Discussion points captured during IALA ENAV WG5 EGNOS/SBAS discussions

**A presentation on potential trials of the transmission of EGNOS data over marine beacon DGNSS was provided during the IALA ENAV16 meeting. The aim of the presentation was to gague a level of interest from Service providers, however the subsequent discussion captured a number of different interesting topics, which are captured here for reference.**

**The following points were noted:**

1. **General open points:**

* Funding scheme for the pilot projects still to be defined depending on the interest shown by the maritime community.
* Timeframe for the pilot projects still to be finally defined (tentative end of the year for starting the projects).

1. **Questions/concerns regarding the transmission of EGNOS corrections over IALA radiobeacons:**

* Test conditions still to be defined:
  + Spare equipment to be used
  + Find appropriate time slots to perform the tests with real life systems/stations which are currently in use
  + …
* Liability chain to be considered as a potential added value of interest.
* EGNOS is a potential solution to improve resilient PNT. E.g. EGNOS could be used for additional integrity checks for the radiobeacon/land based systems
* Open points to further investigate:
  + Error introduced by the conversion of EGNOS corrections into RTCM format needs to be assessed
  + Latency impact  introduced by each of the possible radiolinks: Geostationary Satellites signal, EDAS (internet link), Beacon- final user radiolink,…
* EGNOS performance (SiS) independent from the distance to Reference Stations. If transmitted over IALA radiobeacon stations dependency to distance to the station is introduced.
* Concerns about the availability of the EGNOS corrections:
  + Global GPS constellation failure not happened before
  + EGNOS is an operational certified system for safety and liability critical applications over 99% availability guarantied
  + EDAS: Internet link availability – dedicated connections and transmission lines to be considered (to further analyse)
* Integrity monitoring: Further investigate if additional equipment would be needed to make additional integrity checks (post-broadcast integrity)
* Using EDAS NTRIP – corrections computed at certain reference station  possible solution: VRS option
* Transmission of EGNOS corrections as a back-up of DGNSS (in case of failures of DGNSS station). Not to be transmitted simultaneously (transmission channel capacity not overloaded).

1. **Questions/concerns regarding the transmission of EGNOS corrections over AIS:**

* Interesting to have a similar open discussion for the AIS/VDES option.
* WG3· is addressing the transmission of SBAS corrections through VDES.
* To further investigate whether current AIS stations are transmitting DGNSS corrections or not and why.

1. **Other open points:**

* Some Maritime recommendations/guidelines already contemplate different technical alternatives. It would be necessary to clarify what needs to be done, how to compare systems with the same basis, evaluate the benefits and steps forward.
* If a product specification is to be developed (SC104) it should be independent from the transmission means – independent generation of corrections and transmission means
* Take advantage of multiple iono corrections and multiple satellite constellations (RTCMv2.4)

Other comments

* Conversion of space-state corrections into real-time station-based corrections
* Compatability of receiver algorithms
* SBAS services for other constellations
* Spatial decorrelation effects may change with different SBAS/EGNOS services
* Failure of key components and reliance on data communications need to be taken into consideration
* Integrity monitoring needs to be clear and inline with maritime requirements.
* Service provider considerations for availability – will a site require a legacy set up for redundancy.
* Liability chain.