

## Deeply Buried Athabasca Uranium Deposits

### PURPOSE:

A Titan 24 survey was deployed to test the multi-parameter capability of the system, particularly magnetotellurics, in the system's first survey in the Athabasca Basin. The goal of the survey was to define the DC, IP and MT signatures associated with known uranium-bearing alteration zones.

### CHALLENGES:

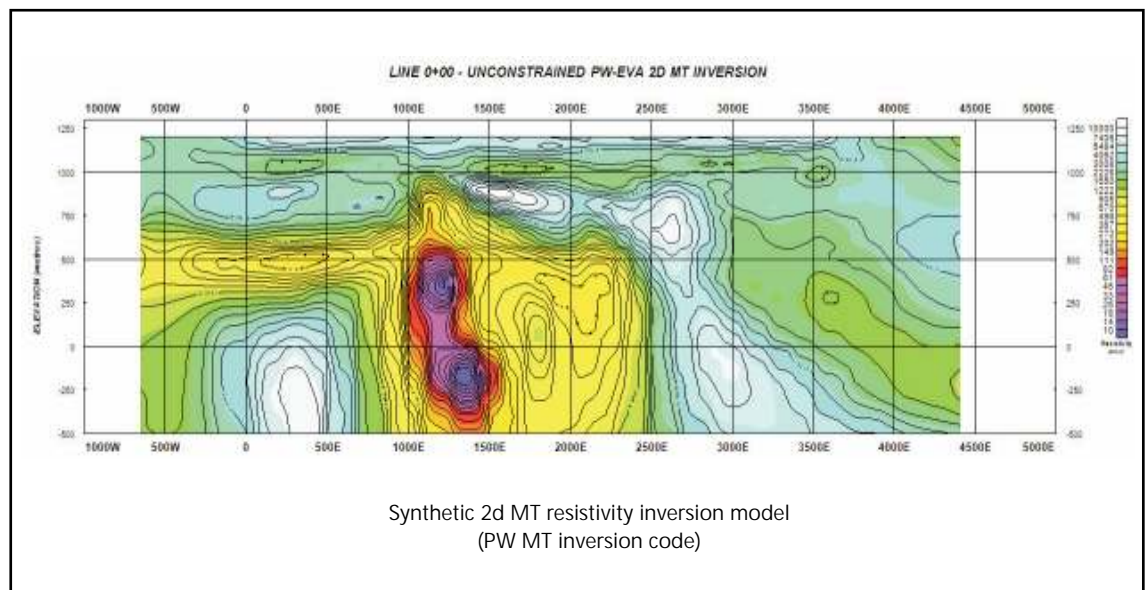
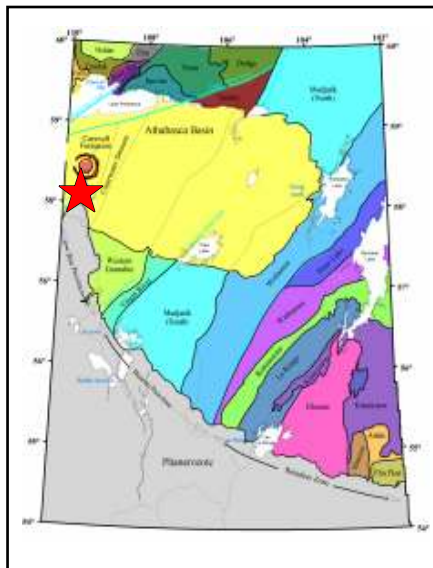
Conventional transient electromagnetic geophysics (TEM) have been successful at mapping favourable conductive horizons associated with graphite to depths of 300 to 500 metres. However, deeper terrains present new challenges because traditional technology limits depth of penetration and accuracy.

### FORWARD MODEL STUDY RESULTS:

The 2d synthetic modeling was prepared to render an image of the thickness of the sandstone and the contrasts in the basement to target the conductive and resistive targets. The MT inversion models correctly identified the position and general size of the alteration zones and the underlying graphites, indicating that deep penetrating surveys may be essential for efficient drill targeting in these geologic terrains.

The Shea Creek project is immediately to the south of the past producing Cluff Lake mine in the western Athabasca Basin of Saskatchewan. The deposits which form Shea Creek are distributed along a 2.8 kilometre strike length of the north-northwest trending Saskatoon Lake graphitic conductor.

Regionally, uranium deposits can occur beneath 100 metre to 1 kilometre thick sandstone cover rocks, and are commonly associated with deeper basement graphitic metasedimentary units accompanied by clay-alteration zones in the sandstones.

