

DESCRIPTION OF GEORADAR GEOPHYSICAL METHOD

The operating principle is the same as the radars used in air and marine navigation, with the main difference being the lower frequency operation, so that the electromagnetic pulse penetrates the ground surface. The emitted pulse is reflected at each discontinuity-interface that alters the dielectric constant or resistance in the subsurface.

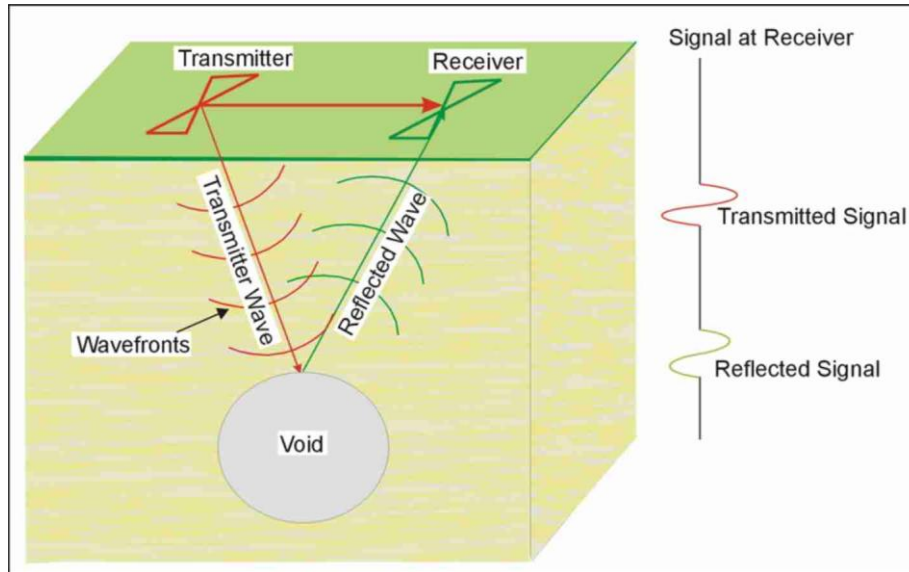
The operating frequency adjusts the depth of penetration. This is done with the same instrument simply by using a different antenna. The selection of the antenna for research (basically frequency selection) refers not only to depth but also to resolution, because lower frequency means greater depth of research and less resolution - that is, we can distinguish larger objects by losing some larger ones.

The power of reflection - that is, percentage of the signal will be reflected - depends on the difference of materials and the mathematical type is the same as the classic type of Optical physics. Reflection is therefore relative (dimensionless) since the power of signal returns is not a criterion for determining subsurface materials or physical parameters of them. Just the method can map out in detail all changes in the subsoil, since Georadar is the geophysical method with the highest resolution (the ability to distinguish small-sized targets (objects-geological layers-gaps etc.)

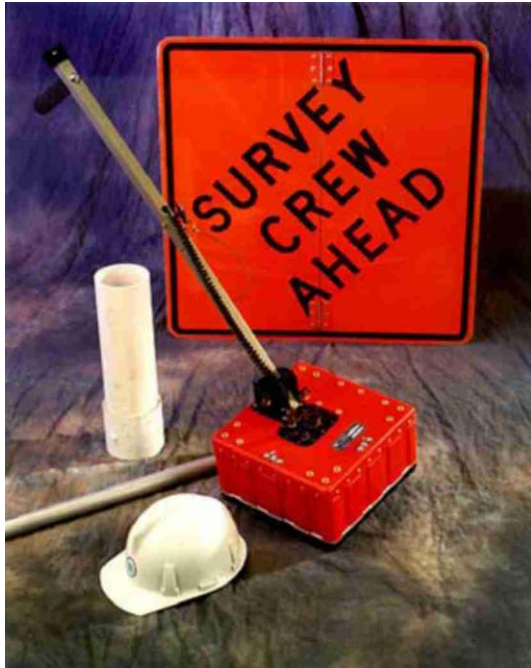
We own the Sir3000 of the American firm GSSI, which is also the first manufacturer of a commercial Georadar instrument. The instrument accompanied by a cart with a distance measuring device that can also adjust the recording based in the length. In addition, we have three different antennas for depths from 60 cm up to 18 meters (in rock). In soil only geology the maximum depth is 12 m



Εικόνα Η συσκευή του Γεωραντάρ με τον μηχανισμό μετρήσεως αποστάσεων.



Sir 3000 from GSSI



Εικόνα 1 Η κεραία των 400 Mhz που χρησιμοποιείται κυρίως για εντοπισμό δικτύων



Εικόνα 2 Η κεραία των 200 Mhz που χρησιμοποιείται για βάθη μέχρι 15 μέτρων για γεωτεχνικούς κυρίως σκοπούς



Εικόνα 3 Η κεραία των 100 Mhz σε monostatic mode δηλαδή πομπός και δέκτης μαζί για βάθη μέχρι 15 μέτρων.



Εικόνα 4 Η ίδια κεραία (των 100 Mhz) με ξεχωριστό δέκτη και πομπό έχει την δυνατότητα να ερευνήσει την γεωλογία μέχρι βάθους 25 μέτρων.



Εικόνα 5 Η κεραία αυτή κατεβαίνει σε γεωτρήσεις και με κατευθυνόμενη εκπομπή μπορεί να ελέγξει περιμετρικά (360 μοίρες) σε ακτίνα 15 μέτρων