High Definition
Airborne Gravity Gradiometer
(HD-AGG)

The attributes and benefits of the **Gedex High Definition - Airborne Gravity Gradiometer (HD-AGG)** in comparison to the state of existing airborne gravity gradiometer (AGG) technology are significant and distinctive. Gedex is currently developing an **HD-AGG** for use in **mineral, and oil and gas exploration**.

By definition, an **HD-AGG** possesses the following attributes:

1. **High Sensitivity**
   - Gravity gradient error variance less than 1 Eotvos; and,

2. **High Spatial Resolution**
   - Data acquisition sampling at 2 kHz resulting in measurements, at the 1 Eotvos noise level, every second (60 metres); and,

3. **Operability Under Typical Survey Conditions**
   - High accuracy and high spatial resolution maintained even in moderate turbulent conditions (when levels reach 100 mg $(1 m/s^2)$).

The **HD-AGG** will greatly enhance the chances of discovery by:

1. Enabling the detection of:

   - Shallow deposits, that while very significant and economic, have weak geophysical signatures; and,
   - Deposits hidden beneath overburden with signatures,

   which are beyond the detection capability of today's airborne systems.

2. Providing new **opportunities** for **reconnaissance exploration** over vast areas with high potential, covered however by a small amount of overburden.

3. Providing opportunities for re-flying geophysical surveys, including gravity and gravity gradiometry surveys, to obtain images that could resolve previously missed resources.

While similar improvements in images can be equally valuable for the discovery of other minerals and oil and gas, the example below demonstrates the implications of using **HD-AGG** to detect kimberlites in **diamond** exploration.

Current AGG technology can provide an image of a kimberlite's signal that can be hidden in the noise of the system. The result is:

1. The kimberlite's signal could be dismissed as noise and the kimberlite would not be discovered; or,
2. The noise could be interpreted as signals arising from the presence of kimberlites and unnecessarily followed up at great cost.

An **HD-AGG** provides an image of **the kimberlite's signal that cannot be dismissed as noise. The location to be drilled is clear.**

THE CONCLUSION IS THAT AN HD-AGG HAS THE UNDENIABLE POTENTIAL OF ILLUMINATING NEW AND PREVIOUSLY UNDETECTED TARGETS.

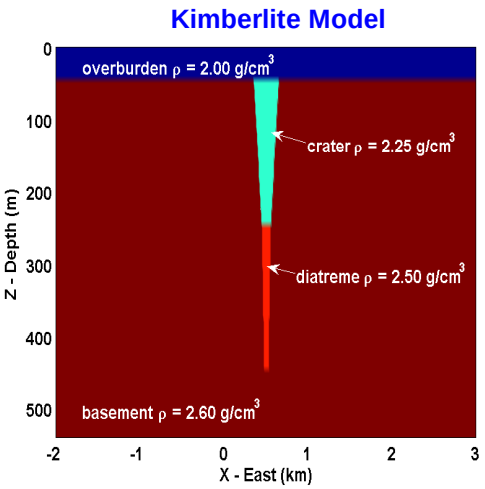

Figure 1. Kimberlite model. Overburden thickness 50 m. Crater diameter 282 m (6.25 hectares). Diatreme diameter 95 m.

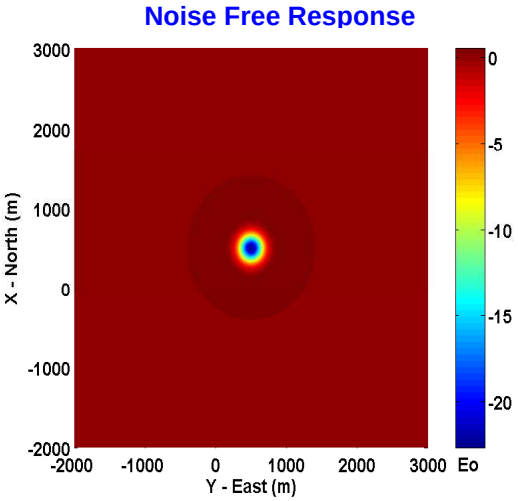

Figure 2. Noise-free vertical gravity gradient response of kimberlite model. Observation altitude 100 m.

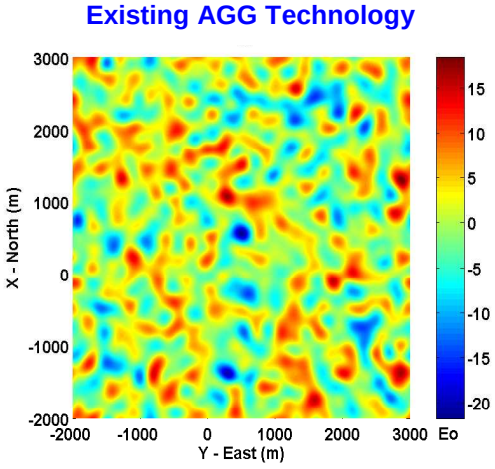

Figure 3. Noisy vertical gravity gradient response of kimberlite model. The noise standard deviation is 5 Eo with a bandwidth of 200 m, as expected from **current AGG technology**

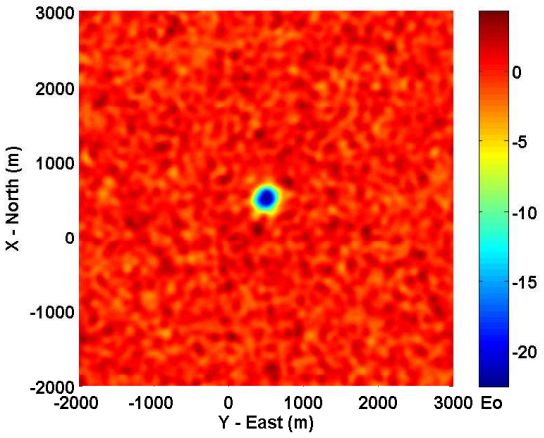

Figure 4. Noisy vertical gravity gradient response of kimberlite model. The noise standard deviation is 1 Eo with a bandwidth of 100 m, as expected from an **HD-AGG**.