

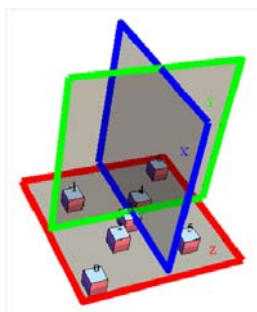
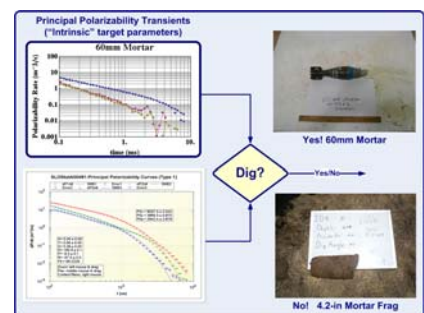
GEOMETRICS INTRODUCES THE METALMAPPER UXO DISCRIMINATION SYSTEM

COMMERCIALIZING THE RESULTS OF PRIVATE AND GOVERNMENT RESEARCH PROGRAMS

From Bark Hoekstra, Product Manager, Geometrics

The MetalMapper, supported in its development by several major governmental agencies including SERDP/ESTCP and NAVEODTECHDIV, is geared towards reducing the high cost for cleaning up sites contaminated with unexploded ordnance (UXO). A major emphasis of these groups is the commercialization of the technologies developed under these programs.

The MetalMapper system is a step forward in the discrimination of Unexploded Ordnance (UXO) from other buried metallic scrap. It uses the proven methods of Time Domain EM (TDEM) to identify buried metal, but has significantly more capabilities than existing commercially available systems. The TDEM method works by inducing currents in the ground. Currents in the soils quickly decay away, but if there are metallic objects in the ground the currents decay much more slowly. The MetalMapper system measures the magnetic fields caused by the currents in the metallic objects and then uses that information to compute the size and shape of the buried object.



The system consists of 3 orthogonal transmitter loops that are 1m x 1m in size. There are 7 (seven) 3-component receiver coils mounted within the horizontal transmitter coil. The receiver coils are wire wrapped on 10 cm x 10 cm cubes

The system can be used in two different modes. The first is a dynamic mapping mode where only the horizontal transmitter coil is used and a shorter recording window is employed. The second mode is a static mode where once a target has been identified the array is placed on top of the target. In this mode all three transmitter coils are fired sequentially and a longer recording window is employed.

The system is controlled by a compact PC, running software that controls the acquisition parameters, logs the data and also provides feedback to the operator on the positioning of the system and data quality. The system is highly configurable allowing the operator to vary almost every data acquisition parameter including decay length, number of decays averaged, transmitter coils used and others. The displays available to the operator are equally flexible, so the operator can see the information necessary for whatever type of survey is being performed.

This is a map (*Image 3*) derived from the MetalMapper data. The targets are identified by bright pink features in the data. Similar production rates to currently used systems are obtainable, but the MetalMapper has increased positional accuracy because of the multiple small receiver coils instead of a

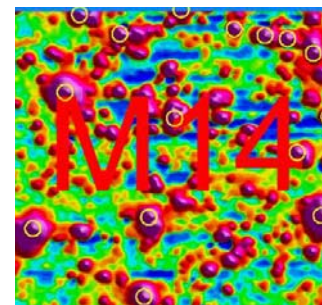


Image 3

single large coil. Further research is currently being conducted to provide the ability to determine the size and depth of the objects from dynamically collected data.

The results from the latest demonstration of the MetalMapper at a site in San Luis

Obispo, California showed that the MetalMapper can provide information that is a huge leap forward in the ability to discriminate UXO objects from other metallic objects. The receiver operating curves (ROC) shown in (Image 4) show that all UXO objects would be excavated with a minimal number of pieces of scrap metal.

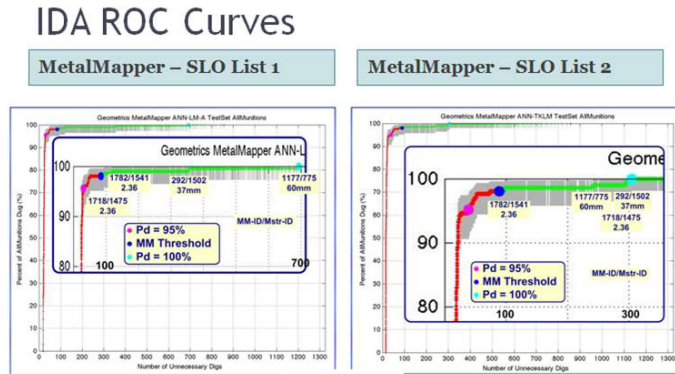


Image 4

Instead of digging thousands of metallic scrap items to find one or two UXO items, which is typical of most UXO remediation projects, the MetalMapper identified all the approximately 200 UXO objects while only selecting 90 metallic scrap objects. This type of information allows a UXO remediation to proceed much quicker and at lower cost, allowing valuable property to be used productively.

Software is provided with the MetalMapper to directly import the MetalMapper files into commonly used software packages such as *Geosoft Montaj*. In addition a .Net library is provided to allow other programs to easily access the data..

Geometrics has supplied the world with rugged, portable, easy-to-use, and technologically-innovative geophysical instruments — and responsive, worldwide customer support, since 1969. Our line of seismographs, magnetometers, and geoelectrical instruments lets you produce detailed reports, graphs, and maps of the earth's subsurface for:

- Mineral, oil, and gas exploration
- Unexploded ordnance mapping
- Geotechnical engineering studies
- Archaeology

Learn why colleges and universities, research institutions, government agencies, and exploration firms depend on our 40 years of field experience at www.geometrics.com.