Xcalibur
SMART MAPPING

XMAG®

An Ultra-High Resolution Magnetic Gradiometer and Radiometric System

Exclusive to Xcalibur Smart Mapping

Xcalibur
SMART MAPPING

XMAG®

Xcalibur Smart Mapping currently operate eight Air Tractor Systems globally, which are equipped with the XMAG® system. Air Tractors are designed for low-level flying with long endurance, which optimizes productivity.

XMAG® is a world-leading magnetic and radiometric system which utilizes a fixed wing aircraft to deliver ultra-high-resolution data, with a quick turnaround time.

XMAG® surveys offer some of the lowest noise levels in industry and the system is highly sought-after for mineral exploration in the public and private sector.

XMAG® technical advantages:

The magnetic system:

- Low system noise (Cesium Vapour sensors) for clean and highquality data.
- Low-level flying which Improves signal-to-noise ratios and spatial resolution of data.
- Fast acquisition and processing to expedite exploration activity.
- Real-time compensation which removes the effects of aircraft induced noise on data.

- Measurement of magnetic gradient data which improves geological parameterization.
- Low AC Field Interference from nearby powerlines which helps maintain data integrity.

The radiometric system:

- Fully automatic gain stabilization on natural isotopes worldwide.
- No requirement for radioactive sources for system setup.
- Two NaI (Tl) Crystal packs that operate independently, each pack with four downward and one upward looking crystal (36 litres in total).
- Minimal shielding by fuel tanks.

In addition to the system advantages, XMAG® surveys utilize a team of industry-leading technical and operational personnel.

Diamond Exploration with XMAG®
Central Kalahari, Southern Africa

XMAG® data is well suited to the exploration for kimberlite targets. Low-level flying greatly improves spatial resolution and signal-to-noise ratios, thus providing more detailed information on near-surface features such as faults and kimberlite pipes.

XMAG® surveys, flown in the central Kalahari, led to the discovery of several priority targets (Kimberlites) for potential diamond exploration.

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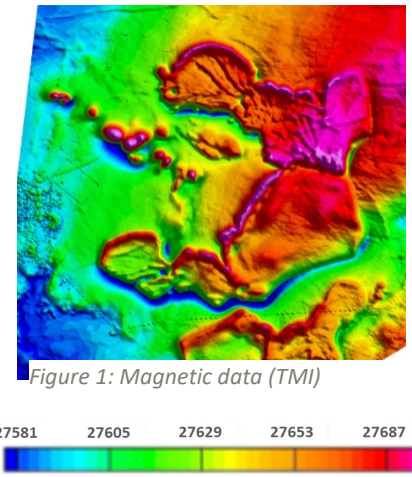

Figure 1: Magnetic data (TMI)

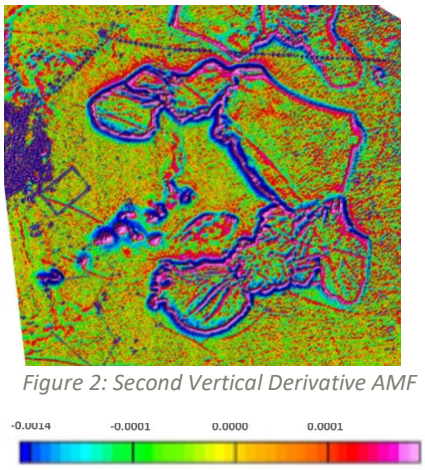

Figure 2: Second Vertical Derivative AMF

Gas Exploration with XMAG®
Karoo Basin, South Africa

Gas in the Karoo basin is sourced from the coal seams of the Vryheid Formation. This is trapped in various structural and lithological sites as well as being present as coal bed methane. High resolution aeromagnetic have been used to identify potential trap sites formed by volcanic intrusions and major structures which act as pathways for gas formed by radiogenic processes.

Flying lower with the XMAG® system and utilizing the horizontal gradient increases the signal amplitude and spatial resolution. This makes it possible to accurately map intrusive and faults. This is illustrated by comparing regional and high-resolution magnetics acquired with the XMAG® system (Figures 3 and 4).

