Skorobogatov V.A. General and particular aspects of oil and gas giant-fields formation / V.A. Skorobogatov // Resource support problems of Russian oil-producing regions up to 2030: Collected scientific articles. – Moscow: Gazprom VNIIGAZ, 2012. – P. 5–16.

The Article contains the results of author’s long-term researches on the issue of hydrocarbons ontogenesis in sedimentary basin and rocks of different type and age in compliance with the world’s experience on researching conditions of formation, evolution, as well as location regularities of oil and gas giant-fields with geological reserves of more than 300 billion m3 (300 million ton). Author shows the fundamental differences between the conditions of forming and preservation of large-scale oil and gas accumulation areas. Also the conclusions about the conditions favorable to formation of oil and gas giant-fields long-term conservation (including terrigenous and carbon formations) were made.

Istratov I.V. Historical aspects on idea development of oil and natural gas migration / I.V. Istratov // Resource support problems of Russian oil-producing regions up to 2030: Collected scientific articles. – Moscow: Gazprom VNIIGAZ, 2012. – P. 17–21.

The researcher’s main views on oil and gas migration and accumulation are shortly discussed in this article and formed by the middle of the 20th century. These views are relevant even today in learning of deep oil and gas bearing formations and deposits of hydrocarbon fluids.


Examination of main results obtained by the scientists of VNIIGAZ in the field of migration and separate forming of oil and gas bearing formations due to a quantitative assessment of gas-containing prospects and justification of oil and gas industry raw materials base.

Eremeev V.V. Formation of oil-and-gas bearing potential of Mesozoic sedimentary basin in the Atlantic and Siberia / V.V. Eremeev // Resource support problems of Russian oil-producing regions up to 2030: Collected scientific articles. – Moscow: Gazprom VNIIGAZ, 2012. – P. 26 –33.

Discussion of the mechanisms of the formation of oil and gas bearing potential of sedimentary basins in the north of Western Siberia and the Atlantic on the basis of lithofacies and mineralogical and petrographic studies. The author’s established a similarity between the processes of evolution and formation conditions of oil and gas potential of the Lower Cretaceous sediments of these regions.


The arguments which show that hydrocarbon deposits complicated with faults attributed to the type of tectonically screened in many cases are not sufficiently substantiated. Alternative models of traps attributed to the trilaminate structure theory of the natural reservoirs are offered.


The natural three-layered reservoirs of hydrocarbons are presented. The influence of correlation of anticlinal fold amplitude and false cover thickness on possibility of trap forming and hydrocarbons deposits.

Finding allows to get valuable information about the history of formation and reformation of hydrocarbon fields.

The variants of fragmentation of Mesozoic-Cenozoic deposits of intermountain troughs Tien Shan on formations are presented. Also results of vertical and lateral formational rows are presented. It’s established, that oil and gas content of Mesozoic-Cenozoic deposits of intermountain troughs Tien Shan along with other factors are controlled by the formational composition of the complex.

Talas-Fergana fault had a great significance for Mesozoic-Cenozoic Tien Shan troughs division into productive and unproductive troughs. Talas-Fergana fault is a border, which separates two large Tien Shan segments with different histories of development during Jurassic-Paleogene and different formational rows.


The tectonic factor influence on depositional environment and formation of reservoir rock facilities of productive deposits in areas of joint major tectonic structures of the Siberian platform is established. It is established on the example of well-researched Sobinskoye and Beryambinskoye hydrocarbon deposits. Patterns of lateral variability of reservoir rock properties are established. The forecast of zones distribution of rocks with improved reservoir properties is given.


The questions of decipher, definitions of kinematics and mapping of the discontinuous faults are presented. Identification of areas of their geodynamic influence on the analysis of remote sense data.

The features of geological decipher of faults on optical and radar images are analyzed.


3D seismic features in problem solving of structural and kinematic interpretation of faults are demonstrated on the example of North Western Siberia fields, which are complicated with structures of horizontal shift. A wide range of geology issues and hydrocarbon saturation of Western Siberia are analyzed: from oil- and -gas geological zoning of bowels to exploration technology of deep hydrocarbon deposits in conditions of active occurrence of latest pull-apart tectonics.


The correlation between fault tectonics and oil-and-gas formation and accumulation processes at the different stages of basin development is analyzed on the Timan-Pechora oil- and -gas basin example. Tectonic conditions analysis allowed identifying the main phases of the natural reservoirs formation and impermeable beds. It’s established that fault tectonics has a significant influence on hydrocarbon saturation of sedimentary basin. At the first stages of development faults are responsible for basin structure formation,
routing of oil-and-gas source rock, competences and facies, container rocks and impermeable beds. Further faults role increases in traps formation. At the final stage of the basin development faults are responsible for reformations and destruction of oil and gas accumulations.


Building mechanism of structures of sedimentary basins central type, which is connected with pulse discharge of normal and maximum shear tectonic stress, is analyzed. The main criteria of hydrocarbon saturation of the central type structures are presented. The geodynamic criterion which is connected with tensile phases is the most important.


The model of present-day three-ply crust structure is analyzed. The rifting processes are destructive factor for higher slice of crust. The rocks of the middle slice generate overheated fluid zones at thermal plume impact. Inversion motion on postrifting stage determines multidirectional nature of vertical movements of foundation blocks. Last mentioned lead to the formation of local structures and to areas of vertical and horizontal fracture which is the intrusion of deep fluids and gas fluids involved in the formation of hydrocarbons fields.