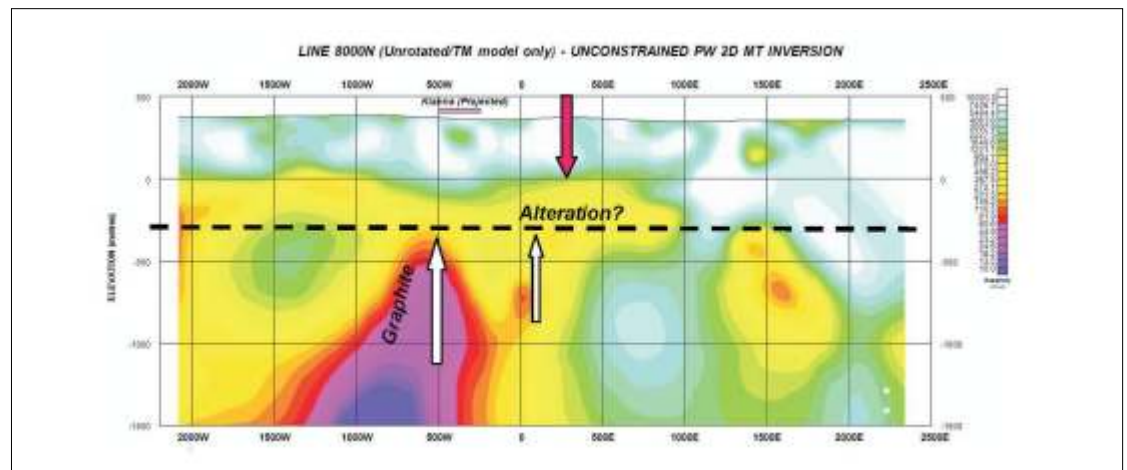
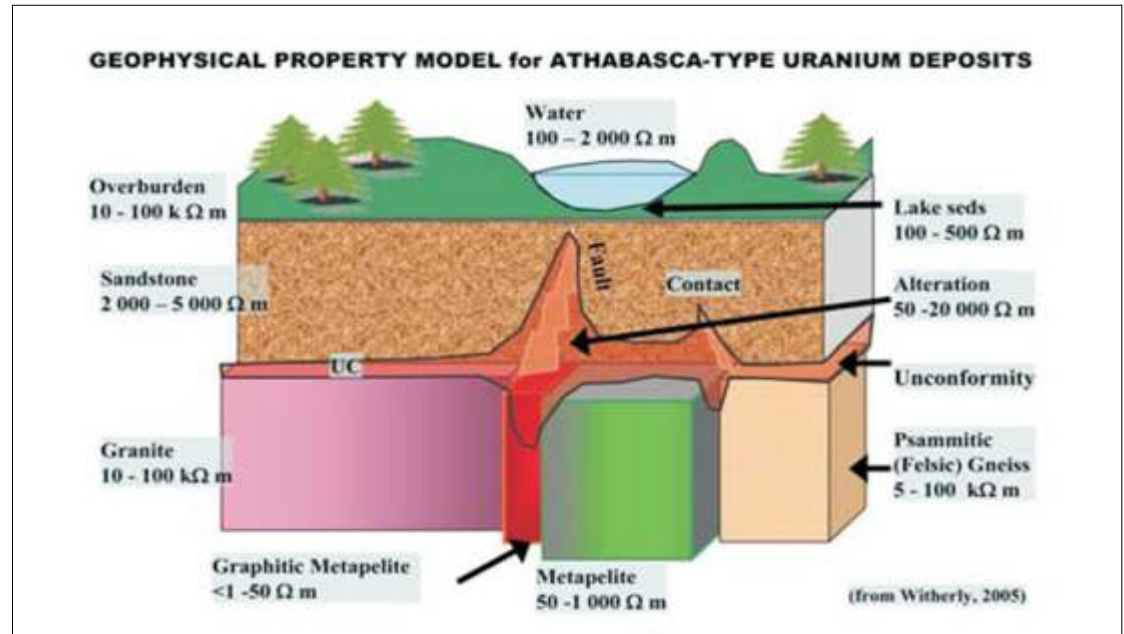




# Uranium Exploration - Athabasca Basin

## TITAN 24 RESULTS:

The Titan 24 survey identified DC, IP and MT anomalies of varying significance on the four survey profiles, 500 to 750 metres wide, and extending to unconformity. The results corroborated historical resistivity lows, providing more focused resistivity mapping in the sandstones, while also corroborating historical UTEM basement graphitic conductors and sandstone alteration zones. The Titan 24 survey successfully identified the position of the alteration, with the top of the zone located at depth of 650 metres. The DC correctly identified the depth of the sandstone and MT mapped the position of the basement conductor. Titan 24 IP and DC resistivity data can also be presented in 3D inversions, in situations where there are three or more lines of Titan 24 IP data, providing the best available IP imaging of basement conductors and faults as well as alteration halos related to uranium mineralization.



## About Quantec

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