

**[AERO 01]**

**Availability and effectiveness of differential navigation satellite system (DGNSS) radio beacon for hydrographic positioning**

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Differential Global Navigation Satellite System (DGNSS) radio beacon is among a system, which used Differential Global Positioning System (DGPS) concept based on pseudorange measurement. With this system, DGPS corrections can be received for free using the available reference station. With the availability of operated reference station 24 hours per day, users are no longer required to set up their own reference station. However, the main reason of introducing DGNSS radio beacon is as an aid to safety for marine navigation and not intended for a positioning system in hydrographic surveying. This study evaluates the performance of DGNSS radio beacon to be used in hydrographic surveying. For this purpose, a series of test have been carried out on the DGPS corrections received from DGNSS radio beacon. The achievable accuracy using the DGPS corrections from this station depends on the distance between a reference station and moving receiver. For a distance approximately 46 kilometers from a reference station, the achievable horizontal accuracy is within the range of 0.4 meters to 0.7 meters using single frequency L1 C/A code receiver (with carrier smoothing). Meanwhile, for a distance approximately 250 kilometers, the horizontal accuracy is about 1.5 meters to 2.1 meters. The distance and the age of DGPS corrections are identified to be the main factors that contribute an effect on the positioning accuracy. Lastly, a manual tracking of DGNSS radio beacon station produced a consistent result compare to the automatic tracking method for nearshore and offshore applications.