Международная организация гражданской авиации

ЭЛЕКТРОННЫЙ БЮЛЛЕТЕНЬ

Только для сведения

EB 2010/35 9 августа 2010 года

ХОД ВНЕДРЕНИЯ СПУТНИКОВОЙ СИСТЕМЫ ФУНКЦИОНАЛЬНОГО ДОПОЛНЕНИЯ (SBAS)

ИКАО с удовлетворением отмечает начало эксплуатации Европейской геостационарной навигационной оверлейной службы (EGNOS) и поздравляет Европейскую комиссию (ЕК) с внедрением спутниковой системы функционального дополнения (SBAS), расширяющей возможности обслуживания, предоставляемого глобальной системой определения местоположения (GPS) в соответствии со Стандартами, содержащимися в томе I *"Радионавигационные средства"* Приложения 10 *"Авиационная электросвязь"*. Копии документов, в которых приводится дополнительная информация по данному вопросу, прилагаются.

EGNOS является последним дополнением в ряду успешно внедренных региональных проектов SBAS, таких как система функционального дополнения широкой зоны действия (WAAS) и спутниковая система функционального дополнения (MSAS), основанная на использовании многофункционального транспортного спутника (MTSAT). Некоторые другие системы, такие как навигационная система на основе GPS и функционального дополнения геостационарными спутниками (GAGAN) и система дифференциальных поправок и контроля (SDCM), в настоящее время находятся на стадии разработки.

Приложения:

A. Информационный бюллетень по безопасности полетов ЕАБП. Ввод в действие "Европейской геостационарной навигационной оверлейной службы (EGNOS)".
B. Французский циркуляр аэронавигационной информации A12/10.

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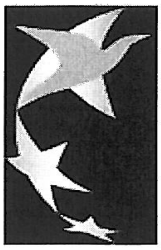
ATTACHMENT A to EB 2010/35

EASA SAFETY INFORMATION BULLETIN – ACTIVATION OF THE "EUROPEAN GEOSTATIONARY NAVIGATION OVERLAY SERVICE (EGNOS)"



EASA Safety Information Bulletin

SIB No.: **2010 - 21**
Issued: **12 July 2010**

Subject: Activation of the "European Geostationary Navigation Overlay Service" (EGNOS)

Ref. Publication: None

Description: EGNOS is a Satellite-Based Augmentation System (SBAS) from the European Union developed to provide both correction and integrity information about the Global Positioning System (GPS). It is similar to the Wide Area Augmentation System (WAAS) controlled by the Federal Aviation administration (FAA).

According to the single European sky (SES) regulations, the EGNOS Service Provider (ESSP) has been certified for the provision of the EGNOS safety of life (SoL) service as of 12 July 2010.

On 2nd August 2010, the system will stop broadcasting the "do-not-use-me" type message (MT0) that is recognized by European Technical Standard Order ETSO-C145 or C146 GPS receivers and prohibits the units to use the EGNOS augmentation. EGNOS will thus be declared operational, but limited to lateral guidance.

The European Commission (EC) will issue a safety of life (SoL) service declaration (before November 2010) to announce the entry into service of the full SoL service, including vertical guidance.

Applicability: All aircraft equipped with EGNOS enabled GPS receivers

Recommendations: The purpose of this EASA Safety Airworthiness Bulletin (SIB) is to highlight to pilots that:

- Although an EGNOS enabled GPS receiver will be processing SBAS signals, no impact is expected on the operation of the currently approved GPS based procedures.
- EGNOS signal may be used for en-route and lateral guidance for approaches from 2nd of August 2010.
- During August 2010, the "do-not-use-me" message (MT0) may occasionally be broadcasted for short periods of time.
- Operations specifically requiring the use of EGNOS enabled receivers for vertical guidance, such as APV SBAS approaches down to LPV minima, are not allowed in any case before the EGNOS SoL Service Declaration of the EC.
- In order to perform such operations, specific installation certification and operational approval from the competent Authority is required.

Information on the current status of the system is available from the European Commission at http://ec.europa.eu/transport/egnos/

The Agency is working on Acceptable Means of Compliance AMC 20-28 as a basis for future approval of SBAS-based navigation.

