionguidance is a great step forwardto increase safety, and alsoverticalaccess, flying in to an airport.e safety.At many Swedish airports the<br/>ground equipment for serving<br/>the non-precision proceduresare getting old and the risks for outages increases.

Early implementation gives the airport some overlap time to assess the users' awareness and readiness to adopt the new procedures and plan for decommissioning conventional navaids. In Sweden we have many regional airports with the type of traffic that will probably have the most

benefit of SBAS-procedures to LPV minima.

LFV is going to deploy a large number of LPVs in the coming years. Which is the current status of EGNOS-based operations in Sweden airspace and how did it start?

The first project to implement APV procedures including SBAS in Sweden was at Gothenburg City airport in a pilot project launched by GSA. The task was to implement procedures based on Baro-VNAV and SBAS, and the airport was chosen because of two aircraft operators showing interest in LPV procedures and for the location in southern Sweden. Due to Sweden being a northerly country the southern location was important to be sure that the EGNOS coverage and signal availability would not be a problem.

The project was a great opportunity for all involved to learn and get experience from related activities



and bring this to coming implementations. You really need to start the job to notice all the details. The new procedures were in service by September 2014.

By December 2014 a SBAS procedure was also implemented at Storuman Airport. Because this airport is located in the northern parts of Sweden an EGNOS signal check was performed before project start and both EGNOS coverage as well as signal availability was confirmed satisfactory.

When GSA in mid-2014 launched the opportunity for airports to apply for the third grant to implement SBAS procedures, LFV got a lot of requests from Swedish airports to help with their applications. It all ended up with LFV making a common application for 21 airports to implement in total 42 SBAS procedures. The application was approved by GSA, a grant agreement is soon to be signed, and LFV now has the great task to design, safety assess, flight validate and publish these procedures within two years from signing the contract with GSA. A really challenging task but also very inspiring.

### In terms of economic benefits, will the implementation of such a big amount of LPVs have implications in the existing navaids infrastructure, for example?

Because the Swedish airports are in charge of their own infrastructure LFV wouldn't know exactly what the impact of new procedures will have. Many airports see the benefits from implementing PBN procedures as an opportunity to save some costs on ground based navaids, but we also know the changing process for operators is slow. A good guess is that the conventional navaids will remain quite a while until enough aircraft operators have the relevant equipment for GNSS-based navigation.

#### How does the CAA mandate and subsequent LPV implementation impact air operators? Have you detected an interest from them?

We have not noticed that much so far, but we believe that the procedures need to be in place to get the operators to take action in regard of upgrading of aircraft, getting approvals etc. Of course we hope and expect that the increasing availability of PBN procedures will encourage operators to speed up the process.

We are now awaiting the result from the consulting period regarding the EASA NPA 2015-01 about PBN IR and hopefully the regulation will end up supporting the ICAO Resolution 37-11 and include a requirement on the operators to equip for the use of PBN procedures at a realistic level in a reasonable time. The challenge to transfer into a PBN environment is there for us all.

Finally, LFV has been pioneer in the implementation of RemoteTower Services (RTS). Are there plans to combine LPVs and RTS in the same airport to demonstrate the combined cost-effectiveness of these technologies?

LFV RTS® is really pushing the standard of ATS efficiency to a new level. The broad implementation of LPVs will in the same manner create a new benchmark as the flight procedures will increase both availability and flight safety, similarly as LFV RTS® will do for the air traffic control. The implementation of LPV procedures will be made to the majority of airports with instrument RWY's no matter if the airport is served by a traditional ATS operation or with LFV RTS®.

#### **Meet the users**



Helén Erikson is ATM specialist at LFV. Graduated from Swedish ATS Academy as an Air Traffic Controller in 1993, she started working in 1995 for a

provider of air navigation products, Navtec Inc. (former EAG -European Aeronautical Group-). After 13 years, in 2008 she signed for LFV as an ATM specialist with focus on PBN (Performance Base Navigation) to monitor and pick-up on development in that area. During this time, she has also been involved in or managed some projects implementing PBN flight procedures at several Swedish airports.

# LPV approaches operational in CHC Helikopter Service

On 14th of April 2015, a CHC Helikopter Service Sikorsky S-92 carried out the first LPV (Localizer Performance Vertical Guidance) approach runway 07 in Florø, Norway. The flight, HKS 56T, under the Command of John Olav Ofstad and instructor Morten Kufaas was on a transit flight from Bergen to Florø in aircraft LN-OQM. The crew was very enthusiastic about the simplicity of setup within the FMS, auto-arming and auto-activation which reduced pilot workload compared to other approach types. Several LPVs has been carried out since in the operations at Florø.

