UNIVERSITI TEKNOLOGI MARA

EVALUATION THE RESOLUTION OF GPR RADARGRAM INFLUENCED BY LNAPL BASED ON DIFFERENT TYPE OF FREQUENCY

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I declare that the work in this project/dissertation 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

The contaminated of subsoil usually happens because of the leakage of hydrocarbon from buried tanks or pipe. Hydrocarbons usually come in the form of liquids and gaseous with different saturation. These hydrocarbons will interfere with electromagnetic wave from GPR and give an effect to GPR data. The purpose of this paper is to determine the resolution of GPR radargram based on different frequeny. Objectives of this study are to evaluate the vertical and horizontal resolution of GPR radargram based on different antenna frequency for clean and contaminated soil and to analyse the accuracy of GPR resolution for high and low frequency. The experiment were conducted using dual antennae ground penetrating radar (GPR) systems with frequency of 250 MHz and 800 MHz were deploy. As a prelude to acquisition of field data, a simulation of GPR surveys was held on a site in UiTM Arau, Perlis. A pvc pipe was planted in 3 different soil which are fine sand, coarse sand and gravel. The depth of the pipe was approximately 0.5m from the surface of soil. GPR survey were done on the original soil condition and then a new GPR scanning were conducted after the soil had been contaminated by diesel. Next the GPR data being process and filter by using REFLEXW software to get the necessary parameter to calculate and analyze the resolution of radargram. The output of this study shows that the influence of diesel in soil give a rise in relative permittivity of media and thus affected the horizontal and vertical resolution.

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