

UNIVERSITI TEKNOLOGI MARA

**COMPARISON ACCURACY
BETWEEN STANDALONE GLOBAL
POSITIONING SYSTEM (GPS) AND
DIFFERENTIAL GLOBAL
POSITIONING SYSTEM (DGPS)
BASED ON RADIO BEACON IN
HYDROGRAPHY SURVEYING**

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Disertation submitted in fulfillment
of the requirements for the degree of
**Bachelor of Surveying Science and Geomatics
(Hons)**

Faculty of Architecture, Planning and Surveying

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AUTHOR'S DECLARATION

I declare that the work in this disertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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ABSTRACT

There are presently two Global Navigation Satellite System core system namely Global Positioning System (GPS) and Differential Global Positioning System (DGPS). The dependency on these space-based technology for navigation, positioning and timing is on the growth globally, and already be the essential system worldwide. The present service of GPS has motivate the acceptance and integration of the technology into peaceful civil, commercial and scientific application worldwide. Issues such as integrity, accuracy, availability and continuity are not adequately addressed. Lacking of these requirement may lead to occurrence of catastrophes. While in hydrography survey, positioning is a crucial part where it is determine the actual position based on seabed of the survey area. Where according to International Hydrographic Organization (IHO), the standard accuracy for positioning in survey work is two (2) meter accuracy level. In order to ensure which positioning method that best suit hydrographic positioning accordance to the tolerance given by IHO, this paper study about the difference accuracy of positioning based on different source and analyse the accuracy between Standalone GPS and Radio Beacons DGPS observation. Observation between these two methods is done by using dynamic mode to imitate the motion of a vessel. Two observation being done for both method on the same sounding line and outcome coordinate from both method were compared to each other and also compared with sounding line. Displacement value from these method will be analyse using statistical analysis by method Root Mean Square Error (RMSE) to define which method has a good accuracy. The result of dynamic observation for the two (2) method show that the displacement of Radio Beacons DGPS method is lower that Standalone GPS method compared to sounding line where the displacement is below one (1) meter and according to IHO, the accuracy of DGPS based on radio beacons for this study is significant at the 95% confidence level because the RMSE is below that two (2) meter. The outcome form this study show that Radio Beacon DGPS is more accurate compared to Standalone GPS even the observation was on the ground surface and long baseline.

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