> "Florø is the first Norwegian airport (in support of oil and gas) that was equipped with LPV capabilities", states Jørgen Staffeldt, Chief Technical Pilot of the S-92 fleet. "Florø has been served with non-precision approaches (VOR, Localizer and NDB), but has now transferred to future navigation concepts. The LPV vertical path is geometric ("fixed in space"), and the S92 allows full coupling in vertical and lateral axes (Pseudo-ILS)".

> According to Sigmund Lockert, Deputy Manager Flight Operations, "CHC Helikopter Service provided input to the National Norwegian PBN plan (Performance Based Navigation) in 2011." Since then, CHC Helikopter Service has worked systematically to implement PBN operations:

"Navigation Databases have been quality assured, approaches constructed and crew trained. All EC225 and S92 pilots are now PBN qualified. A close dialogue with the authorities and Avinor has been required to achieve the present status."

Last year Norway implemented RNP airspace and the first GNSS approaches with vertical guidance based on a barometric glide path. Only the major airports are equipped with ILS, and it is definitely a huge step for Flight Safety that "step-downapproaches" soon will be history at the minor airports along the Norwegian coastline. In addition the LPVs allows lower minima than traditional non-precision approaches and thereby providing improved regularity.

The PBN rollout plan provided by Avinor involves LPV approaches to most of the airports in Norway, only constrained by limiting EGNOS coverage north of 70 degrees.

The LPV capability is one of the future navigation concepts fully embraced by SESAR (in Europe) and NextGen (in the US) both for helicopter and fixed-wing aircraft.





Avinor

#### Meet the authors

CHC Helikopter Service is a regional business of CHC Helicopter. CHC is a leader in aviation services for oil and gas companies, government search-and-rescue agencies and organizations requiring helicopter maintenance, repair and overhaul services through the Heli-One segment. The company operates more than 230 aircraft in about 30 countries around the world.

www.chc.ca

# What's new? Since last bulletin...

#### EGNOS WORKING AGREEMENTS (EWA) SIGNED

The following EWAs have been signed in the last quarter:



The Royal Netherlands Air Force **Netherlands** 

#### LPV & APV BARO PROCEDURES PUBLISHED PER COUNTRY (including last AIRAC cycle #07 – 25/06/2015)

Next table shows, for each country:

- the number of airports with LPV procedures, as well as the total number of LPV procedures;
- the number of airports with APV Baro procedures authorised to be flown with EGNOS vertical guidance as well as the total number of APV Baro procedures.

Country	Airports – LPV procedures	# LPV Procedures	Airports – APV baro Procedures	# APV baro Procedures
France	70	104	1	2
Switzerland	6	6	0	0
Guernsey	1	2	0	0
Germany	18	27	24	63
Italy	5	11	0	0
Spain	2	3	0	0
Finland	1	2	0	0
Austria	2	2	0	0
Czech Republic	4	8	2	4
Norway	7	14	0	0
Poland	2	4	0	0
United Kingdom	2	4	0	0
Sweden	2	3	0	0
Netherlands	2	3	0	0
Slovak republic	2	4	0	0
Denmark	1	2	0	0
Portugal	1	2	0	0
Total	128	201	27	69

#### LPV 200 about to come in Europe!

The new EGNOS system release V2.4.1M will enable LPV operations based on EGNOS SoL service down to a decision height of 200 ft. This new service level will be called LPV-200 and its declaration towards users is foreseen in Q4 2015.

#### Did you know...?

...that in Germany there are several airports that have already implemented helicopter- specific LPV procedures using EGNOS? Various operators are already using them, such as those at <u>Emden</u> airport.





We certify you're there.



# What's new? Since last bulletin...





## What's going on... in aviation.

#### NEW H2020 AVIATION PROJECTS DEALING WITH EGNOS

GSA has disclosed the list of awarded projects in the 1st call of the Horizon 2020 programme dealing with EGNOS and Galileo. For aviation, the projects are the following:

- GMCA (GNSS Monitoring for Critical Applications – coordinator: DW International Ltd).

 e-Airport (Increase airport capacity, safety and security using European GNSS – coordinator: Telespazio SpA).

- UKRAINE (Ukraine Replication, Awareness and Innovation based on EGNSS – coordinator: VVA).

