REPORT

on the work of the Dissertation Council on defense of dissertations for awarding the degree of Doctor of Philosophy (PhD) in 2024 in the direction of training 8D072- Production and processing industries in the group of specialties: 8D07208 (6D070600) - Geology and Exploration of Mineral Deposits, 8D07210 - Oil and Gas Business at the Caspian University of Technology and Engineering named after Sh. Esenov.

Chairman of the Dissertation Council Doctor of Technical Sciences, Professor, Head of the Department of "Geophysics and Seismology", NAO Kazakh National Research Technical University named after K.I. Satpayev. K.I. Satpayev - Chairman dated June 25, 2024 № 04-03-02-231

The Dissertation Council is authorized to accept dissertations in two specialties: 8D07208 (6D070600) – Geology and Exploration of Mineral Deposits, and 8D07210 (6D070800) – Oil and Gas Business.

Permanent Composition of the Dissertation Council:

1) Boranbai Tovbasarovich Ratov - Doctor of Technical Sciences, Professor, Head of the Department of Geophysics and Seismology, K.I. Satpayev Kazakh National Research Technical University - Chairman;

2) Kozhakhmet Kosarbai Abdrakhmanovich - Candidate of Geological and Mineralogical Sciences, Associate Professor of the Department of Ecology and Geology, NAO Caspian University of Technology and Engineering named after Sh. Yesenova – Deputy Chairman;

3) Gusmanova Aigul Gaynullaevna - Candidate of Technical Sciences, Professor of the Department of Petrochemical Engineering, NAO Caspian University of Technology and Engineering named after Sh. Yesenova;

4) Bayamirova Ryskol Umarovna - Candidate of Technical Sciences, Associate Professor of the Department of Petrochemical Engineering, National Academy of Sciences of the Caspian University of Technology and Engineering named after Sh. Yesenova is the academic secretary.

1. The number of meetings held is - 7.

2. The names of the council members who attended less than half of the meetings are - not.

3. List of doctoral students with an indication of the organization:

- Kunaeva Gaukhar Ermekovna- KUTI named after Sh. Yesenova;
- Bekbaeva Raushan Askarovna- KUTI named after Sh. Yesenova;
- Borash Ardak Rabbimuly - KUTI named after Sh. Yesenova;
- Tavova Nursaule Raulovna- KUTI named after Yesenova;
- Khadieva Albina Sagyngalikyzy- KUTI named after Sh. Yesenova;
- Zhetekova Lyazzat Bishebaevna- KUTI named after Sh. Yesenova;
-Elmira Kokebaevna Merekeeva- KUTI named after Sh. Yesenova.

4. A brief analysis of the dissertations reviewed by the Council during the reporting year

During its work, the Dissertation Council reviewed 3 (three) papers on the specialty 8D07208(6D070600) – Geology and exploration of mineral deposits; 4 (four) papers on the specialty - 8D07210 (6D070800) – Oil and gas business

The names of dissertations in the field of specialties are given below.:

№	Full Name of the Doctoral Student	Organization of Training	Scientific Advisors
1	Kunaeva G.E.	KUTI named after Sh. Yesenov	Bayaimirova Ryskul Umarovna – Candidate of Technical Sciences, Acting Associate Professor of the Department of "Oil and Gas Engineering", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Gusmanova Aigul Gainullayevna, Candidate of Technical Sciences, Acting Professor of the Department of "Oil and Gas Engineering", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Djalalov Garib Isakovich – Doctor of Technical Sciences, Professor, Head of the Laboratory of "Hydro-Gas Dynamics of Reservoir Systems" at the Institute of "Oil and Gas" of the National Academy of Sciences of Azerbaijan, Corresponding Member of the NAS of Azerbaijan, Baku, Azerbaijan.
2	Bekbaeva R.A.	KUTI named after Sh. Yesenov	Gusmanova Aigul Gainullayevna, Candidate of Technical Sciences, Acting Professor of the Department of "Oil and Gas Engineering", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Yegorova Elena Valeryevna, Candidate of Technical Sciences, Associate Professor, Head of the Department of "Development and Operation of Oil and Gas Fields", Institute of Oil and Gas, Astrakhan State Technical University (ASTU), Astrakhan, Russian Federation.
3	Borash A.R.	KUTI named after Sh. Yesenov	Ratov Boranbay Tovbasarovich – Doctor of Technical Sciences, Professor, Head of the Department of "Geophysics and Seismology", Non-Profit Organization Kazakh National Research Technical University named after K.I. Satpaev.. Nifontov Yuri Arkadyevich – Doctor of Technical Sciences, Professor, Head of the Department at Saint Petersburg State Marine Technical University, (Russia, Saint Petersburg).
4	Tauova N.R.	KUTI named after Sh. Yesenov	Yesenamanova Mansiya Sanakovna – Candidate of Technical Sciences, Associate Professor, Head of the Department of "Ecology", Non-Profit Organization "Atyrau University named after K. Dosmukhamedov". Kozhakmet Kosarbay Abdrakhmanovich – Candidate of Geological and Mineralogical Sciences, Associate Professor of the Department of "Ecology and Geology", Non-Profit Organization "Caspian University of Technology and Engineering named after Sh. Yesenov".