Contact:

For further information contact the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA.
E-mail: ADs@easa.europa.eu

Reports on service difficulties and malfunctions may be sent to: egnos@easa.europa.eu

For further information regarding the EGNOS system/services please contact: egnos-helpdesk@essp-sas.eu

ATTACHMENT B to EB 2010/35

FRENCH AERONAUTICAL INFORMATION CIRCULAR A12/10

AIC

SUBJECT : EGNOS SAFETY OF LIFE SIGNAL INTRODUCTION OVER FRENCH AIRSPACE

1. INTRODUCTION

1.1. The European Geostationary Navigation Overlay Service (EGNOS) provides an augmentation signal to the Global Positioning System (GPS) Standard Positioning Service (SPS). Presently, EGNOS augments GPS using the L1 (1575.42 MHz) Coarse/Acquisition (C/A) civilian signal function. While the GPS consists of positioning and timing signals generated from spacecraft orbiting the Earth, EGNOS provides differential corrections and integrity information to GPS signals with a dedicated wide area ground infrastructure and geostationary satellites broadcasting the EGNOS signals over Europe.

1.2. EGNOS is providing three type of positioning services:

- The Open Service (OS) is broadcasted through Geostationary satellites and is available since the 1st of October 2009, and intends mainly to support mass market applications. All the details about the OS service may be found in the OS Service Definition Document (see the section 4. Reference Document).

- The Commercial Data Distribution Service (CDDS) uses Internet based resources rather than Geostationary satellites to broadcast EGNOS data, and is intended for ground based customers who require enhanced performance for commercial and professional use. A dedicated CDDS Service Definition Document will be published for the CDDS when the service is declared available (in 2011).

- The Safety of Life Service (SoL) is broadcasted through Geostationary satellites. It is providing the most stringent level of signal-in-space performance to all Safety of Life user communities in Europe, in particular aviation, and it is the subject of this AIC.

    - The SoL signals provided by EGNOS are consistent with the SBAS (Satellite Based Augmentation System) standards promulgated by the International Civil Aviation Organisation (ICAO), and allow providing a positioning service along En-Route, Terminal, Non Precision Approaches (NPA) and Approaches with Vertical guidance (APV).

    - There are two EGNOS SoL service areas. For operations ranging from En-route to NPA, the geographical zone where SBAS avionics may use EGNOS signals is defined by the following geographical coordinates: [40° East, 20° North], [40° East, 70° North], [40° West, 70° North], [40° West, 20° North]. For APV operations using EGNOS vertical guidance, which will be subject to a specific AIC, the service area will be available in the SoL Service Definition Document (to be published for the 1st of November 2010, see the section 4. Reference Document).

1.3. Similar SBAS systems, designed versus the same ICAO standard have already been commissioned by the US and Canada (Wide Area Augmentation System – WAAS) and Japan

(MSAS). WAAS is currently approved to support navigation for En route, Terminal phases of flight, and approaches classified by ICAO as NPA (Non Precision Approaches) and APV (APproaches with Vertical guidance), over the WAAS designated Service area. MSAS is currently approved to support navigation for En route and Terminal phases of flight, and NPA, over the MSAS designated Service area. Implementation of additional SBAS systems is being investigated in other regions of the world (e.g. GAGAN in India and SDCM in Russia).

1.4. Users already authorized to fly operations based upon other SBAS signals (e.g. WAAS) must consult this AIC to be aware of differences and operational restrictions.

2. EGNOS SOL SERVICE INTRODUCTION

2.1. The SoL service is expected to be promulgated in Europe in two steps.

2.2. The first step, from the 2nd of August 2010, will consist of removing from the EGNOS signal the specific message (called Message Type 0) which is currently limiting EGNOS utilisation to Open Service (OS) users.

2.2.1. Consequently, from the 2nd of August 2010, airspace users equipped with SBAS avionics receivers, as defined within TSO C145(), TSO C146(), ETSO C145(), ETSO C146(), may use the EGNOS signals to improve the accuracy and availability of GPS signals, during En-route, Terminal and Non Precision Approach phases of flight, over the geographical area defined in section 1.2 (this area encompasses the French airspace).