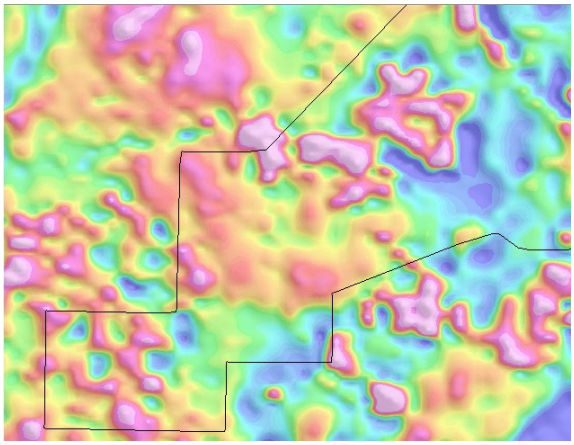

Figure 3: Regional magnetic data (TMI)

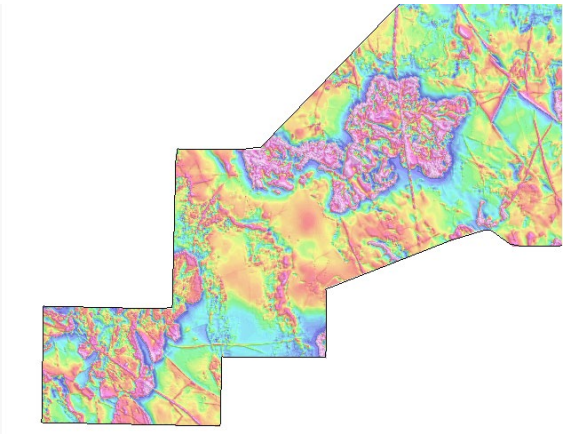

Figure 4: XMAG magnetic data (TMI)

Gas Exploration with XMAG®

West Africa

A high-resolution XMAG® survey was flown at 50m line spacing targeting areas for gold exploration. Radiometric data helps to correlate and delineate lithological units based on radioelement concentrations in the ground and the magnetic data helps in the detection of associated mineralization along geological structures.

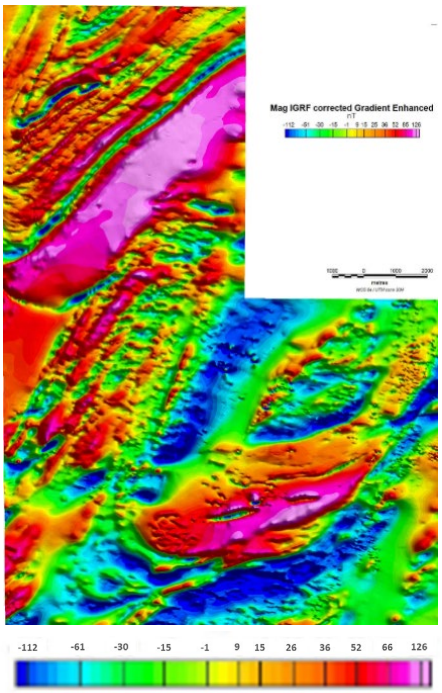

Figure 5A: Regional Magnetic Data (TMI)

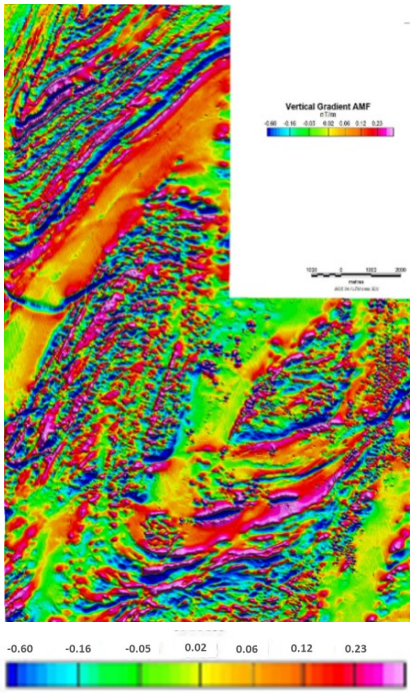

Figure 5B: Regional Magnetic Data (TMI)