			Kushakov Abdulla Romanovich – Candidate of Geological and Mineralogical Sciences, Professor, Head of the Educational and Methodical Department at the "University of Geological Sciences", (Uzbekistan, Tashkent).
5	Khadieva A.S.	KUTI named after Sh. Yesenov	Sabyrbaeva Gulzhan Sanalbaevna - Candidate of Technical Sciences, Acting Associate Professor of the Department of "Oil and Gas Engineering", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Djalalov Garib Isakovich - Doctor of Technical Sciences, Professor, Head of the Laboratory of "Institute of Oil and Gas", "Hydro-Gas Dynamics of Reservoir Systems" at the National Academy of Sciences of Azerbaijan, Corresponding Member of the National Academy of Sciences of Azerbaijan.
6	Zhetekova L.B.	KUTI named after Sh. Yesenov	Karazhanova Maral Koilybaevna – PhD, Associate Professor of the Department of "Oil and Gas Engineering", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Efendiyev Galib Mamed ogly – Doctor of Technical Sciences, Professor, Department of "Drilling of Oil and Gas Wells" at AGUNP, Institute of Oil and Gas, National Academy of Sciences of Azerbaijan. (Baku, Azerbaijan).
7	Merekeeva E.K.	KUTI named after Sh. Yesenov	Kozhakmet Kosarbay Abdrakhmanovich – Candidate of Geological and Mineralogical Sciences, Associate Professor of the Department of "Ecology and Geology", Non-Profit Organization Caspian University of Technology and Engineering named after Sh. Yesenov. Alekseev Alexander Sergeevich – Professor at the Faculty of Geology, Lomonosov Moscow State University, Moscow, Russia.

4.1. Analysis of the Topics of the Reviewed Works

1) Analysis of the work of Kunaeva Gauhar Ermekovna, performed on the topic: "Improving the development of oil fields operated by horizontal wells", submitted for the degree of Doctor of Philosophy (PhD) on the educational program 8D07210 (6D070800) - Oil and Gas Business.

The dissertation work is devoted to the development of new hydrodynamic methods for determining the productivity of horizontal wells in the development of oil fields with deformable reservoirs. Adaptation of the hydrodynamic model on the history of development of a fragment of an oil field to calculate the forecast development options.

The work is executed on 96 pages of typewritten text and consists of an introduction, four chapters, main conclusions and recommendations, a list of used literature, including 74 titles, 9 tables and 32 figures and contains 2 appendices. The content of the chapters of the dissertation fully reflects the defended provisions.

The relevance of the study lies in the fact that the main production facilities of oil fields in Kazakhstan are at a late stage of development. Reserves of these objects belong to difficult to recover, which is due to such factors as high oil viscosity, low permeability of reservoirs, as well as high layer-by-layer and zonal heterogeneity, low effective thickness of reservoirs, the presence

of sub-gas zones and low-power oil rims. Residual hard-to-recover reserves require the introduction of new technologies. The technology of drilling horizontal wells has great prospects associated with the possibility of increasing the efficiency of oil production, extending the period of water-free operation of the well and increasing the oil recovery factor, involving in the development of reservoirs with low reservoir properties and high-viscosity oil, reducing the underbalance on the reservoir and the effect of coning. Increasing interest, all over the world, to the application of horizontal wells arises the need to develop the theory and study the processes of fluid filtration to the bottom of these wells, taking into account the above factors, and it becomes an urgent scientific and practical task.

