



Exploration from new heights

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AUSTRALIAN explorer Emmerson Resources has enlisted Fugro Airborne Surveys' high-powered helicopter time domain electromagnetic system, the HeliTEM, to detect large prospective deposits under cover.

It is using the technology to find extensions at the historic Tennant Creek gold and copper fields in the Northern Territory.

Emmerson managing director Rob Bills said earlier this year that after a detailed study of historic drill cores at the site, mineralisation in many of the deposits at Tennant Creek, including White Devil, Orlando and Gecko, were found to be weakly conductive, while the barren host rocks were highly resistive.

"The contrast between mineralisation and barren host rocks was deemed to be large," he said.

"We then looked at the available technologies to measure conductivities across our project area, and it was obvious that the new Fugro HeliTEM system was the most powerful [technology] available."

Bills said the HeliTEM measured electromagnetic conductivity of ore bodies located below the surface using a large loop slung under a helicopter.

"The loop contains twin high-powered generators that put about 2000 amps into the loop [which] is flown about 30 metres above the ground," he said.

"Anything that is conductive down to about 500 metres below [the surface] will then generate an electromagnetic field which is picked up by a receiver in the helicopter."

A Fugro spokesperson said the HeliTEM provided three-dimensional data from X,Y and Z receiver coils which allowed for complete and definitive interpretation of target geometry.

The data from the receiver coils provided information about the shape and orientation of the ore body and allowed for more accurate drill targets, the spokesperson explained.

Bills said the data provided a more direct detection of the mineralisation, compared to any other exploration method applied at the Tennant Creek mineral field.

"From an orientation survey over known mineralisation, the HeliTEM detects the 'alteration' of both the Gecko and Orlando [deposits at Tennant Creek], plus additional targets that have never been drilled before," Bills said.

"So the HeliTEM has great potential to reinvigorate the discovery of new deposits within the Tennant Creek mineral field."

Other benefits of the HeliTEM include its low-noise receiver feature, which ensures great depth penetration. Also, its installation on a helicopter platform is cost-effective.

An issue with the technology, however, was that not all HeliTEM anomalies related to mineralisation, Bills said.

"This is why we use simple data sets to ensure the targets are robust," he said.

In terms of competition, Bills said there were similar products on the market.

"The direct competitor technology is Geotech Airborne VTEM, however this is not as powerful and won't have the same depth penetration as the HeliTEM."

Emmerson's threefold exploration program includes the search for a new generation of tier 1 gold-copper deposits using the HeliTEM to screen prospective, large, undercover targets.

The program also included the exploration for extensions to known mineralisation and smaller gold-copper deposits, classed as tier 2.

"These include an untested target immediately above the historic Warrego deposit, the largest deposit in the Tennant Creek field, and multiple near-mine targets at Gecko and Golden Forty," Emmerson said.

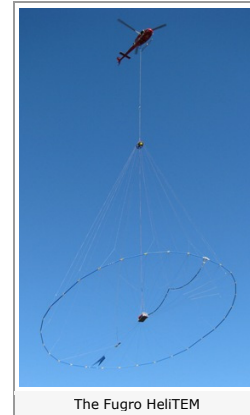
In-situ mineral resources being reassessed in this study were unmined, but mostly developed copper ore bodies at Gecko, gold resources at Warrego, Chariot, Golden Forty, mixed gold-copper at Orlando and undeveloped copper resources at TC8, Emmerson said.

The company said while results of stage one of the HeliTEM program were pending, detailed analysis of drill cores from many of the major deposits within Tennant Creek suggested that the conductivity of the ironstones was above the background conductivity of the surrounding host rocks.

Tennant Creek was one of the highest-grade gold fields in Australia, Emmerson said.

Emmerson has consolidated 95% of this prospective mineral field, with only 7% of the historical drilling below 150m.

The gold explorer said the use of the HeliTEM was part of a \$28 million exploration program funded by Ivanhoe Australia under a farm-in agreement.



The Fugro HeliTEM

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