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Application of TEM Technique in South-East Asia

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Application of electromagnetic methods for oil and gas exploration is developing world-wide. Two main types of EM methods are applied: natural source (MT) and methods with artificial source of EM field (TDEM, FDEM). For hydrocarbon exploration on land high efficiency has transient electromagnetic method in frequency or time domain mode. The role of EM methods is increasing at the areas with poor seismic data quality, non-structural fields and zones with complicated structure of sedimentary cover. Joint interpretation of EM data with seismic or other geological data is a way to reduce the risks and optimize the process of geophysical investigation.

For oil and gas exploration it is possible to study sedimentary layers resistivity at the depth interval from surface to basement and also a lot of information can be received from induced polarization (IP) parameters. The paper is devoted to technique of EM methods combination – TEM and EM-IP for oil and gas exploration, and possible ways of its effective application.

Electroprospecting surveys have been performed over one of the blocks in the Southeast Asia. Two techniques were used: Transient Electromagnetic Soundings in Time Domain (TEM) and Induced Polarization Electromagnetic method (EM-IP). The objective is to conduct a comprehensive study of the sedimentary cover using TDEM. This includes mapping of zones with potential reservoirs properties from TEM, and to qualify these areas with Induced Polarization (IP) anomalies, usually related to presence of hydrocarbon system.

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