Scientific results within the framework of thesis requirements.

On the basis of three-dimensional hydrodynamic modeling, adaptation of the sector model to the actual performance of the surrounding wells was carried out. Comparison of calculated and actual development indicators of the sector model of the field showed a high degree of reliability, the construction of geological and hydrodynamic simulation model of the reservoir, sufficient to bring forecast calculations with different well designs On the example of a real object obtained a quantitative assessment of the possible improvement of the dynamics of development indicators of oil reserves production from the reservoir through the transformation of the existing development system based on horizontal wells.

Scientific novelty. Knowledge and experience of application of horizontal wells in the development of oil and gas fields are generalized, the area of their effective application is shown. 2. A mathematical model and its solution for steady-state fluid filtration to branched-horizontal wells in a deformable porous medium have been proposed, scientifically substantiated and realized. 3. The mathematical model of the mechanism of steady-state fluid motion in a deformable formation during flow to a horizontal well, taking into account the dependence of fluid properties on pressure and temperature, has been refined. 4. The methodology of automated solution of problems of adaptation of hydrodynamic model of the reservoir fragment on the history of development, allowing to estimate its exploitation by horizontal wells taking into account the probabilistic-statistical nature of geological data, has been developed.

The practical significance of the work is that the sector model was adapted on the basis of 3D-hydrodynamic modeling, which confirmed its high accuracy. The analysis showed that the transition to horizontal wells can significantly improve the efficiency of oil production.

Results of the research. 1. The hydrodynamic model of fluid flow to branched-horizontal wells in three-dimensional formulation was developed. 2. The efficiency of the flow model taking into account the deformation characteristics of the formation and perforation density is shown. 3.The problem of identification of relative phase permeability function by the method of optimal control is solved. 4. The possibility of refining the hydrodynamic model to improve the forecasts of field development is confirmed. 6. The influence of geological and technological factors on the design of horizontal wells was determined. 7. The influence of changes in the thermodynamic conditions of the reservoir on the development indicators was established. 8. The necessity of deeper analysis of geological conditions when using horizontal wells was revealed. 9. The relationship of initial production rate with horizontal wellbore length, formation thickness and permeability anisotropy was found. 10. Key factors for designing the optimal horizontal wellbore design are identified. 11. A scheme for evaluating hydraulic conductivity for selecting locations for drilling efficient wells was developed. 12. An expression for predicting the productivity of horizontal wells depending on the borehole length was obtained.

The results of research on the topic of the dissertation are characterized by internal unity, the presence of a connection between the statement of problems and ways of their solutions. The dissertation work is a complete research, and its results are logically interconnected with each other.

Publications. The main results of the dissertation work are published in 15 scientific papers, including in the leading peer-reviewed scientific journals recommended by the CCSON of the Republic of Kazakhstan, as well as on the basis of foreign scientific materials Scopus.

Conclusion. Dissertation work of Kunaeva G.E. on its urgency, scientific novelty, importance for theory and practice, volume of experimental researches completely corresponds to the presented requirements.

2) Analysis of the work Bekbayeva Raushan Askarovna, performed on the topic: "Improving the efficiency of development of oil fields in Western Kazakhstan using the method of simultaneous separate exploitation of reservoirs", submitted for the degree of Doctor of Philosophy (PhD) on the educational program 8D07210 (6D070800) - Oil and Gas Business.

The dissertation work is devoted to the analysis and improvement of the technology of simultaneous separate operation (SSO) on multilayer fields, with a focus on the Ayrankol and Arystanovskoye fields. In the course of research developed methods for determining the depletion of oil reserves, criteria for selecting wells for SRE, as well as algorithms for selecting equipment. The economic efficiency of the technology was substantiated, including cost reduction, production enhancement and development optimization. The work demonstrates the feasibility of using EPR to improve the development performance of multilayer fields.

