

MAGNETIC METHOD



The magnetic method involves the measurement of the earth's magnetic field intensity. Typically the total magnetic field and/or vertical magnetic gradient is measured. Measurements of the horizontal or vertical component or horizontal gradient of the magnetic field may also be made.

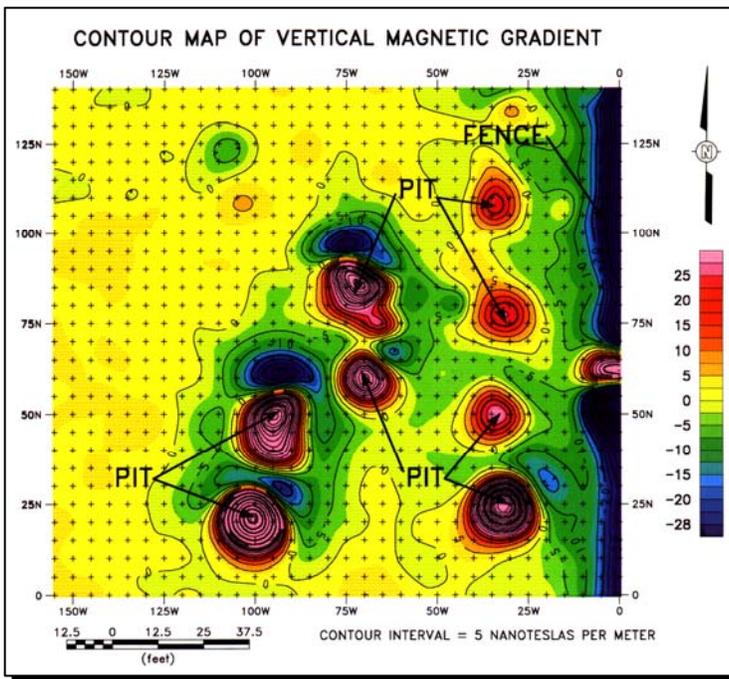
Anomalies in the earth's magnetic field are caused by induced or remanent magnetism. Induced magnetic anomalies are the result of secondary magnetization induced in a ferrous body by the earth's magnetic field. The shape, dimensions, and amplitude of an induced magnetic anomaly is a function of the orientation, geometry, size, depth, and magnetic susceptibility of the body as well as the intensity and inclination of the earth's magnetic field in the survey area. Buried ferrous metallic objects, such as pipes, drums, tanks, and debris generally give rise to dipolar anomalies with a positive response south and a negative response north of the object. The magnetic method is an effective way to search for small metallic objects because magnetic anomalies have spatial dimensions much larger than those of the objects. An oil well typically gives rise to a monopolar anomaly with a very high amplitude, positive peak several feet south of the well and a low amplitude, broad negative response to the north. The magnetic anomaly over a buried oil well often has a diameter of over 50 feet and amplitude of several thousand nanoteslas, depending on depth and casing characteristics. Magnetometers can typically locate an abandoned oil well to depths of over 20 feet providing that background noise levels are not too high and the well casing is not significantly corroded. Magnetometers are not able to detect nonferrous metals such as aluminum and brass.



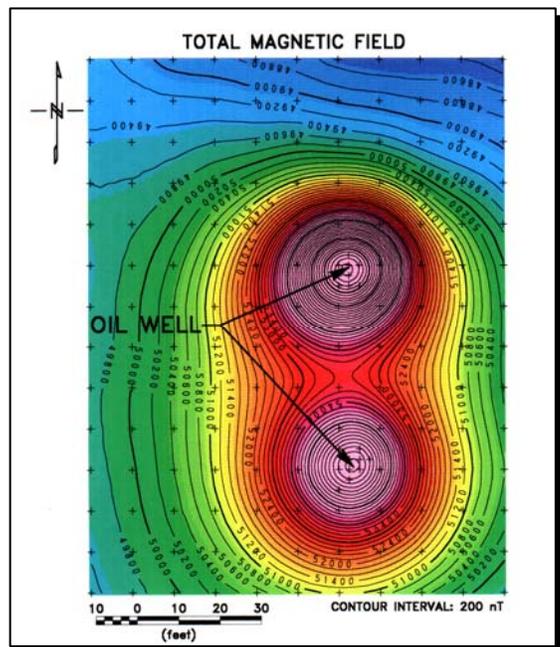
Geometrics G-858 Magnetometer

The magnetic method is typically used to:

- Locate abandoned steel well casings
- Locate buried tanks and pipes
- Locate pits and trenches containing buried metallic debris
- Detect buried unexploded ordnance (UXO)
- Map old waste sites and landfill boundaries
- Clear drilling locations
- Map basement faults and geology
- Investigate archaeological sites



Magnetic Survey to Locate Pits Containing Buried Metallic Containers



Magnetic Survey to Locate Abandoned Oil Wells