

**O16-6****EXPLORATION PROSPECT FOR HYDROCARBON  
POOLS IN OROGENIC AREAS****AKPER FEIZULLAEV**

Geology Institute of Azerbaijan Academy of Sciences, 370143, Baku, H.Javid av.29A, Azerbaijan  
E-mail: rouf\_hassanov@azeri.com

The South Caspian basin (SCB) is one of the known young tectonically active regions where the process of orogenesis initiated since Oligocene is still active. This process is accompanied by the growth of the fault-formation and seismicity, which are especially intensive in the zone of the conjunction of the intermontane Kura depression and mountain massifs of the Greater and the Lesser Caucasus, and in particular, within Shamakhy-Gobustan oil and gas bearing region (OGBR). The highest degree dislocation in sedimentary cover of SCB is observed in this area. Thus, specific density of faulting is about 80 km/1000 km<sup>2</sup> and the specific extension of the axes of folds is about 19 km/100 km<sup>2</sup>. These parameters are considerably lower for OGBR in the subsided parts of the basin and are 50 km/1000 km<sup>2</sup> and 5-7 km/100 km<sup>2</sup> respectively. High degree of dislocation in Shamakhy-Gobustan OGBR conditions the widest spread of oil and gas seepages.

Together with the above mentioned Shamakhy-Gobustan OGBR is characterized by a high seismicity. Every year several tens of earthquakes of different magnitude are recorded. It is necessary to mention all the earthquakes have narrow focus. The depth of most earthquakes is no more than 10-12 km and vary both in space and time.

It was determined that in the process of preparation of earthquakes and deformation of rocks, there took place a process of disconsolidation of rock caused by the formation of numerous fractures and microfractures (dilatancy), that may result in the growth of volume of rocks by 1,5-6 % and of pressure difference up to 20 MPa. As a result of this due to the transitory and impulsive "vacuumation" of the newly formed fractures, quick displacement of considerable volumes of fluid from one crustal medium to another, may occur, in so doing fluids may undergo phase separation.

All this will promote continuous-discontinuous process of reformation and distribution in geological space of the hydrocarbon resources up to their destruction. This can be proved by the fact that the long exploration in the Shamakhy-Gobustan OGBR determined only single cases of commercial oil inflow.

Thus, using Shamakhy-Gobustan OGBR, as an example one can make a conclusion that it is unlikely to expect large hydrocarbon accumulations in the areas which experienced orogenesis and are seismically active. Possible exception to this may be represented by the underthrust zones.

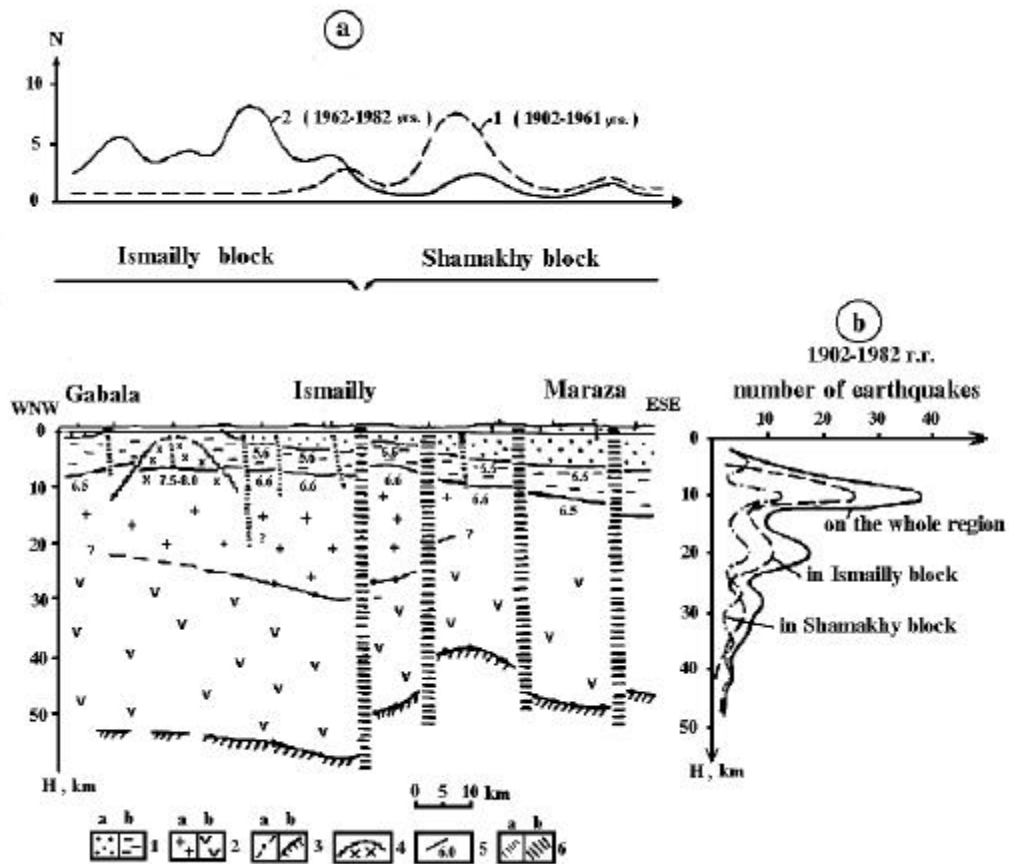


Figure. Cross section of the Earth's crust in the Shamakhy-Ismaily region, Azerbaijan, and distribution of the earthquake epicenters (a) and hypocenters (b) (after T.N. Kengerli and G.O. Veliyev):

1. the sedimentary complexes:
  - a- Jurassic; b- Lower Cretaceous-Anthropogene;
2. basement:
  - a- granite; b- basalt;
3. discontinuities:
  - a -Conrad, and b - Moho;
4. outlines of the intrusive massif;
5. boundary velocities;
6. deep faults:
  - a - in basement;
  - b - traced down to Conrad and Moho discontinuities.