THREE YEARS OF PRACTICAL USE OF AIRBORNE GRAVITY GRADIOMETER

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BHP Billiton has successfully built and deployed three airborne gravity gradiometer (AGG) systems, (Newton, Einstein and Galileo) based upon the Bell Airspace (now Lockheed Martin) Gravity Gradient Instruments developed for the United States Department of Defense. A second-generation gradiometer (Feynman) is presently nearing completion. The GGI technology is based on groups of four (4) accelerometers where the accelerometers are equi-spaced on a circle. The configuration successfully rejects both common mode accelerations and rotations about the axis perpendicular to the plane of the complement. The GGI is mounted within an aircraft in a specially designed, inertially stabilized platform, which significantly reduces sensitivity to noise and turbulence.

The BHP Billiton AGG Technology provides high quality gravity maps with a resolution and sensitivity to map gravity anomalies associated with both minerals and hydrocarbon deposits. To date the purpose built and designed hardware and data processing algorithms, in conjunction with several other geophysical survey instruments, have been deployed against a broad range of mineral and hydrocarbon targets, a total of over 300,000km of operational flights having been made.

Data will also be presented on the in-flight sensitivity of a gravity gradiometer to the airborne environment. It will also outline some of the many unexpected problems that were encountered in the 18-month flight trials required to achieve satisfactory airborne operation.