GPR for the Location of Underground Storage Tanks

Introduction

The ground penetrating radar (GPR) technique has been used successfully in locating underground storage tanks (UST) on service station sites, through reinforced concrete paving and this technical note shows an example of this.

This example is taken from a service station site where the presence of underground storage tanks is always present. The example shows the capability of the technique.

Survey Specifications

This survey used the Mala Geoscience RAMAC/GPR System being the X3M system and a 500 MHz shielded antenna, mounted on a cart and using a PC computer for the data capture display and storage. See the photo below for the system setup.

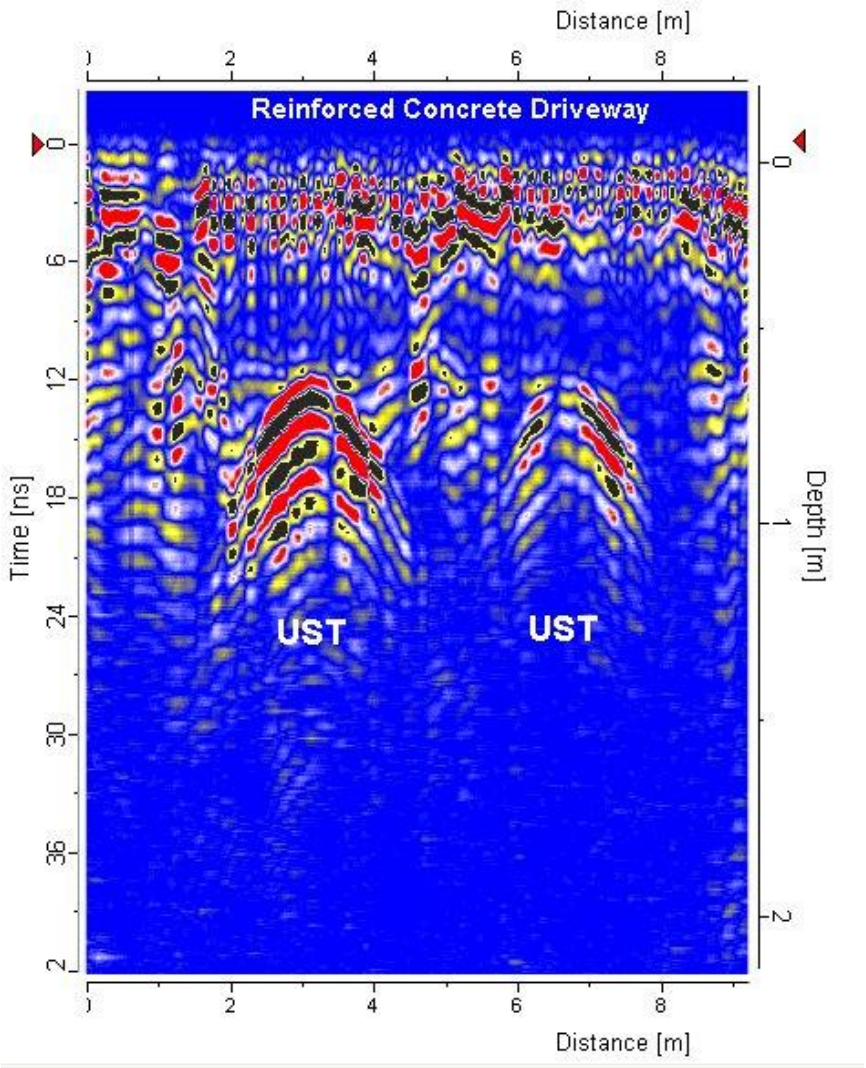
Data Acquisition

The data was acquired on the site using 1 metre line spacing and the wheel odometer providing distance down the survey line. The system can input DGPS data for position of survey lines, however for small complex areas such as a service station it is recommended that the survey be undertaken on a detailed grid.

Results

An example of the data collected during this survey is present on the following page. This example shows two buried UST's on the site under a covering of reinforced concrete paving.

The top of the hyperbola is interpreted as the position of the top of each of the tanks at approximately 0.6 metres below the pavement. There is also an indication in the data of the sides of the trench which the tanks were buried in.



Summary

Although the theory of GPR indicates that there should be little or no penetration of the electro-magnetic pulse / wave through reinforcing to locate items beneath, it has found from practical experience that this is not the case and both tanks and pipes can be located.

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