

Pinemont Technologies Australia

**Airborne AEM-PTP for identification of REDOX cells
using transient impulses**

Fundamentals: Oil & Gas



Airborne AEM-PTP for identification of REDOX cells using transient impulses Utilizing New Technology to Enhance Exploration Focus for Petroleum Sources

Pinemont Technologies Australia Pty Ltd uses patented technology to collect aerial survey data to identify geophysical responses associated with REDOX cell activity.

Why REDOX?

Many geoscientists have documented examples of data collected over numerous oil and gas fields concluding that all fields are in a continuous state of depletion through leakage allowing for a continuous saturation of seals (Kontorovich, 1984) (Schumacher & Abrams, 1996) (Schumacher & LeSchack, 2002).

This upward fluid flow of hydrocarbons in the form of micro seepages has been well documented and is described by most authors using the REDOX model.

Professor Silvain J. Pirson (Pirson, 1970) demonstrated oil related reduction-oxidation cells (REDOX) using SP base line shifts relative to subsurface production zones. Pirson also introduced the model that oil field REDOX cells behaved like large weakly charged batteries moving limited amounts of current to the surface (USA Patent No. US3943426A, 1974). Experimentally, Pirson (1981) and later Reed (1990) demonstrated that when shale cuttings are immersed in oil, reduction occurs generating a negative charge. This natural cracking process continues as long as fresh oil is available.

While the occurrence of hydrocarbon-induced geophysical, geomicrobial and geochemical alteration associated with hydrocarbon accumulations is now well established, our current understanding of the many factors affecting the formation of these alteration zones in the subsurface is incomplete. Consequently, methods for REDOX identification remain underutilized.

Pinemont's passive airborne magnetic impulse survey exploits aspects of these alteration zones by measuring increases in electromagnetic energy when naturally occurring transient impulses interact with elements of these REDOX cells.

Why choose Pinemont's Services?

- **Efficiency:** Airborne surveys are non-invasive and relatively inexpensive means of collecting large amounts data quickly. Moreover, full reports can be provided within weeks of the survey completion.
- **Focus:** Areas of REDOX activity provide an important element in exploration models (e.g. fluid flow & charge).
- **Integration:** The non-uniqueness common to all geophysical methods is best addressed by integration and calibration with other types of data.

Services

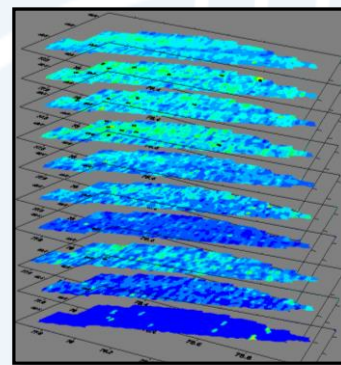
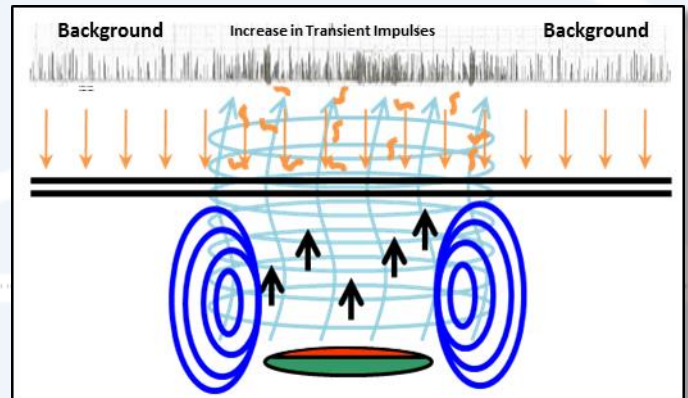
- With fixed wing aircraft, Pinemont is able to collect an average of 650 km of line data per day.
- In Australia, Pinemont charges a flat daily rate based on the number of days flown. All operational, technical and processing stages are incorporated into this fee.

For additional information and pricing, please contact Jim Dirstein

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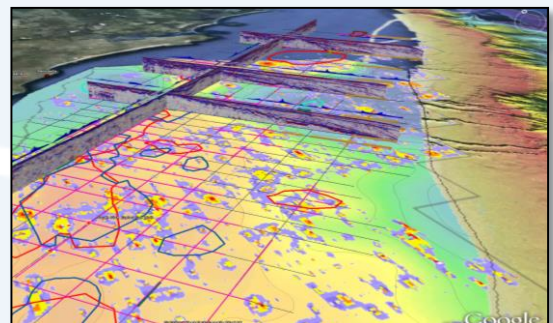
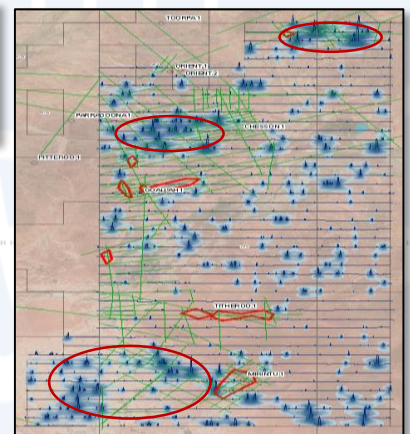
Equipment is very compact and fits into any aircraft for maximum **Flexibility.**



Measuring **Transient Density**

Data is collected and processed in **Ten frequency bands.**

Shape files and transient density maps help provide **Focus.**



Deliverables are in simple formats for easy **Integration** with other datasets