- BEYOND (Building EGNSS capacity on EU neighbouring multimodal domains – coordinator: ESSP SAS).

- CaBilAvi (Capacity building for aviation stakeholders, inside and outside the EU – coordinator: GNSS Centre of Excellence).

H2020 2015 call closed on 8 April, and the evaluation process for this second call is expected to finalise by the end of June. For more details on this initiative, visit the following <u>link</u>.



#### EGNOS FOR GENERAL AVIATION: SUCCESSFUL PRESENCE AT AERO'2015

Last April, the Aero 2015 exhibition took place at Friedrichshafen. This is the fundamental event for General Aviation (GA) awareness. It was a good opportunity to meet GA stakeholders (manufacturers, operators, pilots, associations) to raise the interest of this niche market on EGNOS, inform about the latest initiatives from GSA and ESSP as well as for getting updated information in the particular implementation plans. EGNOS was present as a Silver sponsor, as exhibitor, and through a special participation in the workshop of the H2020 project CaBilAvi: "EGNOS - The European Satnav Solution For Pilots".

The remarkable interest of the GA community on EGNOS was made evident during the event and ensures a likely presence of this technology in next editions.



#### EGNOS FOR BUSINESS AVIATION

Once again, EBACE attracted thousands of professionals from the Business Aviation (BA) sector to Geneva from the 19th to the 21st of May. EGNOS was present as exhibitor and through two successful side panel discussions on Safety and Access. The convention embodies a unique opportunity to meet BA manufacturers, operators, associations and airports for which EGNOS represents an important asset to improve their safety and accessibility and to reduce costs originated by delays, diversions, cancellations, fuel burnt or maintenance of navaids.



#### EGNOS FLIGHT EVENT AT TOULOUSE

Last 7th May, at the Blagnac Airport in Toulouse, a series of flights using EGNOS for landing procedures took place. An ATR 42-600 turboprop, which was equipped with additional avionics in the main cabin, made a flight demonstration for a 15 minute circuit around Toulouse before demonstrating an EGNOS LPV approach and landing. See video available at GSA portal.



#### EGNOS FOR REGIONAL AVIATION: ERA OPS ADVISORY GROUP

EGNOS was present once again during the last ERA Operations Advisory Group meeting that was held in Cologne, Germany, last 28th and 29th April. A lot of interest from operators was detected on the progress of EGNOS, its implementation status and the plans for new LPV operations in Europe. This time, in addition, the group was also provided with information on what roles may GNSS, and EGNOS, play within on board CNS capabilities.

### in maritime.



#### LATEST IALA ENAV COMMITTEE

The 16th meeting of the IALA ENAV Committee on the e-Navigation concept took place from the 20th to the 24th of April, gathering a total of 117 people from 27 countries. During the meeting, the work plan for the period 2014-2018 was updated and more than 100 input papers were considered.

Two of the input papers presented by GSA were related with the Call for Interest on the foreseen pilot projects with regard to the broadcasting of EGNOS corrections over IALA DGNSS beacons and AIS stations. Committee Members were also invited to attend the next planned EGNOS workshop organized by GSA and EMRF held on the 23rd of June in Madrid.

EGNOS topics were addressed in several Working Groups as well as during the plenary sessions. ESSP presented an input paper in WG2 (e-Navigation implementation) requesting information on the main characteristics of the e-Navigation testbeds and confirmed that the future EGNOS testbeds could be considered as part of the e-Navigation initiative. Main topics addressed and proposed for further development within WG5, devoted to Positioning Navigation and Timing (PNT), included the definition of a Guideline on the maritime use of SBAS, a Guideline on eLoran, the revision of IMO Resolution A-915 and the update of the contents of the new module on GNSS included in the IALA World-Wide Academy Level 1 Model Course on

#### Did you know...?



#### WORKSHOP ON THE MARITIME USE OF EGNOS

The First Workshop on the Maritime Use of EGNOS co-organised by the European GNSS Agency and the European Maritime Radionavigation Forum was held in Bordeaux past 7th of April, during the pre-meeting of ENC 2015.

This meeting counted with the attendance of experts from the maritime domain and its main objective was twofold: to consolidate the definition of Maritime Services using EGNOS and to define the roadmap for the adoption of EGNOS in the maritime field.

At the same time, this workshop was the suitable event to promote two new Calls for Interest launched recently by GSA. These Calls for Interest are addressed to National Authorities and private companies with a potential interest in the participation in two pilot projects; on one hand, the transmission of EGNOS corrections over IALA beacons and on the other hand, the broadcasting of EGNOS corrections from AIS base stations to all AIS transponders within its coverage area.



