Input paper: [[1]](#footnote-1) ENG8-11.8

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**□** ARM **x** ENG **□** PAP **□** Input

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Workplan Task Number / Technical Domain 2 …………………………………

Working Group WG 3 – Radionavigation Services

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MAREC – Project SBAS implementation in shipborne receivers

# Summary

## Purpose of the document

This document aims at providing a summary of the MAREC project in order to give insight into how the project could contribute to use of SBAS within the maritime domain.

## Related documents

Draft Guidelines for Manufacturers for the Implementation of SBAS in Shipborne Receivers (1).

# Background

IMO Res. MSC.401 (95) on Performance Standards for Multi-System Shipborne Radionavigation Receivers was adopted in 2015 including SBAS as an augmentation system for maritime (2) (3).

RCTM SC-104 on DGNSS created a SBAS subgroup in 2016 to finalise RTCM Guidelines for the implementation of SBAS in shipborne receivers and draft test specifications for a safety service compliant with IMO Res. A.1046.

EC, GSA, ESA and ESSP prepared a first draft of the Guidelines and present it at RTCM for discussion. A new version of the Guidelines was prepared in 2017, including additional recommendations after being implemented in a software receiver at ESA’s ESTEC Premises (1).

To complement IMO Res. MSC.401(95), RTCM SC-131 on Multi-system Shipborne Navigation Receivers is already drafting the performance requirements and test specifications for multisystem shipborne radionavigation receiver. Liaison between SC-104 and SC-131 is already established with respect to SBAS Guidelines.

IEC TC 80 is expected to prepare test specifications for the type approval of multisystem shipborne radionavigation receivers with the support of RTCM SC-131.

In this framework, and in accordance with the EGNOS Grants Plan, the GSA has launched the MAREC project for implementation of SBAS in Shipborne Receivers according to the draft Guidelines for the implementation of SBAS in shipborne receivers under preparation in RTCM (1), to provide feedback to the document and to provide support for its finalisation and approval within the different standardisation bodies.

# Discussion

In the MAREC project SBAS functionality will be added to existing GPS and DGPS navigation receivers from Kongsberg Seatex. The implementation will be done according to the SBAS guidelines (1), with possible modifications to solve issues that arise during implementation.

Three prototype receivers will be implemented:

1. EGNOS-enabled Shipborne Receiver for navigation in SOLAS vessels
2. EGNOS-enabled Shipborne Receiver for navigation in non-SOLAS vessels
3. EGNOS-enabled Shipborne AIS mobile station

The receivers will be subject to an extensive test campaign with EGNOS in order to establish the level of performance that will be achieved with a receiver implemented according to the guidelines.

The results of the implementation and testing is expected to provide valuable feedback to the SBAS guidelines.

The MAREC project runs for two years from 1st of March 2018. First results of analysis of SBAS guidelines will be available at end of 2018, and first test results are expected in 2019. Final results and recommendations on SBAS implementation in shipborne receivers are expected in the first quarter of 2020.

# References

1. GSA, et al. Draft Guidelines for Manufacturers for the Implementation of SBAS in Shipborne Receivers. 2017. 01-06, 15/8-2017.

2. IMO. Amendments to Performance Standards for Multi-System Shipborne Radionavigation Receivers (Resolution MSC.401(95)). 17 June 2017. MSC.432(98).

3. —. Performance Standards for Multi-System Shipborne Radionavigation Receivers. 8 June 2015. MSC.401(915).

4. IEC. Maritime navigation and radiocommunication equipment and systems - (GNSS) Part 1: Global positioning system (GPS) - Receiver equipment - Performance standards, methods of testing and required test results . 2003. IEC 61108-1.

5. IMO. Adoption of the Revised Performance Standards for Shipborne Global Positioning System (GPS) Receiver Equipment. 2000. MSC.112(73).

6. —. Worldwide Radionavigation System. 2011. A.1046(27).

# Action requested of the Committee

The ENG Committee is requested to:

1. Take note of this introduction of the MAREC project and the work related to the preparation of Guidelines for the inclusion of SBAS in shipborne receivers for SOLAS vessels in preparation of standardisation action within IEC.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Input papers should be assigned to a work task as listed in the Committee work plan which is available in input papers. Leave open if uncertain but consider how the paper is to be processed if not relevant to a work task [↑](#footnote-ref-2)