



## Complete Instrumentation Solutions

# Geophysical Services

Passive Microseismic Monitoring | Electrical & EM Surveys | Airborne Surveys  
Gravity & Magnetic Surveys | Seismic Surveys | Engineering & Environmental Surveys





## Gravity & Magnetic Surveys

**C**omplete Instrumentation Solutions in technical collaboration with its overseas principals, offer GPS positioned Gravity & Magnetic Surveys. We specialize in conducting high quality regional, detailed and microgravity surveys, for clients in Geological Mapping, Mineral Exploration, Petroleum Exploration, Coal Exploration, Geotechnical Studies and Environmental Studies. Along with high

quality Gravity & Magnetic Surveys, we offer precision GPS Geodetic control surveys for a variety of applications.

Gravity and magnetic potential field geophysical surveys are used for the direct indication of minerals and oil & gas deposits and also in mapping structure of the underlying terrain. These surveys are used extensively throughout the world as a baseline for further exploration and studies.

We have the capability of complete planning, acquisition, processing and reporting of gravity/magnetic surveys using a variety of techniques in all types of terrain. From the initial planning maps for a proposed survey, daily processing through to the final images, reporting and terrain corrections, our acquisition and processing team delivers quality data and image products in a timely fashion.



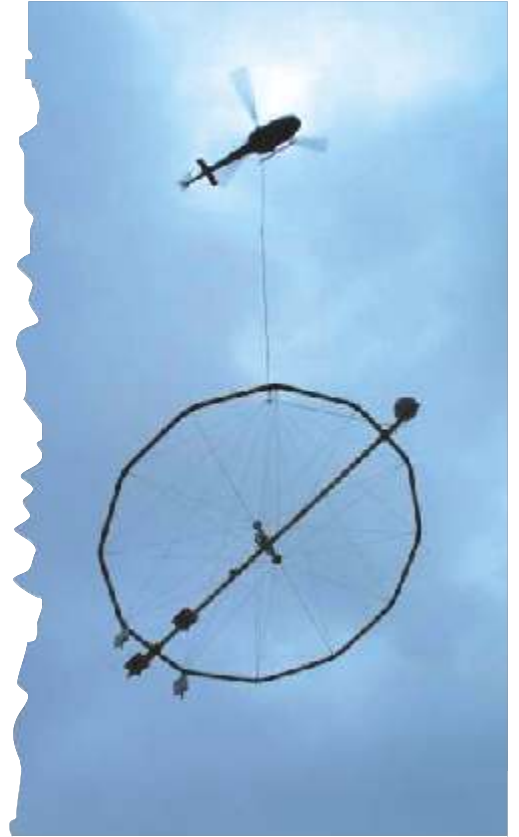
## Airborne Surveys

**C**omplete Instrumentation Solutions in technical collaboration with their overseas associates, offers ultra-high resolution airborne geophysical surveys, using advanced data acquisition and processing techniques to ensure your project benefits from the highest quality available. Our associates are a global geoscience services company providing airborne geophysical surveys to the resources, energy and environmental sectors.

Electromagnetic (time and frequency based), magnetic (single-sensor and gradiometer), radiometric, gravimetric and topographic measurements are acquired using a specialized fleet of rotary and fixed-wing aircraft, delivering a comprehensive range of products for geological and geotechnical visualization and interpretation.

We conduct project specific surveys based on factors including the nature of the survey area

and required survey specifications with all aircraft acquiring geophysical data with very high signal-to-noise ratios, that enables enhanced structural and target definition. Rapid acquisition of cost efficient ultra-high resolution airborne geophysical data with strong signal strengths also encourages detailed geophysical mapping to be made early in an exploration programme on both small scale and regional surveys.





## Seismic Surveys

**C**omplete Instrumentation Solutions in technical collaboration with its overseas principals offers 2D and 3D onshore & offshore seismic surveys & interpretation and high resolution seismic data processing.

We offer a variety of geophysical services to oil industry and research institutions. Our major focus is 2-D and 3-D on and offshore Wide Aperture Reflection/ Refraction

Profiling (WARRP), using arrays of 100 or more data acquisition systems. This method is a powerful imaging tool for problem areas such as sub-salt, sub-basalt or thrust belt structures.

By applying migration technique to WARRP data, we are able to offer the imaging of small scale geological structures even in problem areas such as sub-basalt, sub-salt and thrust or compressed limestone

structures.

We also offer services for seismic hazard estimation and preparation of microzonation maps for engineering feasibility studies. Our principals have developed a High Resolution (HR) 2D and 3D seismic data acquisition tool for detailed studies of the margins (complex sedimentary processes, outflows of fluids and gas hydrates and associated ecosystems).