The work is carried out on 103 pages of typewritten text and consists of an introduction, four chapters, main conclusions and recommendations, list of used literature, including 100 titles, 9 tables and 31 figures and contains 4 appendices. The content of the chapters of the dissertation fully reflects the defended provisions.

The relevance of the study lies in the fact that the oil and gas production industry of the Republic of Kazakhstan is experiencing an active period of its development. However, the problems of irreplaceability of oil and gas production resources requires a wide and intensive search for ways to successfully overcome them. The world community is actively searching for alternative ways of solving this problem, and in these conditions the responsibility in the necessity of successful solution of problems in the oil and gas industry increases manifold. In the recent past, multilayer reservoirs with different physical and geological conditions in the formations were developed by putting them into operation one by one according to the "bottom-up" scheme. Such a system slows down the development of the deposit and is accompanied by the loss of a significant amount of production remaining in low-power reservoirs and sections. The beginning of spreading the technology of simultaneous separate reservoir exploitation (SSE) is a powerful means of increasing the technical and economic efficiency of fields. oil and gas reservoirs development. In addition, as a rule, in field conditions the study of individual reservoirs for inflow and determination of its hydrodynamic characteristics are often incomplete. Accordingly, the author's research objectives include determining the efficiency of oil extraction from a multi-layered deposit by estimating current reserves and calculating the extraction modes for each reservoir from the action of changes in reservoir energy on the example of fields in Western Kazakhstan.

Scientific results within the framework of thesis requirements. The scientific results include the development of a methodology for assessing the depletion of oil reserves and criteria for selecting wells for EPR, justification of filtration characteristics of reservoirs and equipment selection. The economic efficiency of the EPR technology has been proved, providing an increase in flow rate, cost reduction and increased profitability of well operation.

Scientific novelty. 1. The efficiency of implementation of the method of simultaneous separate exploitation in the development of Jurassic deposits of Ayrankol deposit has been substantiated. 2. Scientific substantiation and obtained values of criteria for application of simultaneous separate exploitation. 3. The methodology of specification of separation of extracted products from a multilayer deposit at joint development of formations was created, including determination of the coefficient of use of potential oil recovery factor (ORF) by time at a known degree of opening of formations, their conductivity (kh), calculated by dividing the accumulated production by the product of geological reserves and potential ORF for the considered well by formations. 4. It is revealed that the proposed arrangement of wells at the same time separate exploitation of the considered fields allows to provide the maximum flow rate of the well.

Practical significance of the work consists in the fact that the results of the dissertation work are used in the development of multilayer reservoirs by using the methodology of assessment and calculation of the current depletion of oil reservoirs and selection of equipment for oil extraction from reservoirs. Implementation of a set of measures, including work to optimize the withdrawal modes with ORE technologies at the Ayrankol field increased well flow rates by an average of 29 tons per day, at the Arystanovskoye field - 23 tons per day and increase the level of oil production.

Results of the research. 1. The analysis of well performance at Ayrankol field has been carried out, confirming the efficiency of ORE technology due to the coordinated operation of equipment and formations, providing uniform production of reserves. 2. The methodology of oil reserves depletion estimation by reservoirs based on geological, physical and hydrodynamic characteristics was developed. 3. The criteria for selecting wells for the introduction of EPR were determined, and candidates for further application of the technology were selected. 4. Methods of control of filtration-capacitance properties of reservoirs, increasing the efficiency of development of multilayer fields, are proposed. 5. The technology of reservoir studies in steady and unsteady modes for optimization of oil production has been developed. 6. The efficiency of EPR in comparison with separate development was confirmed, including cost reduction, reduction of development time and increase in the period of profitable operation of wells. 7. The economic efficiency of ORE technology at the Arystanovskoye field with an increase in flow rate by an average of 23 tons per day has been substantiated. 8. The algorithm of selection of equipment for multilayer fields was developed.

Publications. The main results of the dissertation work are published in 12 scientific papers, including in the leading peer-reviewed scientific journals recommended by the CCSON of the Republic of Kazakhstan, as well as on the basis of foreign scientific materials Scopus.

