UNIVERSITI TEKNOLOGI MARA

SEAMLESS VERTICAL DATUM MODEL OVER SARAWAK REGION USING KTH METHOD

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Disertation submitted in partial
fulfillment of the requirements for
the degree of **Science Surveying
and Geomatics (AP220)**

Faculty of Architecture, Planning and Surveying

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AUTHOR'S DECLARATION

I declare that the work in this report was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged a referenced work. This report 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 Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study.

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ABSTRACT

Sarawak had known as a rugged topographic area because it had many mountains, dense rainforest and much of it protected parkland in Sarawak area. Because of that, the traditional levelling network in Sarawak was difficult to carry out. When the levelling network can't be carried out because of that situation, it was had several vertical datum networks that refer differences tide gauge and from that, it will provide the inconsistencies in heighting at Sarawak. In this research, it had selected Sarawak as a study area and this research aims to establish a seamless model of vertical datum over Sarawak region by using KTH method. To achieve the aim for this research, firstly, it will be validated GGM that refers to the inner region and outer region of the research area. After that, the two GGM that had been selected based on validation at the inner region and outer region will be combined with DEM data and gravity data to produce a gravimetric geoid model by using KTH method. From that, it will identify the effect of Global Geopotential Model (GGM) onto gravimetric geoid modelling. In the next step, the gravimetric geoid model will integrate with local datum to produce hybrid geoid model. Lastly hybrid geoid model will compare with existing hybrid geoid model to see the differences. The significant that will be provided by this research is it be provided seamless vertical datum model which is new gravimetric geoid modelling that using KTH method for Sarawak region. Besides that, it will be provided three hybrid geoid model that refers to each of tide gauge in Sarawak and this can be used by a surveyor for any survey work. The potential benefit of this study is it will be known the effect of selected GGM toward generating gravimetric geoid modelling and differences between the new hybrid geoid model with existing geoid model that using RCR method. At the end of this research, it will achieve the aim and objective of the research.

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