

UNIVERSITI TEKNOLOGI MARA

**DETERMINATION AND EVALUATION OF ORTHOMETRIC
HEIGHT DERIVED FROM MALAYSIAN CONTINUOUSLY
OPERATING REFERENCE STATION OF MYRTKNET**

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Thesis submitted in fulfillment
of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work on 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.

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

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ABSTRACT

Traditional levelling in determination of heighting is time consuming, labor intensive and costly. With the advent of Global Positioning System (GPS) technology coordinate in 3D can be obtained with reasonable accuracy. This study investigates the capability of GPS as a tool of obtaining heights value. Static and Real-Time Kinematic with Virtual Reference Station (RTK VRS) technique of GPS observation is chosen for height determination. For static observation mode, absolute and relative GPS heighting concepts are investigated. Only absolute GPS heighting concept is investigated in RTK VRS mode. The study area comprises of Negeri Sembilan and Melaka in Peninsular Malaysia. In this study, it is shown that static mode of GPS observation utilizing the absolute GPS heighting concept can achieve heighting difference between observed and known height in the range of -0.131 m and 0.045 m. The Root Mean Square (RMS) value for static mode using absolute GPS heighting concept is ± 0.079 m. Static mode using relative GPS heighting concept gives mean relative accuracy of 2.6 ppm. In this study, the duration of GPS observation for point positioning is also investigated. For 5 hours of GPS observation, it is capable of determining height in the first-order accuracy points with less than 1.1 km (0.010 m). Using RTK VRS method of observation, the range of height difference is between -0.005 m and -0.202 m. The results also show that there are no significant differences between broadcast and precise ephemeris. From this research, it is possible to do GPS heighting in study area.

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TABLE OF CONTENTS

AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	x
LIST OF FIGURES	xiii
LIST OF ABBREVIATIONS	xvii

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND	1
1.2 PROBLEM STATEMENTS	2
1.3 AIM	3
1.4 OBJECTIVES	3
1.5 SCOPE OF STUDY	3
1.6 METHODOLOGY	4
1.7 THESIS OUTLINE	7

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION	9
2.2 TYPES OF ORTHOMETRIC HEIGHT DETERMINATION TECHNIQUES	9
2.3 GLOBAL POSITIONING SYSTEM	11
2.4 CONCEPT OF GPS	11
2.4.1 Space Segment	12
2.4.2 Control Segment	15
2.4.2.1 Master Control Station	15
2.4.2.2 Monitor Stations	15
2.4.2.3 Ground Control Stations	16
2.4.3 User Segment	17
2.4.3.1 Military Users	17
2.4.3.2 Civilian Users	17