World Academy of Science, Engineering and Technology
International Journal of Geotechnical and Geological Engineering
Vol:9, No:02, 2015

# Study of Cathodic Protection for Trunk Pipeline of Al-Garraf Oil Field

**Authors :** Maysoon Khalil Askar

**Abstract :** The delineation of possible areas of corrosion along the external face of an underground oil pipeline in Trunk line of Al- Garraf oil field was investigated using the horizontal electrical resistivity profiling technique and study the contribution of pH, Moisture Content in Soil and Presence chlorides, sulfates and total dissolve salts in soil and water. The test sites represent a physical and chemical properties of soils. The hydrogen-ion concentration of soil and groundwater range from 7.2 to 9.6, and the resistivity values of the soil along the pipeline were obtained using the YH302B model resistivity meter having values between 1588 and 720 Ohm-cm. the chloride concentration in soil and groundwater is high (more than 1000 ppm), total soulable salt is more than 5000 ppm, and sulphate range from 0.17% and 0.98% in soil and more than 600 ppm in groundwater. The soil is poor aeration, the soil texture is fine (clay and silt soil), the water content is high (the groundwater is close to surface), the chloride and sulphate is high in the soil and groundwater, the total soulable salt is high in ground water and finally the soil electric resistivity is low that the soil is very corrosive and there is the possibility of the pipeline failure. These methods applied in the study are quick, economic and efficient for detecting along buried pipelines which need to be protected. Routine electrical geophysical investigations along buried oil pipelines should be undertaken for the early detection and prevention of pipeline failure with its attendant environmental, human and economic consequences.

**Keywords :** soil resistivity, corrosion, cathodic protection, chloride concentration, water content
**Conference Title :** ICSMGE 2015 : International Conference on Soil Mechanics and Geotechnical Engineering
**Conference Location :** Paris, France
**Conference Dates :** February 23-24, 2015