

AEROFEX

ADVANCED HELICOPTER-BORNE FREQUENCY DOMAIN ELECTROMAGNETICS

AeroFEX is a digital helicopter-borne frequency domain electromagnetic system developed by Aeroquest and GeoPhex. This innovative wideband system utilizes a single computer-controlled, high-output transmitter driver to power individual horizontal coplanar and vertical coaxial transmitter coils, producing a total of 3 fixed or up to 8 programmable frequencies (in each coil orientation). AeroFEX systems are designed to explore to depths of up to 100 m while providing high-resolution results in the very near-surface, and sensitivity in resistive geologic environments.

AeroFEX differs significantly from conventional multi-frequency systems in that the conventional systems use three independent coils per frequency (e.g. 18 coils for a conventional six frequency system versus 6 coils for AeroFEX). This approach minimizes noise from coil interaction. The multi-frequency operation using a single set of coils for each orientation provides many advantages such as simpler calibration, more predictable drift characteristics, inter-frequency spectral integrity, and a lighter tow body.

Features

- Fixed and Programmable frequencies
- Spectral Integrity between frequencies
- Broadband Sensitivity (330Hz to 96kHz)
- High Spatial Resolution
- Magnetometer and GPS on EM bird

Applications

Applications for the system range from environmental and engineering applications to mineral exploration. Following is a partial list of applications:

- Diamond Exploration
- Base Metal Exploration
- Precious Metal Exploration
- Overburden Thickness
- Pipeline Planning
- Bathymetry
- Geologic Mapping
- Groundwater Investigations
- Shallow Gas
- Powerline Corridor Mapping
- Engineering Investigations





Interpretive Services and Products

- Apparent resistivity and depth
- Discrete EM anomaly selection and classification
- Numerical modeling of discrete EM anomalies
- A full range of map products
- Spectral analysis of frequency response
- EM-derived apparent susceptibility
- Sengpiel Sections or pseudo-volume
- Differential Sections or pseudo-volume
- Inversion Sections or pseudo-volume
- General or target-specific interpretive reporting

Specifications

	Impulse	GEM2A
Operating frequencies:	CoAxial: 870, 4,350, 21,750 Hz CoPlanar: 930, 4,650, 23,250 Hz	6 Programmable frequencies (330 to 96,000 Hz) for each Coaxial and CoPlanar coils
Coil Orientation	Vertical: Coaxial Horizontal: Coplanar	
Tx-Rx Coil Separation:	6.5 m	5.9 m
Transmitter dipole moment:	15 to 200 Am ² depending on frequencies used	30 to 400 Am ² depending on frequencies used
Data output:	Each operating frequency has in-phase and quadrature channels, calibrated in ppm	
Output Sampling Rate	30 per second	30 per second
Noise Levels:	Less than 5 ppm rms under normal conditions	
Base-Line Drift:	Less than 15 ppm per hour after initial warm-up	
Tow Cable:	40 m	30 m
System Size (length):	7 m	6.4 m
System Weight	200 kg	110 kg
Magnetometers:	Geometrics G823A high-sensitive Cesium sensor (.001 nT) sampled @ 10 Hz	

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