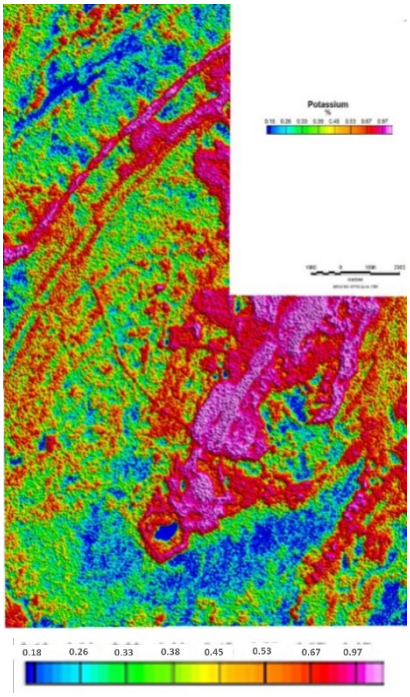

Figure 5C: XMAG radiometric data showing the potassium distribution.

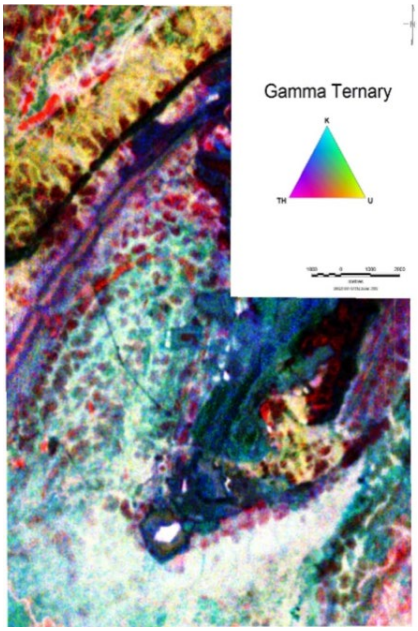

Figure 5D: Ternary map showing the distribution of Potassium (K) Thorium (Th) and Uranium (U) over the survey area.

Manganese Exploration with XMAG®
Northern Cape, South Africa

The Kalahari manganese field in the Northern Cape, South Africa, is a world-class manganese resource (CA. 8 billion tons at 20-48% Mn). The Hotazel Formation hosts the deposits and consists of laminated Mn ore units interbedded with iron formation. Large parts of the Hotazel Formation are beneath Karoo and Kalahari cover.
Aeromagnetic data allows for the identification of loss-of-ground features such as faults and dykes as well as depth estimation.
Email: info@xcaliburmp.com

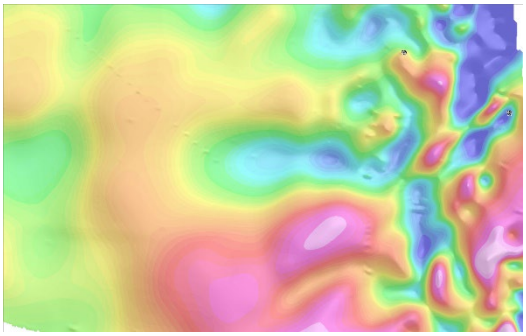

Figure 6: XMAG magnetic data showing location of Mn mines (regional dip to west)

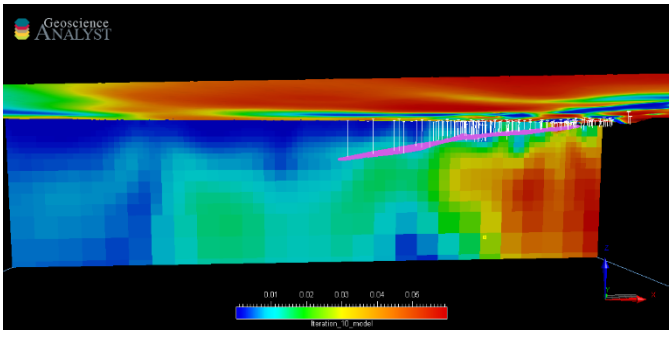

Figure 7: Magnetization Vector Inversion (MVI) model (looking north) with drillholes and Mn reef.