Conclusion. The technology of simultaneous separate operation (SSO) has proved its efficiency for the development of multilayer oil fields, providing production increase, cost reduction and profitability increase. The developed methods and algorithms optimize the production process and increase the oil recovery factor, confirming the high technical and economic feasibility of implementing the SRE.

3) Analysis of the work of Borash Ardak Rabbimula, performed on the topic: "Development of technical and technological means for the development of productive formations in hydrogeological wells", for the degree of Doctor of Philosophy PhD on the educational program 8D07208 - "Geology and Exploration of Mineral Deposits".

The dissertation work is devoted to the study of geological features of aquifers of Tonirekshinsky groundwater field, analysis of existing methods of water well development, their comparative assessment, selection of the optimal method of development taking into account the properties of the field, as well as the development of improved technical means and technologies to improve the quality and efficiency of well development.

The thesis consists of an introduction, 4 sections, general conclusions and recommendations, contains 23 figures, 20 tables, 67 formulas, and a reference list of 72 sources.

The relevance of the study is that in the Republic of Kazakhstan there is a noticeable deficit of water resources, which is a consequence of natural features of the territory and climate. The volume of annual water consumption in the country averaged 22.5 km3, of which 95% is provided by groundwater. According to the Concept of the State Program on Water Resources Management in Kazakhstan for 2020-2030, by 2040 water consumption will increase by 56% and water deficit will be about 12 billion m3. Water supply is provided by the following sources: surface water, desalinated sea water, Volga water and groundwater. The diversity of development methods is caused by the fact that they show different efficiency in different geological conditions. There is no universal method of aquifer development. Therefore, a thorough analysis of the geological conditions of a particular groundwater deposit and the choice of optimal for these conditions method of development is an urgent task, the solution of which is of great practical importance.

Scientific results within the framework of requirements for dissertations. The dissertation is aimed at increasing the coefficient of use of groundwater reserves of Tonireksha field and corresponds to the state programs "Drinking Water" (2003-2010), "Ak-Bulak" (2011-2020) and the State Program of Development of Regions (2020-2025). It also corresponds to the priorities approved by the High Scientific and Technical Commission of the Republic of Kazakhstan in the field of rational use of natural resources, including water resources and geology.

Scientific novelty. For the first time for geological and technical conditions of Tonirekshinskoye groundwater deposit by means of the method of expert evaluations scientifically substantiated the choice of optimal method of water intake wells development, providing decolmatization of downhole zone and maximum flow rate of quality water for domestic and drinking water supply. A new method of application of implosion impact for water intake wells development is proposed and mathematical description of its functioning is given. For this method the problem of buckling of casing strings by differential pressure arising due to creation of unfilled intervals in them necessary for implosion impact is investigated. It is shown that in order to increase the implosion impact it is necessary to increase the wall thickness of the production casing, to reduce its diameter or to reduce the drilling fluid density.

Practical significance of the work consists in the fact that the results of the work can be applied in the activities of public and private organizations engaged in drilling water wells, as well as scientific and design organizations involved in drilling and development of wells. Realization of the developed method of implosion impact will provide the solution of the drinking water supply problem in the region.

Research results. As a result of the performed research on Tonirekshinskoye groundwater deposit, a critical analysis of geological and hydrogeological conditions was carried out, the most promising aquifers, such as Alb-Senoman aquifer complex, were identified. The existing methods of water intake wells development were considered, it was established that for these conditions the implosion method has the greatest compliance with the requirements. The new device for creation of implosion impact, which eliminates the disadvantages of existing models and received a patent of the Republic of Kazakhstan, was developed. As a result, it was also found that the implosion impact increases the permeability of aquifers, but can lead to buckling of casing strings, which requires careful adjustment of the impact parameters. Calculations have been made for an optimal well design that takes into account Archimedes force, which reduces casing weight and winch power requirements. In the course of the research it was possible to develop a scheme of multiple implosion stimulation, which provides effective cleaning of the pay zone and improvement of well performance.

