

# **Expanding Foothills Exploration in Muskwa-Kechika: An Integrated Approach using full Tensor Gravity Gradiometry, Magnetic Gradiometry, LIDAR, Digital Mapping & GIS**

Mark A Davies<sup>1</sup>, Joseph Barraud<sup>1</sup>, Neil Dyer<sup>1</sup>, and Wayne Wheeler<sup>2</sup>  
<sup>1</sup>ARKeX Ltd., Cambridge, United Kingdom; [mark.davies@arkex.com](mailto:mark.davies@arkex.com)  
<sup>2</sup>JEBCO Seismic Canada

## Abstract/Excerpt

In the summer of 2005, ARKeX Ltd. in conjunction with JEBCO Seismic Canada began acquiring an airborne geophysical survey over Muskwa-Kechika (MK) covering 3,000 sqkm of the Rocky Mountain Foothills, British Columbia. The survey was completed in 2006 and the data acquired provides the explorationist with previously unattainable high resolution airborne gravity gradiometry, magnetic gradiometry and LIDAR data. This combined dataset reveals new and detailed information of geologic structures over this expansive area. Through qualitative and quantitative interpretation of the dataset, shallow and deep structural targets are readily imaged, even beneath 1.5km of terrain. This project represents state-of-the-art deployment for Airborne Gravity Gradiometry (Air-GG). The way in which the data was acquired, processed and interpreted represents a significant deviation from existing methodology. In this paper, we demonstrate the advantages of the dataset by focusing on the exploration history of a well drilled in 1993. The target, a deep Mississippian carbonate play in the Debolt Formation, 4km beneath the surface. Using qualitative and quantitative interpretation techniques, we demonstrate, with hindsight, that the addition of Air-GG to the 'then' exploration data-pool would have significantly increased the probability of technical success. We therefore discuss how we can use this example as an analogue to help explore in other areas of MK while avoiding costly mistakes.