Georadar Prospecting with a Case Study from Egypt

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Geophysics, working with ground-penetrating radar, is convinced that with the help of this device may probe to a depth of only 1.5 - 2 meters in the lungs or frozen soils. In wet clay soils, GPR generally cannot work. This opinion is valid for all GPR built according to the traditional scheme.

To achieve maximum depth sensing, georadar "Loza" power probe signal increased 10 000 times in relation to the standard scheme. In the low-frequency version of GPR "Loza-H" signal power is increased to 100 000 times. In order to achieve high energy, performance has been completely revised the traditional scheme of the GPR. Stroboscopic transformation replaced direct detection of the probe signal without converting it to lower frequencies. As the antenna (or its main radiating elements), in a series of georadar "Loza" used RC-loaded dipoles.

The Geo-radar Mission in Alex, Egypt
Objective: a survey of the geological structure of the bottom layer of the soil and the identification the soil collapse along the survey area.

We used Georadar LOZA-V 100 -200 MHz)with a transmitter 5-10 kw

The first Area: Elshatby
We had 30 profiles by using (Loza-V, Freq 100 MHz).

The Survey divided into 5 profile groups, where's the distance between profiles from 2-5m.

Interpretation
- From the profiles, we detected two main layers, the first one on a 2m depth and the second one on 5m.

- The first layer is unconsolidated soil and we've been detected the dangerous places from the profiles as we found a saturated soil with water which had a negative effect on the soil. [3]

Источники и литература

1) L. B. Conyers and D. Goodman, "Ground Penetrating Radar: An Introduction for Archeologists," Altamira press, Walnut Creek, 1997.

2) VNIISMI Company Booklet

3) The Egyptian company for Space science and re-mote sensing
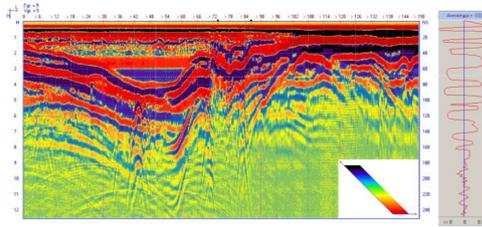
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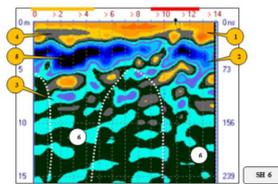
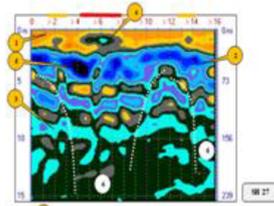Fig 2: the lay out of the measured data.

Рис. 1. Fig. 1

Fig3: Profile SH6

Fig4: Profile sh 27

Рис. 2. fig. 2