Publications. The main provisions of the dissertation are published in 7 printed works in scientific specialized editions (including 2, which are indexed in the scientific database Scopus), 2 - in the proceedings of international conferences, 2 - article recommended by the Committee for Quality Assurance in the field of science and higher education of the Republic of Kazakhstan and on the developed design, within the framework of the tasks of the dissertation work, received a patent for invention from the National Institute of Intellectual Property of the Republic of Kazakhstan.

Conclusion. During the research effective methods of water intake wells development at Tonireksha groundwater deposit were developed. Critical analysis of geological and hydrogeological conditions was carried out, on the basis of which the implosion technology for improving the permeability of aquifers was proposed. A new device eliminating the disadvantages of existing solutions has been developed, which allows to achieve maximum implosion effect without damaging the casing strings. These developments provide an increase in the efficiency of well operation and optimization of groundwater extraction processes, which significantly improves the economic and technical performance of field development.

4) Analysis of the work of Tauova Nursaule Raulovna, performed on the topic: "Study of engineering-geological and geo-ecological conditions within the oil producing wells of Tengiz field" on the educational program 8D07208- Geology and Exploration of Mineral Deposits.

The dissertation work is devoted to the study of geodynamic activity of natural-geological environment and upper part of lithosphere within the framework of geoecology and engineering geology. It focuses on the improvement of theoretical and methodological foundations, as well as the development of technologies for assessing the geo-ecological state, which is necessary for rational nature management and ensuring geological and environmental safety, especially in oil and gas regions. Special attention is paid to the impact of technogenesis and geodynamics on the environment and the need to take into account geodynamic activity in the study of natural and urbanized areas.

The dissertation consists of an introduction, the main part including a literature review, materials and methods, and the results of our own research, conclusion, list of used literature including 96 sources, appendices. The work contains 204 pages of computer text, 53 figures, 54 tables.

The relevance of the study lies in the fact that this paper presents the experience of research of oil and gas region of Atyrau region of the Republic of Kazakhstan on the territory of Tengiz field. In Atyrau region on the Karashungul field in 1899 the first oil fountain was raised. This was the starting point of the formation of the Kazakh oil and gas industry and is characterized by favorable conditions for studying the impact of oil and gas technogenesis of the Atyrau region. Discovery of a number of oil and gas fields such as Tengiz, Dauletaly, Zhana Makat, Borkildakty, East Tegend will allow to consider this region as the largest fuel and energy base in the western part of Kazakhstan. For their successful development a complex characterization of geological and hydrogeological conditions is necessary. In recent years, due to the intensification of geological exploration for oil and gas, the issue of environmental protection is becoming more and more relevant. The most mobile component - surface hydrosphere and lithosphere - is exposed to especially strong anthropogenic impact. The solution to this problem requires a comprehensive study of geo-environmental conditions using geo-environmental mapping methods and the development of a system for monitoring and condition monitoring of the geological environment. Geoecological methods used in this area can serve as a reference for other regions. Drilling operations exert significant technogenic pressure on all components of the environment. Natural ecosystems in areas where drilling waste is stored are most exposed to technogenic impact, a consequence of the imperfection of drilling technologies and the disposal of drilling muds. The placement of drilling waste containing toxic substances in natural environments is the primary cause of the progressive deterioration of environmental quality in areas where drilling operations are conducted. In this regard, research aimed at studying the engineering-geological and geoecological conditions of the Tengiz field within the boundaries of oil extraction wells is highly relevant. Studies on the sandy soils of the Tengiz field in the Zhylyoy district of the Atyrau region of the Republic of Kazakhstan have shown that all lithological-facial groups of soils, forming the engineering-geological profile up to a depth of 20.0 m, are highly saline with chloride-type salinization. All lithological-facial groups of soils contain carbonates, gypsum, and small amounts of organic matter. Portland cements range from corrosion to high corrosion, and for chlorides, all types of Portland cements are highly aggressive. The main difficulties encountered during drilling in salt deposits lie in the fact that when washing the wells, water-based drilling fluids become saturated with salts, causing intense coagulation of clay particles, the formation of cavities on the well walls, and well collapses. This dissertation proposes solutions to this problem by using plugging fluids based on sulfur composite materials, which is highly relevant for regions with strongly saline areas.

