New Technology Applications in the Rub Al-Khali Desert

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Magneto telluric

South Rub Al-Khali Company Ltd. (SRAK) carried out magnetotelluric (MT) and TDEM (time-domain electromagnetic) survey in the Rub Al-Khali desert. 116 full tensor MT data were acquired using up to ten 24-bit GPS–synchronised 5 channel Metronix ADU-06 recording units including a fixed remote reference MT station. Time series were processed using robust remote referencing. TDEM data were acquired at each station using the Sirotem Mk3 system.

This presentation will cover:

The acquisition problems associated with the high resistivity in the sand dunes resulting in poor quality MT data while the data collected in the inter dune areas resulted in very good quality.

The modifications of recording equipment to overcome the data quality issues related to resistivity in sand dunes.

The interpretation of the MT data collected between the dunes using 1- and 3-D inversion techniques.

Seismic Spectroscopy using amplified 3C Geophones

A seismic spectroscopy experiment, using amplified high-sensitivity (HSG) 3C geophones ("low frequency acquisition" or "LF acquisition") was carried out in SRAK's contract area 2 in the Saudi Arabian Rub al-Khali desert. The experiment was designed to assess whether such a technique can be used as a DHI. While initial indications for a DHI are rather weak, a number of interesting observations have been made, including a weak relation between one of SRAK's prospects and some spectral features in the low frequency noise spectrum.

In this presentation we will describe the modified instrumentation, the field implementation and the processing of the LF data as well as briefly review the interpretation of the data and integration with seismic and potential field data.