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Ref: 1 AT RVR PRESENTATION 190223

AT RECEIVER - PSEUDO SCIENCE OR A METHOD WORTH INVESTIGATING

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ABSTRACT

The Audio Magnetotelluric (AMT) signal is generally in the range of 1Hz - 20 kHz with its origin as spherics created by thunderstorms, magnetospheric noise, seismic events etc. Historical AMT monitors up to five channels at each station, namely Ex Ey Hx Hy Hz. The EM field is a plane wave perpendicular to the ground surface, away from the field source. Approximately 1-2 hours was required for a layout / recording / pickup cycle which meant that 8 to 10 stations per day could be surveyed. This has improved with newer equipment.

Normally post processing and editing is done in the office using Cagniard's AC Apparent Resistivity and Skin Depth formulae to achieve a 1D depth inversion. PQWT premise: Because the magnetic field component is basically stable in most scenarios, small in the area of measurement, it will be regarded as a constant function of the Ex response.

A discussion with field examples is made that as the Hy field is small and stable, using a constant will result in faulty readings only on complex structures. If the assumptions are met, good data can be obtained. Price difference of \$2,500 against ~ \$50,000 for a full AMT set. Groundwater and reconnaissance exploration requires a lower level of precision to make an interpretation.

BIOGRAPHY

Ray van Rensburg is the Managing Director of Geotron Systems, a geophysical manufacturing company, together with its predecessor Chemtron, has been building geophysical equipment since 1971. Geotron was founded in 1987 after the buy-out of the geophysical business from Chemtron. Geotron also operated a contracting / consultancy division for two decades. Considerable expertise has been acquired in both advanced electronic methods and applied geophysics during this time. He is a registered Geophysicist and has been a member of SAGA since 1988.