Well known ideas about the predomination of compression and stretching conditions in the Earth`s crust are contradistinguished and are studied within a context of different geodynamic regime of structure formation. The article shows the discrepancy between the “flower model” kinematics to the real 3D models of shift areas. The conclusion establishes that the existing idea about tension-strain state of the Earth`s crust and structural paragenesis of shift areas, that goes back to 2D understanding of geology, is incomplete and needs to be revised. The main conclusion resolves to the affirmation that during each stage of structure formation, there is a simultaneous 3D uneven tension process occurring, that consists of 3 main types of geological deformation like orthogonal (compression, stretching) and diagonal (shearing) of the earth`s crust structures.


The article presents the summary and analysis of all data on fault determination on Omorinsky license block. It determines the role of the role of faults in hydrocarbon deposits accumulation of Vendian (Ediacaran) B-VIII layer of Katanga group of Omorinskoye field and of Salair deposit of Riphean (Mezoproterozoic-Neoproterozoic) upper interval on the basis of well testing results and well logging.

The article presents the results of contemporary seismic survey analysis at Southern Dagestan that confirms the thrust fault model of HC fields and allows us to forecast new prospects onshore. There were various types of HC tramps determined within the sequence from Jurassic to Pliocen sediments on Dagestan’s shelf, that evidences considerable HC potential. The most prospective tramp offshore is considered to be the fan sandbody of Chokrack sediments.


The article presents the results of confinement study of HC fields of Fore-Caucasus to areas with different type of distribution of linear structures. It states that the major part of HC field of Fore-Caucasus is located in “pull-apart” geodynamical areas.


This article considers an issue related to the estimation of the stable level of ancient water-oil contacts and its repositioning due to tectonic shifts that may result in either deforming or preservation of HC deposits in different blocks. Studying the fault block field structure is important during field exploration and design of development system.


The article offers the methodology of fracture porosity estimation based on the P-wave velocity as a function of intergranular and fracture porosity. The methodology comprises the estimation of P-wave velocity in atmospheric and formation conditions and the calculation of seismic quality factor as their ratio. It states, that reservoir fracture porosity reaches the value of 0,5–0,7 % and declines to 0 in simulated formation conditions.


The article presents the methodology of fracture factor assessment using P-wave propagation velocity, based on the variations in relation of P-wave velocity from intergranular and fracture porosity. The article presents the results of P-wave velocity estimation in atmospheric and formation conditions, and the calculation of seismic quality factor as their ratio. The average value of fracture porosity for analyzed samples in atmospheric conditions is 0,2% with the variation range 0,0–0,6 %, that indicates the possibility to estimate fracture factor on first approximation for rock samples according to this methodology.


The article relates the results of natural cracking factor estimation at Urnenskoye and Ust-Tegusskoye fields and of complex geology-geophysical information analysis that are the basis for process design on improvement of field development efficiency.

The article presents the results of the natural fracture pattern definition of a number of the Yamal-Nenets Autonomous District fields’ rocks on the basis of the remote sensing data processing and interpretation. The obtained data gives us new information on the nature of the original deformation processes taking place in the Earth’s upper crust. This will permit to optimise the objects development and the remaining hydrocarbon reserves recovery, the wells’ operation conditions and quantity and also to improve the geological and technical operations’ efficiency.

Zabolotnaya Y.I. Container rocks distribution pattern for the lower Middle Jurassic terrigene formations of Eastern Ustyurt (Republic of Uzbekistan) / Y.I. Zabolotnaya, V.V. Rybalchenko // Russian gas producing areas’ resources provision problems until 2030: collected scientific works. – Moscow: Gazprom VNIIGAZ, 2012. – P. 182–193.

The new geology and geophysics data received as the result of the performed seismic exploration works and exploratory well drilling in Eastern Ustyurt in 2006-2011 allowed to identify the main container rocks distribution pattern for this territory. A study of the lower Middle Jurassic sandy shale formation container rocks’ permeability and porosity properties behaviour has been carried out.


The study of hydrocarbon deposits location for hydrocarbons of different phase states depending on pressure and temperature conditions showed that gas and gas condensate fields are predominantly related to areas characterised by most stressed pressure and temperature conditions of the reservoirs (60–112 °С, 34–79,3 MPa). The areas of relatively low temperatures (32–72 °С) and pressures (4,5–34,0 MPa) mostly contain oil reservoirs. It is possible that new oil accumulations will be discovered in the eastern regions of the Southern Caspian trough at depths down to 7–9 km.


The article considers the material composition, the structure and the genesis of the Chayandinskoye gas condensate field Vendian productive sediments. The present work determines the influence of the basic factors on the depositional environment and the rocks’ permeability and porosity properties formation. It also establishes the reasons of the producing horizons’ lateral and vertical inhomogeneity. The article gives a forecast for the probable distribution of the high-porosity container rocks zone in the Vendian sediments located in the east of the Nepsko-Botoubinskaya anteclise.


Using the detailed lithological research and paleontological modelling, the article gives a classification of volcanic rocks, studies the conditions for their formation, their material composition and the reservoir types. Optimal conditions for the Yakutia Lower Triassic age gas fields’ development are recommended.

The work considers a number of geological and geophysical methods for diagnosing fractures which appear in the natural reservoir rocks in the course of local tectonic movements and change fluids’ percolation paths. Fracture pattern maps are constructed which bear a high resemblance to the modeling experiments results. The influence of the fracture zones on the wells capacity is shown.


On the base of modern Russian and worldwide enhanced oil recovery technologies’ efficiency research it is recommended to develop new technologies for oil production from oil rims and oil reserves below the gas cap on special industrial grounds taking into account the geologic-geophysical, technical and techno-economic particularities of the field being developed and also the experience in the equivalent fields development.