

FAULT TECTONICS AND FORMATION OF OIL & GAS POOLS IN THE EAST AZERBAIJAN FROM ANALYSIS OF SPOT/LANDSAT IMAGES

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Remote sensing can be defined in general terms as technologies and techniques used to obtain information about distant object using reflected or emitted electromagnetic radiation, acoustic energy, potential fields (gravity, magnetics), or geochemical measurements. In geologic remote sensing, we will concern only interpretation draws on structural geology and geomorphology, because the picking out of the linear elements of Earth's surface, the determination of their role in the geologic structure of the regions are represented significant interest. That is why we will use geologic interpretation of satellite images for estimation tectonic peculiarity and oil-gas bearingness in the East Azerbaijan.

The lineaments, recognized on the different scale space photos, are the important object of decision of many theoretical and applied questions of the modern geotectonics. The independence of deepest differences in the determination of the lineaments nature, the high geological effectively of their use are noted by all researchers as the decision of fractured tectonics, as on the establishment of regularities of the oil and gas fields situation. The oil and gas fields of the folds regions are characterized by the abundance of tectonical fractures. That's why the decision of the question about the role of tectonical fractures in the base, conservation and destruction of oil and gas deposits has a important theoretical and applied importance.

Proceeded from the above mentioned the actual material of remote sensing in Azerbaijan for the appreciation of the perspective of oil and gas bearingness of the deposits of the East Azerbaijan.

The actual materials: "Landsat-5" cosmic photo of 1: 100 000, 1: 500 000, 1: 250 000, 1: 100 000 scale; the topographic map, the results of the geomorphologic and geological surveys, the materials of geological study of the region. On the base of these materials the landscape-indicated interpretation of the space photo on the East Azerbaijan area of the 1: 100 000 scale have been carried out. It is controlled by the above mentioned scale photos and by the detailed topographic maps of the 1: 100 000 scale. This permitted to distinguish the linear, arched and circular morphoelements, the reality of which was substantiated on the combined results of the superficial geological, structural-geological and abyssal geophysical researches.

The total lineament interpretation marked the presence of same classes of these objects by their expression on the space photos. The recent confusion on the orientation and on the extension of lineaments and also their abundance were camouflaged their arrangement by one or another objects.

It is noted arrangement of the mud volcanoes development to the zones with the maximum density of the lineaments of different strike, but not by the extension. This is permitted to suggest that:

- mud volcanoes are coincided to the tectonical intersection junction of lineaments of the separate systems and they are independent of the extension of the separate disjunctives (if they are very significant). The mud volcanoes are the indexes of the indicated intersections of penetrated faults of different structural-tectonic stages, the indication of which is given by the

ranged lineament field, reflected the transformation dynamics of the tectonical tension in the region.

The East Azerbaijan is characterized by the accumulation of the thickness of plastic clayey formations of the Paleogene-Miocene and by the more development density of the trong dislocated structures, complicated by the mud volcanicity by an overwhelming majority. These factors are confirmed by the results of the lineaments quantitative appreciation during the perspective determination of oil and gas bearing of the SE Gobustan and the West Apsheron (the southern part of the East Azerbaijan). As a result, analysis have established that the majority of oil and gas fields are located on the regions of faults development. That is the resemblance between the thicknesses of the network faults because these oil and gas bearing fields gravitated towards the areas with the depressed fractures density. So, the tectonical fractures contribute not only to the destruction of promoted oil and gas deposits, but they play the positive role on the formation of the oil and gas accumulation, their conservation and prevention of oil strata from the flooding. But it is only passed up to definite borders of the faults density. Further reduction of oil resources corresponds to the next increase of the dislocation as the region in a whole as the separated structures. This regularity is connected with the formation of deposits, migration and accumulation in the oil and gas traps.

The named regularities are explained that the important surface oil and gas bearingness, as a mud volcanoes, oil outcrops etc. occurred in the zone with the increased lineaments quantity. By the seismic data the statistic data the oil reserves are small in these regions. Some fields, complicated by the mud volcanoes, the surface gas and oil bearing occurred. The results of prospecting works showed, that they are not perspective due to the oil and gas bearing of the Middle Pliocene deposits as commercial importance. Within the SE of Gobustan the named such regularities are high.

Within the northern-east part of the East Azerbaijan (the northern-west flang of the South Caspian Basin) other situations have occurred. The lineaments quantity is smaller than in the above mentioned region. It is shown that the dislocation is small here and the oil and gas bearing on the mud volcanoes are hardly observed. But the oil reserves are highly appreciated.

The strong oil bearing and bitumen bearing rocks occur in some other structures, where density is very high. In these structures commercial oil inflows have not been determined yet.

The great sublatitudinal regional faults on the ranging of lineament region field, developed historically detailed, are the ways for the vertical hydrocarbon migration from Mesozoic and Paleogene-Miocene deposits on surface. So, they demolish the earlier formed deposits and thereby they play a negative role. These ruptures, located the mobile tectonical zones in the Mesozoic stage yet, contributed to the formation of the regional tectonic belts with the traps for oil and gas. They gave necessary conditions for the formation of the oil and gas deposits. So, in it's own time they played a positive role. During the vertical migration the some part of hydrocarbons from the deep-seated horizons on the fractures come to the overlying and took part in the deposits formation.

On the northern structures wings the local faults as longitudinal axis mainly execute the role of the tectonical screens, forming the screened traps for the oil and gas. Sometimes these faults play a negative role, because they crush the earlier formed deposits on the separate territories. But this

factor is insignificant in the comparison with the first, because total deposit size is not reduced by the crushing.

The role of the local faults, developed in the tectonical crashing zones, formed by the sublongitudinal regional fractures is mainly negative, because these fractures are the ways for the outcrop of the hydrocarbons on the surface. The intensive oil and gas shows on the surface, shown the faults demolition in the tectonical crashing zones, the absence of the oil and gas inflows of commercial importance in the testing wells, drilled in these zones.

But we can suppose that in the central-east part of the East Azerbaijan, where the tectonical zones of Paleogene-Miocene deposits are buried under the massive Pliocene cover, these faults can play a positive role. Because they contributing to the vertical hydrocarbon migration on the overlying horizons reservoirs and form the oil and gas accumulations near the tectonics zones, exceeded by the Pliocene types.