

GEOCEAN

REFERENCES

HIGH RESOLUTION MAGNETOMETER SURVEY



GRADIOMETER SURVEY

- **Detection of buried ferro magnetic objects**
- **Precise localization of buried objects**
- **Control after removal**
- **Estimate magnetic mass and burial depth**

METHOD :

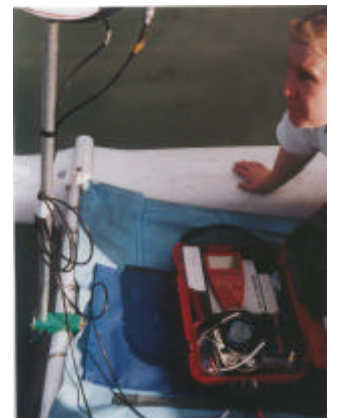
Two high resolution cesium vapor magnetometers are towed on or below a passive floating support. The floating support is towed using a small local boat, big enough to withstand local environmental conditions. The whole assembly is precisely positioned using RTK DGPS.

The surveyed area is covered along predefined tracks, spacing being defined according to required accuracy of results.

Magnetometers are used in gradiometer mode (difference of reading between the two sensors). They can be installed horizontally, to obtain precise horizontal position of objects, or vertically, to estimate magnetic mass and burial depth.

EQUIPMENT :

DGPS positioning, shore station
2 DGPS receivers
1 Navigation computer
2 Geometrics G881 magnetometers
Acquisition PC with mapping and interpretation software



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HIGH RESOLUTION MAGNETOMETER SURVEY

DATA ACQUISITION

Data acquisition is achieved in real time and continuously using a software acquiring positioning and magnetometer data's simultaneously. The software generates a file containing GPS data's and a file containing magnetometric data's, i.e.

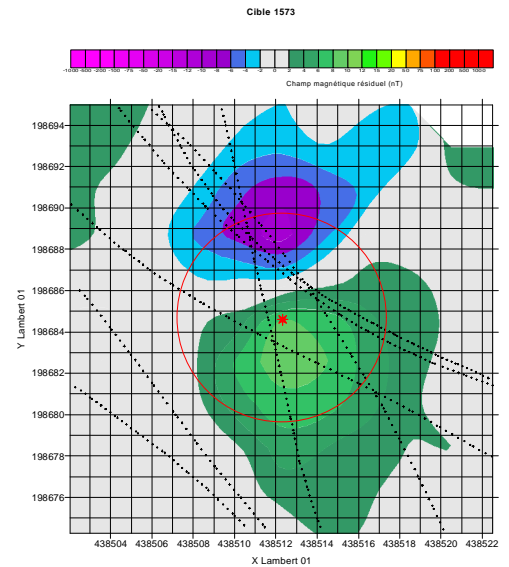
- the total magnetic field measured by each of the sensors
- the measurement quality signal for each sensor
- the immersion of each sensor
- the magnetometric gradient

Magnetometers are set up at a nominal acquisition frequency of 10 Hz, but this frequency can be adapted according to boat speed and obtained results.

Typical boat speed is about 5 knots.

Typical line spacing 5m depending of objective of the survey

Acquired signals can be visualised during acquisition to check their shape



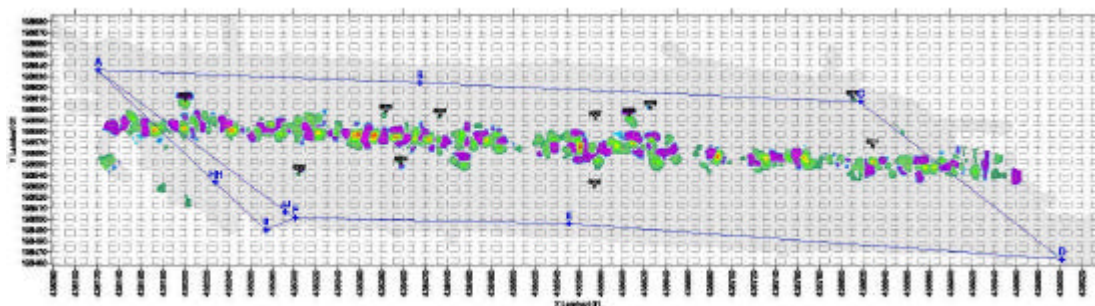
**Individual magnetic anomaly
induced by a large buried object**

DATA TREATMENT & INTERPRETATION

- Navigation data treatment
- Edit magnetometric and extract data related to anomalies
- Merge navigation and magnetometric data's files
- Compensate for daily variations
- Filtering, interpolation and mapping of anomalies

APPLICATIONS

- Precise location of buried pipes and cables
- Detection of buried ammunitions
- Detection of buried anchors and chains
- Control after removal of buried objects



Remaining anomalies after removal of an outfall



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