ELECTRIC RESISTIVITY METHOD

Disclaimer:

This presentation is a part of the assignment for MSc III Semester Mineral Exploration theory paper. This is an attempt to enable the students to collect and review the literature, prepare powerpoint presentation and present the work, independently. The data and literature used here has been taken from various sources, and duly acknowledged. This can help as a guideline, and should not be treated as final.

October 2016

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Content:-

- Fundamentals of Geophysical exploration.
- Principle : Resistivity method.
- Equipment : resistometer.
- Methods.
- Interpretation.
- Applications & Uses.

Geophysical Exploration

Geophysical exploration is the scientific measurement of physical properties of the Earth's crust for investigation of mineral deposits or geologic structures.

What is Electrical Resistivity ?

- Electric resistivity is an intrinsic property that quantifies how strongly a given material opposes the flow of electric current.
- Resistivity is represented by **ρ(rho)** and its SI unit is ohm-meter **(Ω/mts.)**

Formula of electrical resistivity is:-

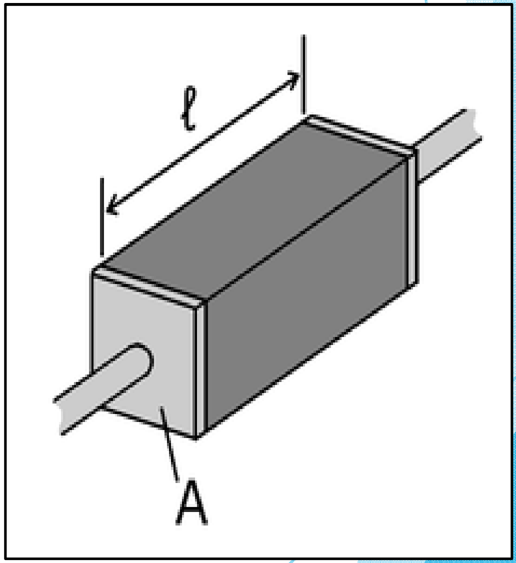
$$\rho = \frac{R A}{\ell}$$

Where,

R = Electric resistance.

ℓ = Length of the material.

A = cross-sectional Area of the material.



Equipment : **Resistometer**

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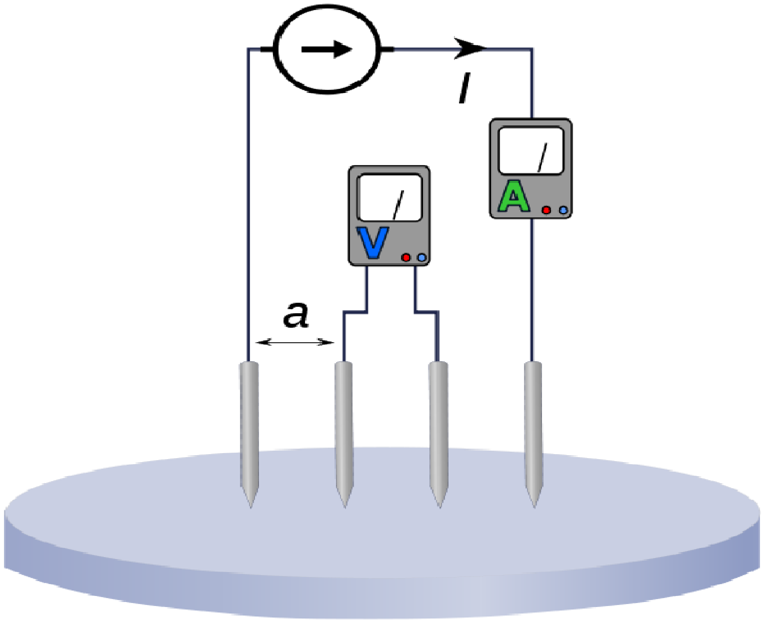


Methods of survey

There are three kind of methods include in resistivity survey are the followings:

