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Lithofacies zonation of the Lower Cretaceous deposits of the southwestern spurs of the Gissar Range

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Abstract. This article examines the lithofacies and paleogeographic conditions of the formation of Lower Cretaceous deposits in Southwest Gissar, where their sediments are most clearly distinguished in the Mesozoic section. The main components of these sections are coarse-grained, sandy-siltstone, clayey, sulfate, chemogenic-organogenic, and carbonate rocks formed in continental, lagoonal, and marine environments. Correlations between various types of sedimentary minerals and dynamic facies types are established.

Key words: *Gissar, Lower Cretaceous, deposits, sedimentation, section, area, facies, paleogeography, climate, transgression, regression, minerals*

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Features of the geological structure and oil and gas prospects of the Cretaceous deposits of the Chardzhou stage

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Abstract. This article examines the geological preconditions for the oil and gas potential of the Cretaceous deposits of the Chardzhou stage of the Bukhara-Khiva oil and gas region, which represent a promising yet understudied target. Based on the interpretation of geological and geophysical data and the results of drilled wells (well logging, core samples, and well testing), as well as a study of the hydrodynamic conditions of groundwater in the Cretaceous deposits, areas most characteristic of hydrocarbon accumulation in various traps associated with tectonic, lithological, and hydrodynamic screens were identified. Potential for expanding promising areas in Cretaceous strata sections is identified, and their potential is assessed.

Key words: *Chardzhou stage, area, structure, chalk, sediments, horizon, formation, migration, hydrocarbon, deposit, potential*

For citation: A.Zh. Khozhiev, T.Kh. Shoimurotov, I.N. Khakimzyanov Osobennosti geologicheskogo stroyeniya i perspektivy na nef' i gaz melovykh otlozheniy Chardzhouskoy stupeni [Features of the geological structure and oil and gas prospects of the Cretaceous deposits of the Chardzhou stage]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 31-51. DOI <https://doi.org/10.25689/NP.2026.2.31-51>. EDN AXNJAB (in Russian)

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EDN BDENYE

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Evolution of ideas about the structure of the oil reservoir in the basement rocks of the Oymash Field (South Mangyshlak)

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Abstract. Declining production and a decrease in the hydrocarbon resource base in the platform cover of oil and gas basins make the search for oil and gas in deep-lying sedimentary complexes and basement rocks an urgent and practically significant task. Despite the discovery of industrial accumulations of hydrocarbons in igneous and metamorphic rocks forming the foundation of sedimentary basins in many oil and gas-bearing regions of the world, there are still no unambiguous solutions to key theoretical problems, such as the conditions and factors controlling the formation of oil and gas reservoirs in them. All this significantly complicates and slows down the exploration process in these promising rock complexes. Solving these issues will allow for more targeted exploration for oil and gas, and increase their efficiency. In recent decades, granitoid intrusions have attracted increased interest, especially after the discovery of large accumulations on the Vietnamese shelf. In this work, the object of research is the Oymashinskoye oil field, which has accumulated quite extensive geological and geophysical material that allows us to determine the patterns of oil placement in the granite massif. In the course of the work, materials from field geophysical studies (seismic, gravity and magnetic exploration), geophysical studies of wells, reservoir testing and testing work in wells, data on the reservoir properties of rocks, and the composition of reservoir fluids were analyzed. The factors controlling the formation of the capacitive properties of the granite massif are considered. A model of the structure of an oil reservoir in igneous rocks is proposed. Recommendations for additional exploration of the field have been made. The results obtained can be used in the practice of geological exploration in other oil and gas regions.

