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**UDC 550.832+552.54**

**GENERATION OF GAS-CONDENSATE DEPOSITS OF THE MID-CASPIAN (p. 4)**

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Modern catagenetic zoning indicates that maternal Jurassic sediments in the deepest area of the Tersk-Caspian trough, being on the second phase (gas condensate) of formation and reformation of deposits, represent some massive source of hydrocarbon gases, leading to gaseous medium domination on the larger part of the Mid-Caspian territory under the decisive influence of gas flows on migration routes.

Different role of gas-condensate flows in hydrocarbon deposits evolution is shown. It is as follows: a) breaking role in the gradual reduction of oil share in traps (oil rims); b) unrealized role in reforming of cut off from migration routes, fading, hardly-recoverable and non-recoverable oil accumulations in the Jurassic deposits; c) creating role in formation of large gas condensate deposits and maintenance of fullness of their filling under the structural hinges (point of overfilling).

Regional gas stream is the major natural factor of gas introduction into oil rims of the Mid-Caspian fields, significant reduction of their thicknesses (Yu. Korchagin field) up to complete replacement of gas condensate (Khvalynskoe field). Gas-oil ratio (GOR) of wells’ product in favor of gas proves this process by the example of their Yu. Korchagin field. Maximum values of GOR are confined to maximum uplifted (Central) block with maximum roof inclination angles of productive formations, gas caps thicknesses, oil saturation by gas (gas factor). Areas with minimum values of GOR in the Western and Eastern blocks with maximum density of oil reserves per one area, where it is advisable to direct horizontal sections of projected production wells in order to minimize increased and hurricane gas breakthrough into the oil rim are identified.

**Key words:** gas-oil ratio; dip angle of a formation; deposit; rim; gas cap; horizontal well; gas breakthrough.

**UDC 553.98(26)**

**ONE MORE REMINDER ABOUT THE EXPEDIENCY OF OIL FIELDS PROSPECTING IN THE BARENTS AND PECHEORA SEAS (p. 13)**

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According to the latest revaluation of predicted oil and gas resources as of 01.01.2009, accumulated in Paleozoic deposits of the Central Barents area of uplifts, at the Admiralteisky swell, in Prinovozemelsky stage as well as in the Upper-Mid-Mesozoic sediments of the eastern near edge part of Khoreyversky depression, recoverable oil resources are evaluated at 1 billion tons and 630 million tons correspondingly.
In accordance with the above-mentioned evaluation, the most noteworthy ones are near edge part of Eastern-Barents trough, i.e. Central-Barents zone of uplifts, and Admiralteisky swell, where deposits of the Upper Silurian, Lower Devonian-Carboniferous of Admiralteisky and Pakhtusovsky local structures as well as Western-Varandey sea and Madachagsky local structures, located in the eastern near edge area of Khoreyversky depression, are of primary prospecting interest.

Specific feature of hydrocarbon deposits distribution when gas and gas condensate fields are predominantly detected in the Mesozoic deposits while oil fields are generally located in the Paleozoic deposits is clearly observed.

Key words: Paleozoic sediments; Khoreyversky depression; the Barents Sea; oil fields.

UDC 550.8

GEOTHERMAL REGIMES OF THE WORLD SEDIMENTARY BASINS FOR HISTORICAL-GENETIC MODELING OF OIL- AND GAS-BEARING (p. 16)

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The paper presents the results of the second stage of the generalizing research work carried out to analyze geothermal conditions of the world sedimentary basins. The work resulted in identifying the relationship between thermogram shape and the geodynamic and geo-morphological specific features of sedimentary basins. The new approach, that envisages usage of convective heat flow while reconstructing paleo-temperatures, is suggested. Rate values of fluids’ vertical recharge and discharge depend on the thermogram shape. The average rate velocities are calculated. The proposed models could be used for further modeling of petroleum systems of the world sedimentary basins.

Key words: sedimentary basin; temperature; heat flow; geothermal regime; hydrodynamic regime; Peclet number; fluid flow rate; convection; oil- and gas-bearing; basin modeling; geo-synergetics.