... that PPUs (Portable Pilot Units) are computer-based systems that a pilot brings onboard a vessel to support navigation decisions? These portable units usually combine GNSS technology (GPS, SBAS/EGNOS) with other sensors (eg: gyroscope), in order to provide accurate positioning, heading, rate of turn and motion prediction.

# What's going on...



### in rail.

#### ERSAT EAV PROJECT KICKS OFF

The ERSAT EAV (ERTMS on SATELLITE Enabling Application & Validation) project celebrated its kickoff meeting last 31st of March in Genoa, Italy. It is an H2020 two-year project funded by the GSA (5.5 Million euros) and lead by Ansaldo STS, where 12 partners including the ESSP will carry out the activities, with the main objective to verify the suitability of EGNSS (including EGNOS and Galileo early services) as the enabler of a cost-efficient and economically sustainable ERTMS signaling solution for safety applications in regional railway lines. The project proposes to address some of the specific challenges related to this topic, in particular the possibility offered by GNSS for the development of new space enabled applications in the railway sector and especially for safety related applications.

ESSP's involvement in the ERSAT EAV project is wide due to the knowledge and support it delivers through its different specialized working groups: the company is present in nine out of twelve work packages. In particular, to highlight the leadership of the sixth work-package "EGNOS-Galileo Application Development for Railway" where the safety case takes the main prominence.





### in agriculture.

#### **DEMOS ON AGRICULTURE MACHINERY USING EGNOS**

The Demoagro fair took place on the last week of May in Aranda de Duero, Spain. With over 20000 visitors, this event focused in machinery usage. It provided a realistic environment to test and even drive different machines. Almost all tractors from the firms present in the fair (CLAAS, New Holland, AgCo; Massey Ferguson, Deutz-Fahr, Lamborghini, Same) were equipped with an EGNOS receiver. The demos on harvesting, fertilising and spraying were done using EGNOS!



#### Did you know ...?



... that, to comply with European Union Regulations, Germany developed a new airspace model entailing the establishment of radio mandatory zones (RMZ) in the immediate vicinity of uncontrolled aerodromes? This model is operational since December 2014 in order to ensure instrument flight operations at 21 uncontrolled aerodromes. You can find more information in the German Aeronautical Information Publication.

### in mapping.

#### **GEOSPATIAL WORLD FORUM**

The Geospatial World Forum exhibition took place on Lisboa, Portugal. This event is focused in Surveying, Mapping and Geographical Information systems. EGNOS was present as exhibitor and through a devoted conference on the GeoAgri session. Active promotion of EGNOS possibilities for mapping was done and first contacts were launched with relevant GIS Companies.

#### Did you know...?

..that GSA launched a questionnaire to understand surveyors' and reference network providers' needs with respect to EGNOS and Galileo. Express your opinion at gsa portal!

### in GNSS.

#### **GSA MARKET REPORT**

The largely expected GNSS Market Report Issue 4, issued by GSA and launched in March 25, delves into the market opportunities, technology trends and future developments of GNSS. In what regards EGNOS, some excerpts from the report are worth highlighting:

- EGNOS in the railway signaling domain is a key enabler for further enhancing GNSS positioning accuracy.

 EGNOS is already supporting navigation and positioning applications, both in sea and inland waterways, complementing DGNSS infrastructure.
EGNOS offers an affordable solution for precision agriculture with minimal investment.

- EGNOS is a cost-effective solution which satisfies the needs of mapping applications requiring enhanced GPS positioning by providing added value, free of charge.

#### EUROPEAN NAVIGATION CONFERENCE

From 7th to 10th April, the European Navigation Conference took place in Bordeaux, EGNOS was present in the different sessions , such as aviation and GNSS receivers. There was a devoted session for augmentation systems in which several talks related to EGNOS Services were provided. Among them, it is highlighted the presentations of EGNOS NOTAM enhancements on the prediction tool, EGNOS LPV200 service performances for CAT-I operations and EDAS possibilities for added value applications.











#### http://egnos-user-support.essp-sas.eu

Information on historical and real-time EGNOS performance. EGNOS Signal in Space (SIS) status. Forecast on SIS availability and EGNOS performance. EDAS information and registration. EGNOS adoption material and tools.

#### http://egnos-portal.gsa.europa.eu

EGNOS applications. Developers platform. Business support.

For questions & information

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