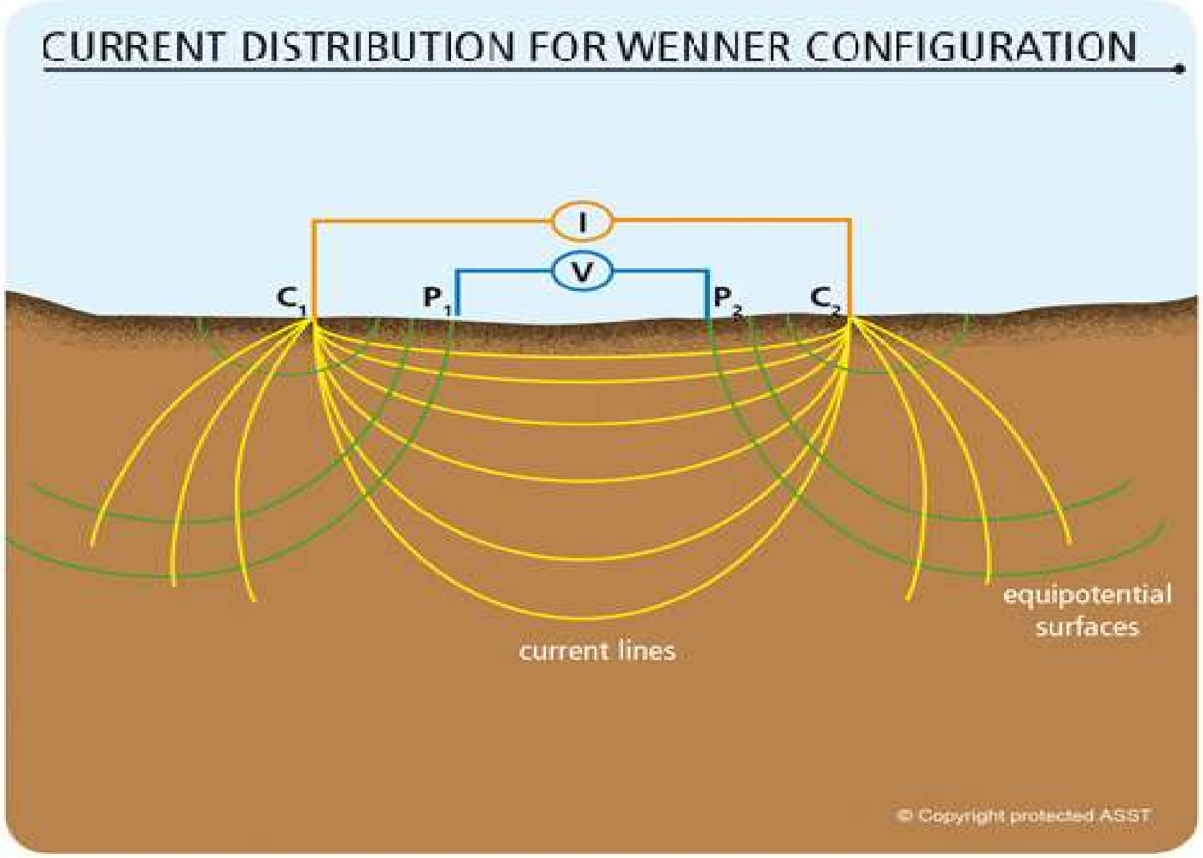
1. Wenner method

2. Schlumberger method

3. Dipole-Dipole method

Wenner method

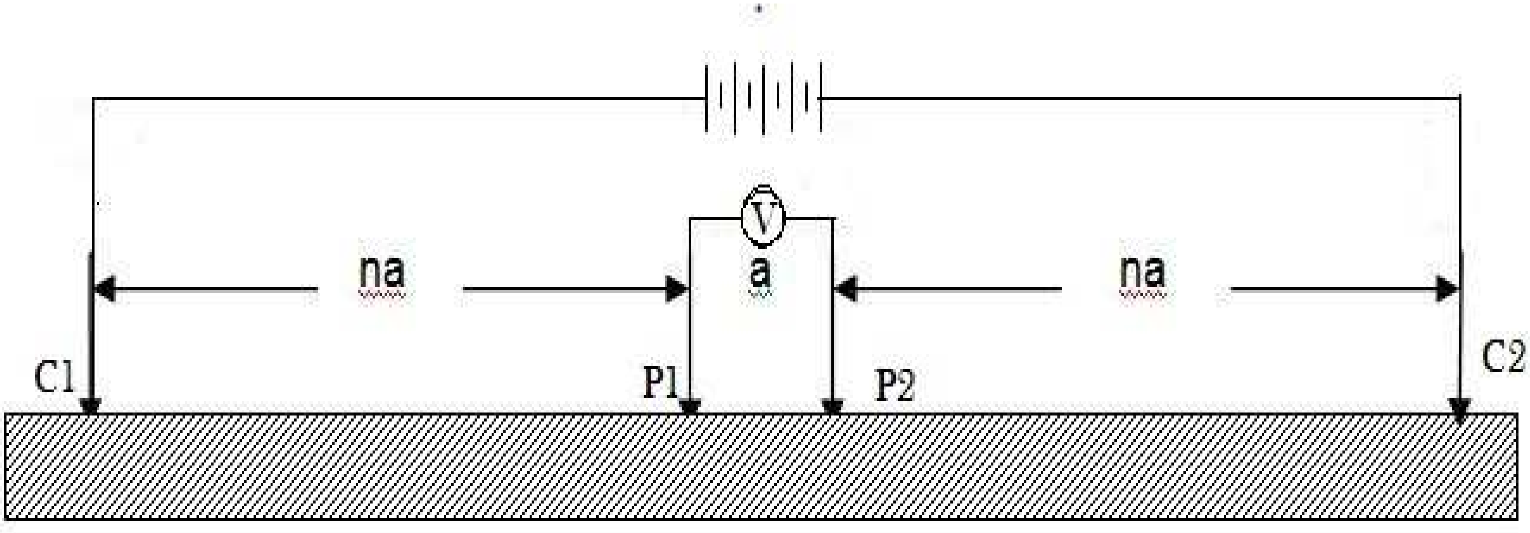
This method is most commonly employed, in practice and theoretically the simplest. In this method there should be four electrodes which are arranged in equally space from each other.



C1 & c2
= Current Electrodes
P1 & P2 = Potential
Electrodes

Schlumberger Method

In the Schlumberger method the distance between the voltages electrode(p1, p2) is ***a*** and the distances from voltages electrode and currents electrodes(c1, c2) are ***na***.



Schlumberger Array

Dipole-Dipole Method