

The oil-and-gas prospects of the Black Sea and Caspian onshore and offshore according to non-seismic investigation data

¹⁻²Yakymchuk N.A., ¹⁻²Levashov S.P., ³Korchagin I.N., ²Bozhezha D.N.

¹Institute of Applied Problems of Ecology, Geophysics and Geochemistry, Kyiv, Ukraine

²Management and Marketing Center of Institute of Geological Science NAS Ukraine, Kyiv, Ukraine,

³Institute of Geophysics of Ukraine National Academy of Science, Kyiv, Ukraine

In 2001-2010, the reconnaissance geoelectrical investigations within the perspective for the oil and gas areas have been conducted on the Black Sea and Caspian onshore. The express-technology of "direct" searching and prospecting for hydrocarbon deposits by geoelectric methods has been used during this investigation. This technology includes the method of forming a short-pulsed electromagnetic field (FSPEF), flux-meter survey and method of vertical electric-resonance sounding (VERS). Integrated application of these methods allow to find and map the "deposit" type anomalies (DTA), and to define the total thickness and bedding depths of anomalous polarized layer (APL) of the "oil", "gas", "water" type.

The considerable volume of geoelectrical investigations has been carried out in the Odessa, Kherson regions and Kerch peninsula. The analysis of available geologic-geophysical data, as well as the geoelectric studies results on the known deposit and perspective area of Black Sea onshore territory confirms repeatedly voiced suggestions about Azov and Black Sea region perspectives in plan of the finding and openings of large and average hydrocarbon reservoirs. It is reasonable to raise the intensity of prospecting geological-geophysical investigation for oil and gas in this region.

In 2003, the ground-based geoelectric research by the FSPEF and VERS methods have been conducted also on several fields and prospects in the Caspian onshore area (including the Tengiz oilfield). The deposit type geoelectric anomalies have been discovered and mapped by the FSPEF survey on these deposits. The bedding depths of anomalous polarized layers (APL) of oil and gas type were determined by VERS sounding within one anomaly areas.

The results of practical testing in 2010 of special method of satellite data processing and interpretation in the Tengiz oilfield vicinity and the neighboring to it the Caspian Sea offshore are discussed also. The deposit type anomalies were mapped within investigated by geoelectric methods fields on the satellite data interpretation result (including offshore). The experimental results show that the special technology of satellite data processing and interpretation can be used successfully for the hydrocarbon accumulations prospecting and exploration in remote and difficult to access regions on reconnaissance and evaluation stages of research.

Integration of satellite data processing and interpretation technology with the FSPEF and VERS ground-based methods enables to improve significantly the efficiency and information value of the latter's (FSPEF and VERS methods). The technology of satellite data processing and interpretation may be integrated also with traditionally used methods of oil and gas accumulations prospecting and exploration (seismic, in the first place), as well as with non-classical geophysical techniques of other developers.