

# *International Conference on the Geodynamics of the Black Sea-Caspian Segment of the Alpine Folded Belt*

*Baku, Azerbaijan, June 9–10, 1999*

The International Conference on the Geodynamics of the Black-Sea-Caspian Segment of the Alpine Folded Belt was held in Baku, Azerbaijan from 9 to 10 June 1999. The meeting was organized by the National Committee of Geologists of Azerbaijan (AzNCG) and the Geological Institute of Academy of Sciences of Azerbaijan. Over 200 geoscientists, including delegates from Canada, Great Britain, Greece, Iran, Russia and Georgia, attended the meeting. Ninety-seven papers by 160 authors submitted in Azerbaijani, Russian and English were published in the abstracts.

Academician Ak. A. AliZadeh opened the conference. He pointed out the unique features of Azerbaijan. Situated between the Afro-Arabian and Eurasian plates, the region allows the study of complex geological problems on the formation of the folded belt and the revelation of distribution regularities of a wide spectrum of useful minerals. He emphasized the participation of foreign oil companies in the study of the Caspian Shelf geology, which, jointly with Azerbaijan geologists, have revealed a number of new perspective structures for hydrocarbon raw materials. These will allow Azerbaijan to rank as one of world's large oil- and gas-bearing regions in the 21st century.

The conference proceeded in three stages:

- Contemporary geodynamic notions about the region and geophysical studies of the lithosphere;
- Models of the oil- and gas-bearing basins, stratigraphy and correlation of oil- and gas-bearing structures;
- Geodynamics and metallogeny of ore-magmatic systems.

**Section I** Complex structures of the Black Sea-Caspian Sea area are the result of multi-staged evolution of this folded belt, and an essential role in their formation is played by sublatitudinal and submeridional extensions that cover the territories within the Turanian, Scythian and Eastern-European platforms (Dr. G.B. Georgobian, Georgia; Prof. F.S. Ahmedbeyli, Dr. V.G. Idrisov, Azerbaijan). Seismo-stratigraphic analyses of the deep-sea depressions of the belt have revealed the complex lateral and vertical segments of the sedimentary basins which existed at different stages of dynamic and thermal evolution of the lithosphere. Large geosystems of the Mesozoic, influenced by relatively weak tectonic-magmatic effects, have been partly preserved in form and are well described in the seismic time sections (Prof. A.N. Yakobson, Russia; Prof. P.Z. Mamedov, Azerbaijan).

The studies of neotectonics of various kinematics allow us to define that the western Pri-Caspian Pliocene-Quaternary trough, along with the Middle- and Southern-

Caspian trough, formed a united supra-rift depression of modern aulacogen as a result of latitudinal extension (Prof. M.L. Kopp, Russia).

According to data from geophysical research, the South-Caspian depression in the neotectonic stage was exposed to directly shifted deformation, which caused the deformation of the productive series into large structure-traps. The hierarchy of more shallow structures shows the role of subseismic faults resolution in the control of hydrocarbon migration (Dr. M.B. Allen et al., Great Britain). According to 3-D seismic data obtained from the North Sea, faults with small-amplitude displacement, creating polygonal network inside stratigraphic traps and characterized by a low interval of velocities testifying to rock impermeability, have been revealed. Such a model allows us to study the trap and reservoir distribution in the deep-water parts and gives more accurate drilling predictions (Dr. Andrew Skuce, Canada).

Much attention has been paid to the evaluation of the results of integrated geological-geophysical research on the region, in order to reveal the tectonic lamination and splitting of the alpine structural complex which led to the formation of the differentiated overthrust sheets in the sedimentary cover (Dr. T.N. Kengerly, Azerbaijan).

**Section II** Most of the speeches in this section were dedicated to the problems dealing with prospective geostructural zones of various kinds in the Black Sea-Caspian region produced by geodynamic evolution and subsequent processes of transformation, e.g., nappes and overthrust sheets in which various oil formation systems occurred (Dr. L.E. Levin, Russia; Prof. I.P. Gamkrilidze, Georgia; Dr. A.B. Mamedov et al., Azerbaijan).

It has been determined that recent geodynamic processes occurring in the earth's crust, both on the regional and local levels, are more clearly manifested in the local structures confined to the active areas with fault disturbances active in the recent stage (Dr. N.A. Kasyanova et al., Russia). The formation of the structures took place against a background of transformation of directions of compression and decompression, and, as a result, there occurred the changes of parameters of structures, rates of sedimentation, geothermal regime, and distribution of the potential resources of hydrocarbons by densities (Dr. L.E. Levin et al., Russia).

The substantial role of geodynamic factors in the processes of hydrocarbon gases generation has been observed. Therefore, in geosynclinal regions, processes of filtration and mosaic distribution of hydrocarbon accumulation prevailed in typical zones; while in platform areas, processes of diffusion played a

significant role in the formation of gas accumulations (Dr. Ch.S. Muradov, A.A. Feizulayev, Azerbaijan).

Prospects of oil-gas contents in the regions developing on the oceanic-type crust have been positively evaluated when considering the role of geodynamics in the formation of deeply-submersible Paleogene and Miocene series of Azerbaijan (Dr. Ad.A. Aliyev, A.A. Bairamov et al., Azerbaijan).

A great role of post diagenetic transformations in the formation of oil-gas accumulations has been substantiated. It has been shown that degree of rock transformation depends on tectonic position of sections of recent depths of occurrence accounting geothermal gradients (Dr. B.K. Chrchua, Georgia; Dr. A.D. Kuliye, Azerbaijan).

Autochthone, allochthone and neoautochthone complexes are observed in the section of sedimentary cover of the South-Caspian basin. The Mesozoic complex has an allochthone origin and is characterized by a wide development of anticlines and antiforms but not brachyanticlines, that requires an orientation of seismo-exploration namely on these structures (Prof. B.C. Shein, D.A. Astafiyev, Russia).

**Section III** The ore-magmatic systems of the Alpine belt reflect their link with the geodynamics of the region, and within separate structural zones they are related to the peculiarities of the processes of geodynamic evolution (Dr. R.V. Djznelidze, G.Sh. Nadareishvili et al., Georgia; Dr. Ismail-Zadeh, Azerbaijan).

The importance of distinguishing of paleogeomorphic structures, the lithofacial characteristics of which reflect the conditions of plate kinematics of various stages and conditions of initial concentration of ore components and formation of field-peculiarities of ore-forming processes (Dr. S.A. Kekeliya et al., Georgia), are observed in problems dealing with the connection of geodynamic regime with metallogeny.

The Conference presumed that the development of geological problems related to the geodynamic evolution of the earth's crust based on the data of recent geophysical methods of investigation will be the priority direction of geological science in the new millennium when exploring the Caucasian segment of the Mediterranean belt.

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