Key words: *granite intrusion, reservoir rock, reservoir, oil accumulation, oil and gas potential*

For citation: V.I. Popkov Evolyutsiya predstavleniy o stroenii rezervuara nefti v porodakh fundamenta mestorozhdeniya Oymasha (Yuzhnyy Mangyshlak) [Evolution of ideas about the structure of the oil reservoir in the basement rocks of the Oymash Field (South Mangyshlak)]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 52-96. DOI <https://doi.org/10.25689/NP.2026.2.52-96>. EDN BDENYE (in Russian)

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EDN BSHRYT

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Hydrodynamic modeling approaches and well placement planning

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Abstract. The issue of real, full-scale modeling of oil fields with carbonate deposits still persist in the current stage of reservoir simulation development. This relates to the complexity of replicating a dual porosity and permeability system associated with the heterogenous distribution of fracturing in both the vertical and horizontal directions. Significant calculation capacity does not allow for the full consideration of complex fracture geometry within comprehensive geological and simulation models.

Nowadays, fracturing studies employ various investigative methods, such as tensor analysis, oriented core studies, 3D seismic analysis with vertical seismic profile, as well as tracer techniques. However, the key issue of the absence of reliable tools for the quantitative evaluation of the contribution of vertical and horizontal fracturing to overall system permeability remains. This significantly increases the difficulty of accurately distributing reservoir properties between the fractures and the rock matrix. In this paper, the authors developed a test simulation model based on the available geophysical data, which approximates the authors' perception of the geological structure of the carbonate deposits.

Key words: *fracturing, carbonate deposits, dual permeability model, deposit, rock matrix reservoir properties, the Bashkirian and the Serpukhovian stages, oil recovery rate, water cut*

For citation: I.V. Davletshina, R.R. Davletshin, I.G. Fattakhov Podkhody gidrodinamicheskogo modelirovaniya i planirovaniya razmeshcheniya proyektnykh skvazhin [Hydrodynamic modeling approaches and well placement planning]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 97-113. DOI <https://doi.org/10.25689/NP.2026.2.97-113>. EDN BSHRYT (in Russian)

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EDN ANTPUS

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The need for tertiary methods in long-term field development

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Abstract. The article analyzes the relationship between the coverage of the well stock by tertiary reservoir treatment operations and the efficiency of oil reserves extraction. The efficiency criterion is the ratio of reserves, and a sample of long-term oil fields of the Khanty-Mansi Autonomous Okrug is used as a research material. Based on the analysis results, the values of the well stock coverage by geological and technological measures for the main tertiary methods application are substantiated. Additionally, the article examines the possibility of increasing oil production through tertiary methods, and how the increase in production at the late development stage correlates with the efficient reserves development.

Key words: *multiplicity of reserves, hydraulic fracturing, treatment of the bottom zone, physical and chemical methods of increasing oil recovery, hydrodynamic methods, drilling of side wells, long-term development of fields*

For citation: T.N. Pechyorin Potrebnost' dlitel'no razrabatyvaemykh mestorozhdeniy v tretichnykh metodakh [The need for tertiary methods in long-term field development]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 114-128. DOI <https://doi.org/10.25689/NP.2026.2.114-128>. EDN ANTPUS (in Russian)

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EDN EEVTQQ

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Justification of the use of polymer flooding in oil fields with low viscosity

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Abstract. The article is devoted to the justification of the use of polymer flooding technology to increase oil recovery in fields with low-viscosity oil. The well-established opinion is refuted that polymer flooding is effective only for high-viscosity oils, while low-viscosity ones should use technologies based on surfactants (surfactants). The authors prove that the key efficiency factor is not only the viscous, but also the viscoelastic properties of polymer solutions. These properties, which manifest themselves at high concentrations of polymer (polyacrylamide), contribute to the formation of a more even displacement front and the involvement of residual oil in the development. The paper analyzes the parameters affecting the manifestation of elastic properties: the concentration of PAA, its molecular weight and mineralization of reservoir water. Polymer flooding may be a more cost-effective and efficient technology for increasing oil recovery compared to surfactant polymer flooding for low-viscosity oil fields.

