

Planning, Calibrating and Running a Drone Magnetic Survey on a Gold Project Côte d'Ivoire Central Part

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The Yaouré Gold project in the central part of Côte d'Ivoire has planned and designed a drone magnetic survey to see the potential extent of gold mineralisation from the mine pit. The goal of this project is to accurately configure and record good-quality data with the drone towing magnetometer in high-vegetated and hilly areas. We conducted the first Airbird Magnetic (GEM advanced towed magnetometer U25A) survey in Côte d'Ivoire using a 10 m tow cable with success.

The survey was carried out with a DJI Matrice 300 RTK drone, flying at 75 m above ground level with 50 m line spacing. Flight stability was a key factor as the wind can affect the magnetometer rear wing thus altering the quality of data.

An average speed of 14 m/s was selected based on tests to conduct the mission for flat ground and 12m/s for hilly places. Sensor orientation was set to a roll angle of 30° counterclockwise and at a vertical angle to get a better amplitude signal toward the East-West line. For the tie line, the sensor was oriented at 30° clockwise with an angle of 45° backwards toward the nose of the magnetometer. These settings are important to get a good quality signal and a magnetic field close to the regional value. In total 945 km line was completed mostly with magnetic field amplitude above 170. Few gaps were noted and reflow later before at the end of the project. Diurnal corrections were performed using the GEM 19T base station magnetometer with 3 s recording time. The GEM magnetometer U25A model cycling time was set at 1Hz, which means a measurement was taken each 1.4m at an average speed of 14.2 m/s.

Good quality data was accomplished, and Total Magnetic field image and derivatives maps were generated.