

## THE NEW GENERATION TEMPEST SYSTEM

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The development of the new Generation TEMPEST system was driven by an expectation that TDEM data would find increased utility, at regional scale, for both geological mapping and regolith characterization. Achieving the correct balance of affordability and technical capability was determined to be a key component to the success of this endeavor.

Designed as a system suited to contemporary demands for high quality calibrated data whilst maintaining a good depth of penetration, a number of new innovations were necessary. These include the development of a 'low frequency bird' (12.5Hz and below) in conjunction with UWA, a faster switching higher power transmitter and new signal processing algorithms to accommodate these changes. Additionally, continuous measurements of system geometry, transmitter/receiver orientation etc. for use in modern inversion codes enables the potential for both improved results and better quantified data and associated uncertainty.

Historically the cost of operating a TDEM system also limited the widespread use of quality EM data for mapping purposes. In order to contain these operational costs an inexpensive and robust platform, the Cessna C208B, albeit with an upgraded engine, was selected as being most suitable. CGG embarked on a certification journey with the Civil Aviation Australia (CASA) for the issue of a Supplemental Type Certificate. This 2.5 year endeavor provides a unique insight into the trials and tribulations of equipment development in an increasingly legislated environment.

In this paper we present both the development path and technical achievements of a project designed to improve the accessibility of quality Airborne EM data