Key words: *enhanced oil recovery, polymer flooding, oil recovery coefficient, viscoelastic properties, displacement coefficient, displacement front, water mineralization, molecular weight*

For citation: K.D. Tagirov, A.A. Podkorytov, A.D. Mukhametdinova Obosnovanie primeneniya polimernogo zavodneniya na mestorozhdeniyax malovyazkoy nefi [Justification of the use of polymer flooding in oil fields with low viscosity]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 129-140. DOI <https://doi.org/10.25689/NP.2026.2.129-140>. EDN EEVTQQ (in Russian)

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EDN GPIAHS

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An approach to derivation of several important formulas of subsurface fluid mechanics

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Abstract. The article demonstrates one of the possible approaches for deriving three important formulas of reservoir engineering: flow rate, front coordinates and time of complete flooding during piston displacement, Hawkins' formula for the skin factor, and Borisov's formula for the flow rate of a horizontal well.

Key words: *reservoir engineering, piston displacement, skin factor, radial inflow, steady-state inflow, Dupuis formula, Hawkins formula, Borisov formula, Joshi formula*

For citation: A.V. Nasybullin Ob odnom priyeme dlya vyvoda neskol'kikh vazhnykh formul podzemnoy gidromekhaniki [An approach to derivation of several important formulas of subsurface fluid mechanics]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 141-155. DOI <https://doi.org/10.25689/NP.2026.2.141-155>. EDN GPIAHS (in Russian)

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EDN ILKFYN

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Improvement of well acidizing efficiency in carbonate and terrigenous reservoirs

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Abstract. The research performed has resulted in the development of a specific algorithm to select acid systems for well treatment operations in carbonate and terrigenous reservoirs. This analytical study is based on analyzing the effect of physical and chemical characteristics of acid systems on treatment efficiency in carbonate and terrigenous reservoirs when used for injection and production well stimulation. To enhance the efficiency of well acidizing in carbonate and terrigenous reservoirs, a new approach to selecting acid systems is considered. This approach includes determination of technical and operational parameters related to the mineralogical features of reservoirs and physical-chemical properties of oil. A number of methods and key parameters are used to develop new technologies and acid systems, as well as to adjust the existing ones to specific reservoir conditions. These methods can be classified as general and specialized. General methods include standard procedures to determine physical and chemical properties, such as appearance, density and concentration of the basic component, interfacial tension (IFT), dissolution rate of St.3 steel, and freezing point. Specialized methods are focused on studying the interaction between acids and the reservoir rock, for example, solubility of core samples or individual minerals (such as marble, quartz, etc.). These methods also involve studying interaction between acids and reservoir fluids, including compatibility with oil and formation water, as well as permeability tests using models and core samples. Solution to this problem is based on theoretical and experimental studies supported by preliminary review of domestic and foreign experience using public sources. The results of experimental studies were processed by analytical methods. This paper presents justification of the key standard parameters and their values used in technical and process requirements and conditions applied to acid systems for well acidizing operations in carbonate and terrigenous reservoirs. This includes determination of their significance, reviewing domestic and foreign research experience, description of procedures, determination of basic requirements for acid systems to ensure their efficiency during well acidizing operations in carbonate and terrigenous reservoirs, definition of key techniques and parameters to assess the efficiency of well acidizing, as well as justification of selection and significance of physical and chemical characteristics and their values.

Key words: *acid system, acidizing, wellbore zone, carbonate and terrigenous reservoirs, physical and chemical characteristics, optimum values*

For citation: A.Yu. Dmitrieva, N.I. Baturin, K.M. Garifov, I.G. Fattakhov Povysheniye effektivnosti kislotnykh obrabotok priskvazhinnykh zon karbonatnykh i terrigenykh kollektorov [Improvement of well acidizing efficiency in carbonate and terrigenous reservoirs]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 156-187. DOI <https://doi.org/10.25689/NP.2026.2.156-187>. EDN ILKFYN (in Russian)

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EDN MITMRM

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A system of features and models for intelligent selection of production enhancement operations