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SECONDARY KAOLINIZATION OF SAND FORMATION AS THE SIGN OF SEDIMENTARY COVER TECTONIC DEFORMATIONS (p. 22)

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Some algorithm for computing the secondary kaolinite formation intensity, developed on the basis of application of statistical analysis method of well logging data obtained in sandy reservoirs and the introduced definition of the imposed epigenesis intensity is presented. Comparison of the computing data with the results of core petro- graphic studies and the results of the seismic data processing of reflecting horizons surface have confirmed the effectiveness of the proposed algorithm and determined the dependence of the secondary kaolinite formation intensity on tectonic deformations and the distance to them.

Key words: secondary process of kaolinite formation; imposed epigenesis; well logging (GIS); tectonic fault; fracturing; migration of fluids; statistical interpretation of GIS data.

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FUNDAMENTAL REGULARITIES OF VARIOUS-TYPE TRAPS APPEARANCE IN DEEPLY-SET SEDIMENTS OF THE SOUTH-CASPIAN DEPRESSION AND IDENTIFICATION OF THEIR DISTRIBUTION AREALS (p. 27)

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It’s well known that oil and gas traps of non-standard (non-anticlinal) type appear in the process of the earth’s crust evolution, reflecting the results of the stages of the sedimentary cover formation such as lithogenesis diagenesis, katagenesis and supergenesis. Among the majority of factors that pay strong influence on the material composition of the Earth's crust, the active role belongs to tectonics and, naturally to tectonic movements’ regime. The on-going processes result in formation of geological bodies of various geometric shapes that form oil and gas traps. There exist a great number of traps in nature that were directly formed under the influence of a lot of factors. Study of the traps formation conditions, the main factors, justifying their appearance and placement in the earth's crust, allows predicting these traps that are rather complicated by form, by geometric data and by lithological composition and identifying areas of their distribution. The traps of both standard and non-standard type observed in the deeply-set sedimentings and being of considerable interest from the point of view of prospecting and exploration of oil and gas fields can have a more complicated form due to multiple tectonic and other effects. Consequently, this fact cannot be ignored and should be taken into consideration.

Key words: trap; oil; tectonics; deposit; hydrocarbon; lithology.

UDC 622.276

ASSESSMENT OF PROSPECTS OF CRUST MODEL APPLICATION TO STUDY THE STRUCTURE AND OIL AND GAS CONTENT OF THE ARCTIC WATER AREAS (p. 32)

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The comparative analysis witnesses the fact that CRUST model as global, worldwide model is not optimal in case of studying some small regional areas of the earth's crust. The model fixes global peculiarities of the earth's crust structure and
identifies large, basic tectonic elements. CRUST model is not applicable for predicting the structure and petroleum potential of the Arctic region of Russia.

Key words: seismo-tomography; CRUST model; the Arctic water areas; the Barents and the Kara Seas; oil and gas potential.

UDC 622.276

PHYSICAL MODELING OF PERMEABILITY OF PRODUCTIVE TERRIGENE ROCKS (p. 37)


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The results of experiments, carried out to determine gas and water permeability with the help of samples of productive terrigene rocks are presented. It is proved that in case of small intraporous pressures gas permeability of conditionally permeable rocks deviates from the true values due to gas slippage effect. Differences in the permeability of fresh and salt water for terrigene rocks with different amount of clay components are measured. Physical modeling Klinkenberg effect for the systems considered is performed.

Key words: permeability; terrigene rocks; clay components; modeling.

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APPLICATION OF ANALOGUE-STATISTICAL MODELS FOR ON-LINE COMPUTING OF OIL RECOVERY FACTOR AT THE OIL FIELDS OF PERM TERRITORY (p. 42)

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Recommendations on calculation of oil recovery factor for the fields of Perm territory that united scientifically-justified approaches to assessment of this parameter for any type of oil deposits and conditions for their development are presented. The problem was solved by studying the effect of geological-technological development indicators on the recovery factor. These studies resulted in developing of the methods, mathematical models and formulas of oil recovery factor assessment with their further application at the objects of Perm territory.

Key words: Perm territory; oil and gas field; oil recovery factor; terrigene and carbonate rocks; methods of calculation of oil recovery factor.

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OIL SHALES
(Informational-analytical review) (p. 45)

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Raw-material base of oil shale from some shale-bearing basins, their deposits and occurrences, located on the territory of the Russian Federation, Belarus, Estonia, Kazakhstan, Uzbekistan and Azerbaijan is discussed. The light was thrown on the problem referring to the state of development and production of oil shale in these countries.

Key words: oil shale; resources of oil shale; products of processing; production; exploration; geological prospecting.