



## Conception of oil and gas bearing and lithosphere fluidodynamics of the Eastern part of the Khanty-Mansiysk region (West Siberia)

Vladimir Pisetski (1), Kirill Ivanov (2), and Alexandr Sudilin (1)

(1) Urals State Mining University, Ekaterinburg, Russia (pisetski@yandex.ru), (2) Institute of Geology and Geochemistry of the UB RAS, Ekaterinburg, Russia

On the basis of complex geological and geophysical researches and mapping of the territory huge segments a new scheme of structure-formational basement's zones has been developed. A new geological map of the pre-jurassic basement of the West-Siberian plate (Eastern part of Khanty-Mansiysk region) has been compiled [Ivanov et al., 2010].

A conception of dynamics fluid model (DFM) is composed on the two basic processes: modern block geodynamics in a system of "sedimentary cover-basement" and fluid flows. Together these two processes form non-stationary fluidodynamic regime of lithosphere which determines the essence of sedimentary basin oil- and gas- saturation according to the following logical chain: fluid migration in contact zones of the basement and sedimentary cover block system – fluid and its hydrocarbon components accumulation in local areas of temperature and pressure contrast lowering. In such setting physical determination of hydrocarbon traps is composed of two interconnected elements – fluidodynamical channel and an area of abnormal lowering of relative estimations of abnormal stress. Thus, the strategy of forecasting oil and gas deposits in deep intervals of the sedimentary cover and basement can be composed on the successive solvation of the following tasks:

- determination of geometry of block separation scheme of the sedimentary cover and basement on the base of a formalized basis of frequency decomposition and integration of a series of structural maps and potential fields;
- estimation of distribution of a general rock pressure relative values in a system of active block processes in co-ordinated intervals of lithospheric lawyer on seismic data [Pisetski, 1999];
- solvation of hydrodynamical tasks on the base of the equation of a fluid flow in the deformed discrete media.

Practical example of the oil-presence successive forecast of the Khanty-Mansiysk region illustrates the possibility of forecasting the block separation scheme on the level of lithosphere and the sedimentary cover. Zones of the proved oil-saturation of the sedimentary cover are located in the vicinity of meridional boundaries of lithospheric separation blocks (the block size of this level is 110 km) and are related to their knots. Therefore, all the rest of block knots of this level in the unexplored Eastern part of the Khanty-Mansiysk region can be perspective ones for the oil deposits discovery.

The researches are fulfilled within the frames of the Program "Fundamental problems of geology and geochemistry of oil and gas..." of Russian Academy of Sciences (projects 09--5-1008, 10-35-09NDR).

### Literature

Ivanov K.S., Pisetski V.B., Erokhin Yu.V. et al., 2010. New data on geological structure of the eastern part of Khanty-Mansiysk region basement // Ways of realization of oil-, gas- and ore potential of Khanty-Mansiysk region.V. 1. pp. 119-127 (in Russian).

Pisetski V.B., 1999. The dynamic fluid method. Extracting stress data from the seismic signal adds a new dimension to our search. The Leading Edge, September 1999, Vol.18, No.9, SEG, USA, pp. 19.