Scientific results within the requirements for dissertations. The dissertation work aligns with the priority areas of scientific development approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan, specifically in the fields of ecology, environmental protection, and rational natural resource management, as well as the development and operation of oil and gas fields. The research fully meets the objectives of the National Development Plan of the Republic of Kazakhstan until 2025 and the State Program for Regional Development for 2020-2025.

Scientific novelty. The uniqueness of the deposit lies in its complex geology, therefore, the study of geological and geomorphological processes is a key step in further sustainable, environmentally sound development of the deposit. To better understand the heterogeneity of the reservoir at Tengiz, a new wide azimuthal seismic survey was conducted. The deployment of receivers and sources over a wider area increased the diversity of ways of propagation and recording of seismic waves, which provided a 6–fold increase in the display of the total depth point from 40 to 240 reception points, and as a result, geologically more accurate images of the deposit were obtained. For the first time, a technology has been developed for the production of chlorine and up to resistant grouting solution based on a sulfur composite material. Physico-mechanical tests have established that the developed grouting solution has high mechanical properties and resistance to aggressive media.

The practical significance of the work lies in the fact that as a result of geological studies of the Tengiz field, it was found that the deposits of the largest deposits of the Caspian basin are represented by carbonate rocks, and in most wells the reservoir is diagnosed as fractured. Geoecological examination in surface and groundwater, as well as in the soil, shows an increased content of chloride ions, which negatively affects the drilling rig. Obtaining drilling mud based on a sulfur composite material opens the way to solving the problem of creating a grouting solution resistant to chloride-aggressive media, since a properly selected and qualitatively prepared drilling mud is fundamental to the successful drilling process.

Research results. The conducted experimental studies have made it possible to supplement and develop ideas about the geological structure and hydrogeological conditions of the territory of oil fields based on methods of dynamic and static soil sounding, seismic interpretation and assessment of well productivity coefficients. Based on geoecological studies, an increased content of chlorides in surface and groundwater and soils has been revealed. The use of sulfate-resistant cements on drilling rigs is ineffective in reducing the aggressive effects of chlorides in the soil. To solve this problem, a technology has been proposed for producing a grouting solution based on sulfur waste modified with aluminum chloride.

Publications. The main provisions of the thesis were presented at international scientific and practical conferences in Atyrau "Youth and science: today and the future" (2022), Aktau "Scientific modernization: the legacy of personality", dedicated to the 95th anniversary of Academician Sh. Yesenova (2022). In the period from June 01 to June 26, 2023, she completed a scientific internship at the National University of Uzbekistan named after Mirzo Ulukbek.Tashkent, Uzbekistan, under the leadership of Candidate of Geological and Mineralogical Sciences, Professor A.R. Kushakov Certificate. The main provisions of the thesis have been published in 10 scientific papers, including 3 articles published in journals included in the Scopus database, 1 article recommended by the Committee for Quality Assurance in Science and Higher Education, KOKSNVO: – Izvestia of the National Academy of Sciences of the Republic of Kazakhstan. Series of Geology and Technical Sciences. – 2022. – 5 (455); (462); – News of the National Academy of Sciences of the Republic of Kazakhstan. Series of Geology and Technical Sciences. – 2023. – 6 – International Journal of Design & Nature and Ecodynamics – 2022. – 17(5); – Scientific and technical journal "Oil and Gas" - 2022. - 2(134).

Conclusion. The work highlights the importance of an integrated approach in studying the geological and geomorphological processes of the Tengiz field for sustainable and environmentally sound development. The data obtained using azimuthal seismic exploration improved the accuracy of geological images of deposits, and the development of a chloride-resistant grouting solution based on a sulfur composite material demonstrated high mechanical properties and resistance to aggressive environments. These results contribute to improving the efficiency of field development and ensuring environmental safety.

5) Analysis of the work by Khadieva Albina Sagyngalikyzy, completed on the topic: "Enhancing the Efficiency of Physicochemical Impact Technologies on High-Viscosity Oil Reservoirs" within the educational program 8D07210 (6D0700800) – Oil and Gas Business.