## Passive Microseismic Monitoring

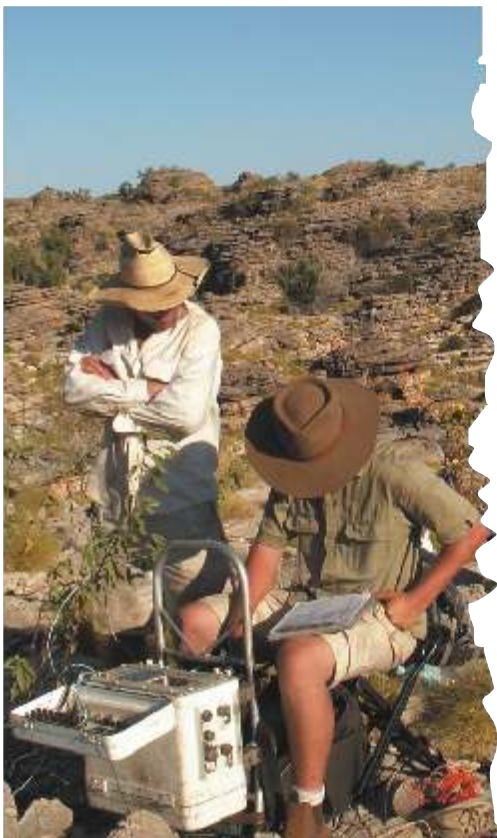
Microseismic events or passive seismic events are induced during hydrocarbon & geothermal fluid production and throughout reservoir development operations. Over the past 15 years it has also been shown that permanent microseismic monitoring has the ability to provide valuable time-lapse 3D seismic (4D seismic) information on the longer-term geophysical & geomechanical processes taking place

within the reservoir. This technique is becoming an increasingly important contributor to the reservoir management process.

CIS, in technical collaboration with its overseas principals, use a custom array of surface and downhole detectors, unique to each application, to locate very low level acoustic energy emissions associated with hydrocarbon producing activities. Micro-

seismic Reservoir Monitoring provides application specific solutions for mapping hydraulically induced fractures, delineation of reservoir-scale faults or reservoir discontinuities, identification of areas of reservoir compaction, injected fluid front monitoring and continuous reservoir monitoring. MRM technology is positioned to revolutionize long term reservoir performance and permit optimization of each hydrocarbon asset.





## Electrical & EM Surveys

**C**omplete Instrumentation Solutions through its technical collaborators provide high resolution EM surveys which include MT, AMT, CSAMT, CSEM, MMT, EMT, TDEM, IP etc, which are finding ever increasing use in Mining, Oil & Gas/Geothermal Exploration, Reservoir Monitoring, Deep Crustal Studies, Earthquake Research etc.

EM surveys overcome the problem posed

by high velocity layers which act as an acoustic barrier for seismic techniques, but allows the magnetic signal to pass through unimpeded, for deeper investigations. EM data provides both dimensionality and directionality indicators, adding more detail to structural & stratigraphic interpretation. Both natural-source methods (MT/MMT) and man-made, controlled-source methods (IP & CSEM/CSAMT) have made valuable

contributions in refining geologic models, reducing exploration risk, and improving production monitoring. The presence of hydrocarbons in rocks is also associated with characteristic resistivity patterns revealed by MT, the so called "Direct Hydrocarbon Indicators". MT allows rapid reconnaissance of areas as large as tens of square kilometers, while detecting conductive zones to 2000 m and deeper.





## Engineering & Environmental Surveys

**C**omplete Instrumentation Solutions conducts geophysical surveys for acquisition & analysis of data for Geotechnical Engineering, Structural Engineering and Environmental applications. CIS in collaboration with its overseas principals use Radar Tomography, a new powerful visualization tool, analogous to "CAT Scan", allowing engineers to literally see what is underground. This

ability is extremely valuable for all types of underground construction and for environmental site assessment. Virtual excavations using Radar Tomography can yield information to the design engineer with upto 90% certainty over large areas for a very small amount. We also conduct surveys for soil & rock characterization, bedrock mapping and rippability studies, seismic reflection, cross hole, SASW & ERT studies.

We conduct Environmental geophysical services for locating, identifying and evaluating Abandoned Walls, Acid Mine Drainage, Buried Concrete Vaults, Buried Waste Trenches and Pits, Buried Drums, Confining Layers, Contaminant Plumes, Landfills, Localized Bedrock Depressions, Permeable Pathways, Underground Piping, Underground Storage Tanks (USTs) and Unexploded Ordnance (UXO).





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