

THE METHODOLOGY OF HETEROGENEOUS TRAPS AND RESERVOIRS SIMULATION BASED ON STOCHASTIC METHODS TO OPTIMIZE EXPLORATION AND DEVELOPMENT OF OIL FIELDS

RYZHKOV A.P., DAVYDOVA T.B., ULYANOV S.A. Russian Peoples' Friendship University, Druzhba-Engineering Company, Moscow, Russia

There is suggested the technology for comprehensive researches of oil fields based on working out of heterogeneous traps and reservoirs models to optimize exploration and development. The models being worked out are sedimentary-facial, oil field, tectonical anisotropy and hydrodynamic communications of reservoirs. Methods of study and analysis - harmonic (spectral) method, trend analysis, factor analysis, taxanometry of multi-dimensional data and recognition methods. The models permit: to determine sediments occurrence and their structural time reconstruction; to forecast favorable high porosity and permeability zones in reservoirs; to find out mobile dislocations, fractures and fracture systems (linear or linear-focus) controlling fluid-conducting properties; to locate zones susceptible to intensive circulation loss of drilling fluid and the most complicated conditions for drilling of exploration and development wells; to differentially locate heavy recoverable reserves of the fields depending on the heterogeneity of reservoirs and productivity zones. The suggested technology was successfully applied on more than 80 oil-gas fields of various structures and genesis located in different oil-gas basins of the former USSR (Russian Federation, the Ukraine and Belorussia).