

UNIVERSITI TEKNOLOGI MARA

**COMPARISON OF POSITION
ACCURACY ANALYSIS FOR NON-
DIFFERENTIAL GPS, BEACON
DIFFERENTIAL GPS AND LOCAL
AREA DIFFERENTIAL GPS FROM
ISKANDARNET IN
HYDROGRAPHIC POSITIONING**

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Thesis submitted in fulfillment
of the requirements for the degree of
Bachelor of Surveying Science & Geomatics

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AUTHOR'S DECLARATION

I declare that the work in this thesis 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.

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ABSTRACT

DGPS uses a network of fixed ground based reference station to provide signal for showing the difference in reading between the position indicated by positioning system and known fixed point. The aim of research project is to determine the difference in term of positioning accuracy between Non-Differential GPS, Beacon Differential GPS and ISKANDARnet DGPS. The objectives are to determine the accuracy of positioning from non-differential GPS, beacon DGPS and ISKANDARnet DGPS, to evaluate the quality of positioning accuracy between Non-differential GPS and ISKANDARnet DGPS and to determine the connectivity and stability of ISKANDARnet connection. The methodology starts with information gathering about the research element such as study area, equipments, software and method of data collection. Next is the data acquisition that started with integrity checking, creating path for research work using MyRTKnet and data acquisition. Real time data processing was used with using the dynamic mode and HydroPRO software. Three types of data have been collected which were Non-Differential GPS (NDGPS), Beacon DGPS and ISKANDARnet DGPS with each type of data will be compared to each other. The result show that the integrity check was within tolerance of the International Hydrography Organization (IHO) acceptable tolerance for doing any hydrography survey works which is ± 2 meter. Another analysis that has been produce was the comparison of data collected between Non-Differential GPS (NDGPS), Beacon DGPS and ISKANDARnet DGPS from the 10 lines that have produced before data being collected. From results obtain, all the points distance were below 2 meter from the center line. Third analysis show that the ISKANDARnet has several disconnect and have similar pattern before it disconnect and reconnect. Lastly, analysis on number of satellite vehicle (SV) and PDOP value from the entire collected data. NDGPS has the highest average number of SV with 11 SV followed by ISKANDARnet (8) and Beacon DGPS (7). For PDOP value, lowest average recorded was NDGPS (1.78), followed by beacon DGPS (2.48) and ISKANDARnet (2.68) Based on result obtain, ISKANDARnet can be use for hydrography survey works as the accuracy was below the tolerance stated by IHO and NDGPS has become more reliable after the Selective Availability (SA) discontinued.

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