

FLUXGATE BOREHOLE PULSE EM Precision 3-Component B-Field Probe LALOR LAKE DEPOSIT

This multi-billion dollar deposit was first discovered in 2007 by HudBay Minerals *from surface* using the Crone Pulse EM Coil system. Based on the Surface Pulse EM data, a target was predicted at a depth of 800m. Upon drilling, mineralization was first encountered at 795m down-hole, intersecting 24 meters of highgrade zinc. Along with significant associated gold, silver, and copper, several mineralized zones have been extensively drilled and well delineated in following years.

In December 2010, a Crone Fluxgate Pulse EM demonstration survey was completed down a known non-intersecting borehole on the Lalor Lake VMS deposit near Snow Lake, in Manitoba, Canada. Traditional dB/dt Pulse EM data were collected in the same hole in 2007. The two data sets are shown below.

The deposit dips at approximately 30 degrees and has a minimum depth from surface of about 600m extending well below 1000m. The borehole under consideration missed the known mineralization by approximately 200m.

Z Componen



Time Domain Electromagnetic Equipment & Surveys





Log-scale profiles of all Crone off-time channels (LEFT: 150ms Fluxgate, RIGHT: 50ms dB/dt)

The 3-component Fluxgate data were collected at a 150ms timebase (1.67 Hz) to 1000m depth, using a 1000m by 1000m collar loop. The dB/dt survey was carried out at a 50ms timebase (5 Hz) to 860m depth using a 1350m by 650m offset loop.

The dB/dt survey used a standard Crone High-Power transmitter at 20 amps. The fluxgate survey used a Crone Tandem High-Power transmitter configuration at 34 amps.

Both the dB/dt and B-Field data showed a broad offhole response in the late off-time channels of the axial component (Z) centered at 600m depth. The XY component data also showed well resolved crossovers with both surveys and allowed the direction-to-center of the deposit to be determined for future drilling.

The 3-component Crone Fluxgate probe showed remarkable signal-to-noise levels in all channels. This B-field sensor presents an excellent opportunity to improve the detection threshold of high-conductivity targets with slowly decaying secondary fields, pushing Crone Pulse EM exploration to greater depths than ever before possible.

Crone Digital Receiver Technology provides low-noise A/D conversion with a huge dynamic range. 26 bits of resolution combined with Smart Stacking allows our Receiver to optimize and not limit the sensitivity of our low-noise sensors. High-bandwidth 250-kHz sampling allows for excellent early channel resolution, and our proprietary high-speed A/D conversion avoids the digital ringing characteristic of sigma-delta converters.

Crone technology is fully rugged and winterized (-40°C), tried and tested from decades of experience in a full range of harsh and demanding environments.



Linear-scale profile, off-time channels 23ms – 150ms Crone Fluxgate Pulse EM Survey



PLEASE ASK US ABOUT OUR:

- CRONE CDR2 RECEIVER WITH SMART STACKING AND PROPRIETARY A/D CONVERSION
- CRONE BOREHOLE AND SURFACE FLUXGATE MAG SENSORS FOR USE WITH PULSE EM, ESPECIALLY FOR HIGH CONDUCTIVITY TARGETS
- CRONE TANDEM HIGH-POWER TRANSMITTER CONFIGURATION FOR VERY HIGH CURRENT, LARGE LOOP, DEEP-PENETRATING EM