2.2.2. During this first step, the MT 0, may be broadcasted again for some short periods of time.

2.2.3. The SBAS avionics standards are compatible with either the use of GPS signals augmented with ABAS (Airborne Based Augmentation System), using integrity provision techniques such as Receiver Autonomous Integrity Monitoring (RAIM), or GPS signals augmented with SBAS. When both augmentations are available, the SBAS receiver evaluates in real time the quality of the positioning service provided by ABAS and SBAS, and automatically selects the best solution.

2.2.4. When the message type 0 (MT 0) is removed, it is expected that the superior quality of SBAS positioning will conduct the SBAS avionics to select the use of EGNOS signals, for the lateral guidance of En-route, Terminal and Non Precision Approach phases of flight. Therefore, for users equipped with SBAS avionics, the major change introduced during this first step of EGNOS SoL introduction, will be to rely on EGNOS signals, in addition to GPS signals, rather than on the sole use of GPS signals augmented by ABAS.

2.2.5. Therefore no specific EGNOS procedures will be published by DSNA or other European Air Navigation Service Providers (ANSP) during this phase, and until the second step defined in section 2.3 below. Users equipped with ABAS avionics, which do not support SBAS positioning, will not be impacted by EGNOS MT0 removal.

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Note: Some SBAS receiver manufacturers have included the possibility within the airborne receiver to deselect one specific SBAS provider. This selection/deselection scheme may be exerted through positioning of a specific bit, on an AIRAC database update cycle (every 28 days). When equipped with those SBAS receivers, currently deselecting EGNOS, users may not be capable to use EGNOS signals, and are invited to contact their avionics manufacturers.

2.2.6. Continental United States or Canadian airspace users equipped with WAAS capable receivers are generally approved to fly APV operations based on Barometric Vertical Guidance in this airspace, with the use of WAAS vertical guidance alternatively to Barometric vertical guidance. Barometric based APV operations are published on some RNAV(GNSS) approach charts, and materialize with a minima line designated as LNAV/VNAV on those approach charts. However, the use of EGNOS vertical guidance to fly such operations, is currently not supported by the APV airworthiness material in Europe and therefore is not authorized in France airspace, until further notice.

2.3. The second step, planned from the 1st of November 2010, will support the full SoL Service, including APV approaches based upon the use of EGNOS vertical guidance, in addition to En-route, Terminal and Non Precision Approach phases of flight.

2.3.1. In opposition to the first step discussed above, APV operations based upon the use of EGNOS vertical guidance will require a specific procedure publication by DSNA or other ANSPs, as well as a corresponding specific approach procedure loaded within the aircraft database. This ANSP publication will materialize as a minima line designated as LPV on RNAV(GNSS) approach charts, usually in addition to the LNAV minima line, representing the Non Precision Approach minima.

2.3.2. This step is only mentioned here for information and will be subject to a specific AIC.

3. OPERATIONAL IMPACT

3.1. The availability of the lateral positioning based on EGNOS allowing Non Precision Approaches, is expected to vary within the area where SBAS avionics are currently allowed to use EGNOS signals ([40° East, 20° North], [40° East, 70° North], [40° West, 70° North], [40° West, 20° North]). A typical map showing the availability of EGNOS lateral positioning is given below. It should be noted that En Route and Terminal area operations availability is expected to be higher than the figures given in this map. As explained in section 2, when and where EGNOS signals will not allow supporting a lateral positioning based on SBAS, the SBAS avionics will automatically revert to a positioning mode based on ABAS. Therefore no operational impact, due to the unavailability of the lateral positioning service of EGNOS, is expected with respect to users only equipped with ABAS avionics.

