Modeling of regional faults impact upon spatial oil and gas within Caspian Sea - creation of conditions for oil and gas fields formation (Azerbaijan)

Y.V. Poletayeva
(yelenapv@mail.ru)

In spite of the fact that the problem of Caspian Sea deep structure investigation was studied by various scientists but it still remains unsolved.

Under thorough study of the Caspian Sea deep structure having a significant volume of geology-geophysical information there exists an opportunity of modeling reflecting a deep structure of the given area.

System analysis and complex 3-D seismic data interpretation including gravitational, geomagnetic and thermal fields was applied when studying tectonic processes and role of faults during oil and gas deposits location within the Caspian Sea. Well data and maps of lithology-facial composition were applied as well.

As a result of conducted research a typization of the main geophysical fields anomalies (seismic, gravitational and magnetic) through revealing their typical peculiarities was carried out. Map of the thermal fields was analyzed. Models of the faults distribution according to seismic, gravitational and magnetic fields were compiled. Zones of deep faults were traced at depth and their quantitative parameters were determined (depths of distribution, inclination, amplitude of vertical displacement were determined). On the base of totality of all geophysical data there was developed a model network of deep faults indicating their quantitative parameters.

Space folds location along regional deep folds within Caspian Sea (structure) were modeled. Genetic correlation between faults and occurring tectonic reconstructions, structure-formation, sedimentogenesis and oil-gas accumulation was established. Patterns of geostructural elements history formation of the Caspian Sea and deep faults were revealed. HC migration potential along faults from source rock within accumulations zones were estimated.