

**INVESTIGATING OF VLF SIGNAL PRESECUTORS FOR
EARTHQUAKE NEAR MENTAWAI ISLAND**

**This thesis is submitted in partial fulfillment for the award of
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ABSTRACT

This report investigates about Seismic-Ionosphere perturbation using Very Low Frequency (VLF) signal Observed in Malaysia. The propagation of VLF signals is between NWC transmitters and receiver at Selangor station. The length of the transmitter-receiver –Great Circle Path (TRGCP) is 3000km. The propagation path of VLF signal identify the possible ionospheric-perturbations related to the earthquake disaster occurred in Indonesia region within January 2009 – April 2011. Out of seven earthquakes detected within the period only one that show possible evidence is the earthquake at Mentawai Island on 25th October 2010. The magnitude is 7.7 and depth 20.6km. The data was analyzed using three methods (1) average nighttime and daytime amplitude variation (2) terminator time (TT and (3) nighttime fluctuation (NF) methods.

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CHAPTER 1

INTRODUCTION

1.0 BACKGROUND STUDY

An earthquake is a very destructive natural disaster. The earthquake is caused by a sudden vibration of rocks and makes the ground of earth's surface moving. The movement of earth's surface also creates seismic waves. Prediction of the earthquake is very important to decrease the number of earthquake events. The prediction can be classified depending on the time which is to be concerns. But in reality, the earthquake prediction it has been far and seems very possible to predict [1]. The crustal movement of the earth's surface measurement are classified as conventional prediction of earthquake. For the short term of earthquake prediction, this kind of measurement has been concluded as not very useful. Earthquake prediction using electromagnetic method called radio surrounding to detect an effect of the earthquake at the atmosphere and ionosphere. A results show that ionosphere is extremely sensitive to the seismic effect [2].

The lightning discharge is produced electromagnetic signals which are known as radio atmospheric then radiated electromagnetic energy into extremely wide bandwidth. Most of the energy is radiated to the Very Low Frequency (VLF) and