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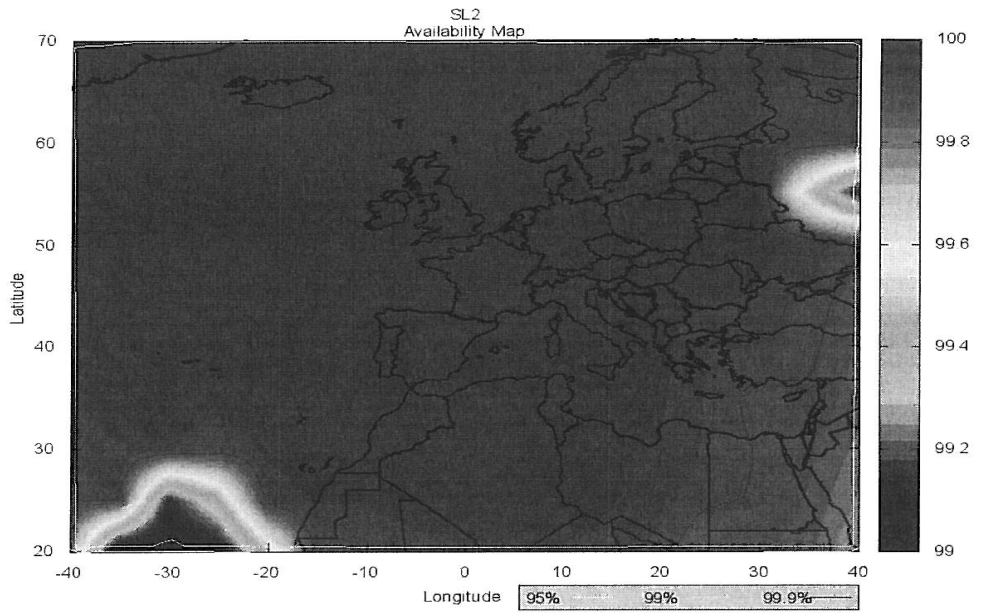

Figure 1. Geographical area where the lateral guidance based on EGNOS will be available when removing MT0, and assessment of availability for NPA operations

3.2. The changes described in this AIC only impact the type of lateral positioning service, along already published procedures. Therefore, no specific or new operational requirements are required for the flight crew. Airspace users equipped with SBAS receivers are invited to refer to their Aircraft Flight Manuals and the existing AIC supporting the use of GNSS systems in France Airspace (in particular AIC A 16/07 and AIC A 26/07 – see the section 4. Reference Document section).

4. REFERENCE DOCUMENTS

Open Service / Service Definition Document
http://www.essp-sas.eu/docs/printed_documents/egnos_sdd_os_v1.pdf

Safety of Life Service / Service Definition Document
http://www.essp-sas.eu/docs/printed_documents/

AMC 20-27 : Airworthiness Approval and Operational Criteria for RNP APPROACH (RNP APCH) Operations Including APV BAROVNAV Operations, published 23/12/2009

AIC

AMC 20-28 : Airworthiness Approval and Operational Criteria for RNAV GNSS approach operation to LPV minima using SBAS, NPA 2009-04, draft version 19/03/2009

AIC A 16/07 France. Objet : Mise en oeuvre des procédures d'approche aux instruments RNAV de non précision basées sur le GNSS.
https://www.sia.aviation-civile.gouv.fr/dossier/aicfrancea/AIC_A_2007_16_FR.pdf

AIC A 26/07 France. Objet : NOTAM GNSS.
https://www.sia.aviation-civile.gouv.fr/dossier/aicfrancea/AIC_A_2007_26_FR.pdf

5. OTHER INFORMATION

5.1. Information related to DSNA navigation strategy and procedure deployment planning may be obtained at :

Direction des Services de la Navigation Aérienne
Direction des Opérations – Service de l'information aéronautique
8 Avenue Roland Garros
BP 40245
33698 MERIGNAC CEDEX, FRANCE
Tel : 33-(0)5 57 92 55 55
Fax : 33-(0)5 57 92 55 10

5.2. Information relative to the certification and operational approval for the operations described in this AIC may be obtained at :

5.2.1. For the French aircraft owners registered in France, and for the French registered public transportation companies (for their whole fleet):

Direction de la Sécurité de l'Aviation Civile
Direction technique Navigabilité et Opérations
50 Rue Henry Farman
75720 PARIS CEDEX 15, FRANCE
Tel : 33-(0)1 58 09 44 80
Fax : 33-(0)1 58 09 45 52

5.2.2. For other aircraft or airlines :

EASA – European Aviation Safety Agency
Postfach 10 12 53
D-50452 KOELN
Allemagne

Tel: 49 (0) 221 8999 000
e-mail : info@easa.europa.eu

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