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Abstract. The paper discusses intelligent support for selection of production enhancement operations aimed to stimulate production and improve oil recovery. It is shown that selection of production enhancement operations is a multi-criteria task that simultaneously considers natural and geological constraints, current state of development system, design and engineering parameters of well interventions, and economic limitations. A workflow for integration of conventional engineering screening and artificial intelligence methods is proposed, including candidate well classification, prediction of operational benefits, well ranking, and design parameter optimization. Nature-based, conditionally controllable and directly controlled parameters in the design of production enhancement operations are distinguished; it is shown that machine learning and optimization algorithms have the potential to offer the highest practical benefit with the latter two groups of parameters. Based on recent EOR/IOR and reservoir engineering publications, the most common features of selection of formation stimulation methods are summarized and tables appropriate for applied corporate decision support systems are generated. It is concluded that the highest efficiency is provided with hybrid "geology – fluid dynamics - machine learning - optimization - engineering expertise – pilot testing" approach rather than application of AI alone.

Keywords: *production enhancement operations, enhanced oil recovery, machine learning, optimization, EOR screening, candidate well selection, digital decision support*

For citation: A.D. Papash, A.T. Zaripov, D.M. Papash Sistema priznakov i modeley dlya intellektual'nogo vybora geologo-tekhnicheskikh meropriyatiy [A system of features and models for intelligent selection of production enhancement operations]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 188-203. DOI <https://doi.org/10.25689/NP.2026.2.188-203>. EDN MITMRM (in Russian)

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EDN NNROOG

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Analysis of factors affecting the reliability of electric submersible pumps based on operational monitoring

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Abstract. This paper presents the results of an analysis of operational data from a collection of over 200 wells equipped with electric submersible pumps (ESPs). The aim of the study was to identify and rank key process and geological-physical factors that have the greatest impact on equipment failure rates and time between repairs. Statistical analysis revealed that the primary destabilizing factors include high water cut, elevated solids content, and wellbore complications. Parameters such as fluid flow rate, pump depth, and the presence of a frequency converter are shown to have a less pronounced impact than the quality of the pumped fluid. The study's results allow us to prioritize optimization of operating modes and planning preventive measures aimed at improving the reliability of downhole equipment.

Key words: *ESP, reliability, failure rate, operational factors, water cut, mechanical impurities, data analysis, repair*

For citation: A.A. Salimgaraev, R.R. Kadyrov, O.V. Denisov, I.G. Fattakhov Analiz faktorov, vliyayushchih na nadezhnost' ekspluatatsii EUCN, na osnove dannyh ekspluatatsionnogo monitoringa [Analysis of factors affecting the reliability of electric submersible pumps based on operational monitoring]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 204-218. DOI <https://doi.org/10.25689/NP.2026.2.204-218>. EDN NNROOG (in Russian)

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EDN QAZBFT

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Reduction of vibrations during well drilling through modification of PDC bit design

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Abstract. The present study is devoted to extending the service life of a PDC bit. The stated objective is achieved by reducing drill string vibrations generated by the PDC bit during drilling in hard rock formations through modernization of the cutting structure of the tool.

To evaluate the influence of bit design, an aggressiveness coefficient AG was introduced and substantiated. This coefficient characterizes the change in the penetration area of PDC cutters into the rock. Experiments conducted on the ZIF-1200 test bench established a parabolic relationship between the amplitude of reactive torque oscillations and the introduced aggressiveness coefficient AG. It was found that increasing AG suppresses vibrations occurring during drilling. Field tests at a deposit in Eastern Siberia confirmed the effectiveness of the proposed approach: the footage per run reached 1000 m, which exceeds the performance of standard designs by 200–300 m, while the rate of penetration (ROP) reached 8 m/h compared to the planned 7 m/h.

Key words: *PDC bit, drilling vibrations, aggressiveness coefficient, cylindrical PDC cutter, hard rock formations, torsional vibrations*

For citation: R.R. Mingazov, K.R. Valyamov, G.G. Ishbayev, E.A. Kovalevskii Litologo-fatsial'naya zonal'nost' nizhnemelovykh otlozheniy Yugo-Zapadnykh otrogov Gissarskogo khrebtta [Reduction of vibrations during well drilling through modification of PDC bit design]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 219-230. DOI <https://doi.org/10.25689/NP.2026.2.219-230>. EDN QAZBFT (in Russian)

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EDN VHBQPS

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Analysis of mechanisms and mitigation methods stick–slip vibrations in oil and gas well drilling

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Abstract. The paper presents a review of modern approaches to the analysis and mitigation of torsional stick–slip vibrations occurring during oil and gas well drilling. The physical mechanisms responsible for the onset of stick–slip vibrations and their dependence on drilling parameters, drill string configuration, and bit–rock interaction are discussed. Experimental and field studies confirming the nonlinear nature of torsional vibrations and their interaction with axial and lateral vibration modes are analyzed. Particular attention is paid to modeling and diagnostic methods, as well as software and technical solutions aimed at reducing vibration loads. It is shown that effective stick–slip mitigation requires a comprehensive approach combining predictive modeling, bottom-hole assembly optimization, and adaptive control of drilling parameters.

Key words: *oil and gas drilling, stick–slip, torsional vibrations, drill string dynamics, BHA, vibration modeling*

For citation: G.R. Romanov, E.V. Shakirova, P.A. Soldatenko Analiz mekhanizmov i metodov snizheniya stick–slip vibratsiy pri burenii neftnyanykh i gazovykh skvazhin [Analysis of mechanisms and mitigation methods stick–slip vibrations in oil and gas well drilling]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 231-252. DOI <https://doi.org/10.25689/NP.2026.2.231-252>. EDN VHBQPS (in Russian)

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EDN UOPBWV

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Study of the influence of various reagents on the rheological properties of drilling fluid

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Abstract. Various additives are used as reagents in drilling fluids. They perform different functions and have different specifications. These include weighting agents, regulators of rheological and filtration properties, bridging agents, emulsifiers, foaming agents, defoamers, and other additives.

Within the framework of this study, a comprehensive investigation was carried out into the effect of reagents used in practice that influence the rheological properties of drilling fluid. An assessment was made of changes in the nature of the rheological behavior of the drilling fluid during the addition of polymer reagents. The study was conducted with the addition of different reagent concentrations. All fluids were initially under equal conditions, with the exception of the substance under consideration.

The results obtained provide convincing information on which model a given drilling fluid belongs to. The Herschel-Bulkley rheological model was not considered in this study, since this model is capable of combining all the other behavior models examined: Newtonian, Shvedov-Bingham, and Ostwald-de Waele.

Key words: *drilling fluids, rheological properties, non-Newtonian fluids, drill cuttings, viscosity, environmental risks, biodegradable polymers*

For citation: E.L. Leusheva, D.M. Russkov, A.O. Morozov Issledovaniye vliyaniya na reologicheskiye svoystva burovogo rastvora razlichnykh reagentov [Study of the influence of various reagents on the rheological properties of drilling fluid]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 253-298. DOI <https://doi.org/10.25689/NP.2026.2.253-298>. EDN UOPBWV (in Russian)

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EDN QPNNWI

УДК 550.8

*К 100-летию со дня рождения
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The role of V.P. Boronin in the study of geodynamic processes

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Abstract. Based on the article by the famous scientist, geologist, geophysicist Vitaly Petrovich Boronin, the views and views on paradigms in the history of Earth exploration and the influence of nonlinear geodynamic and geophysical processes on oil and gas formation are highlighted. The article presents a galaxy of students of the associate professor of Kazan University in the field of petroleum geophysics and geology. The relevant literature is given.

Key words: *paradigm, nonlinear geodynamic and geophysical processes, oil and gas formation, galaxy of students*

For citation: M.Ya. Borovskiy, V.I. Bogatov, A.S. Borisov, N.N. Raviolova Rol' V.P. Boronina v izuchenii geodinamicheskikh protsessov [The role of V.P. Boronin in the study of geodynamic processes]. Neftyanaya Provintsiya, No. 2(46), 2026. pp. 299-305. DOI <https://doi.org/10.25689/NP.2026.2.299-305>. EDN QPNNWI (in Russian)