The dissertation work is dedicated to the study of various aspects of the oil displacement process using polymer solutions and other technological methods. The main focus is on the rheological properties of polymers in porous media, their compatibility with injected water, and the impact of salts in reservoir waters on the efficiency of oil displacement. The work examines the use of different polymer grades, such as R-1 and GL-50, as well as combined technologies, including the use of polymers in combination with a water-gas mixture and electrochemically modified water. The research is aimed at optimizing processes and improving oil extraction efficiency from heterogeneous and homogeneous reservoirs, as well as conducting a techno-economic analysis of the applied technologies.

The work consists of an introduction, three chapters, main recommendations, a list of references including 3 sources, and appendices. The work contains 107 pages, 25 tables, and 28 figures.

The relevance of the study lies in the fact that the issue of effective development of oil fields, especially in developing countries, is becoming relevant due to the growing demand for oil and petroleum products. The effectiveness of traditional water pressure technologies is limited in conditions of depletion of oil fields and low reservoir permeability. Currently, it is important to apply active methods of influencing formations saturated with oil and water to increase the coefficient of oil recovery. These methods make it possible to redistribute the movement of fluids in formations and increase the coverage of water pressure effects, which opens the way to efficient oil production. From a scientific and technical point of view, this is an important task, since it contributes to the efficient use of oil fields in the long term. Efficient extraction of high-viscosity and asphaltene-containing oil, found in many oil fields in Kazakhstan, is one of the key and challenging tasks. The viscosity of oil directly affects its activity during filtration through the reservoir, which, in turn, determines the flow rates of producing wells and the final oil recovery rates. In high-viscosity formations, only 10% of the initial geological oil reserves are extracted in the natural development mode, which indicates a low oil recovery coefficient. In such fields, the use of water pressure does not bring significant results. Therefore, there is a need to develop technologies to increase the efficiency of extraction of high-viscosity oil by increasing the oil recovery coefficient and reducing the saturation coefficient of residual oil. The use of tertiary methods is proposed to reduce residual oil in the reservoir through capillary and adsorption forces. Tertiary methods include thermal, physical, chemical, hydrodynamic effects, gas injection, acoustic and bacterial methods. Chemical methods of influencing the formation include surfactants, polymers, alkalis, acids, etc. These methods can be used both separately and in combination with other methods, which significantly improves the efficiency of oil production. One of the most effective and promising methods for stabilizing oil production is physico-chemical technologies based on injection of polymer compositions. These methods regulate the permeability of oil reservoirs, simplify the movement of oil, and increase production efficiency. Among the polymer impact methods, the most effective technologies for slowing the rate of decline in oil production and increasing reserves are methods based on the use of polymers. The research results show that the options for combined effects on the reservoir are the most suitable for implementation in specific conditions. These methods ensure efficient oil production, taking into account the geological features of the formations. Nevertheless, additional experimental and production studies are needed to further improve the technologies and increase their effectiveness. These studies will help determine the possibilities of using polymer methods in specific deposits and their long-term effects.

Scientific results within the framework of the requirements for dissertations. The dissertation corresponds to the priority areas of scientific development approved by the Government of the Republic of Kazakhstan, especially in the field of Ecology, environmental protection and efficient use of natural resources, including the Development and operation of oil and gas fields. The results of the work are aimed at improving the efficiency of oil production and the rational use of natural resources, which coincides with national strategic goals and scientific and technological development.

Scientific novelty. 1. A comprehensive method of influencing the formation with polymer compositions and a water-gas emulsion, as well as electrochemically modified water, has been developed. 2. A special regression equation has been proposed for determining the oil recovery coefficient when using polyacrylamides of different concentrations by planning experiments, which allows obtaining results without conducting several additional experimental studies. 3. The use of polymer grades R1 and GL 50 is recommended based on the identification of their advantages in increasing the efficiency of oil production.

The practical significance of the work lies in the fact that the conducted research has made it possible to better understand and develop the mechanisms of oil field development using complex effects based on polymer compositions in various geological and physical conditions. The results of these studies can serve as a basis for the application of polymer exposure methods on an industrial scale in the oil fields of Kazakhstan. The use of polymer technologies opens up opportunities for increasing oil production and improving the technical and economic indicators of field development. Thus, the results of the study contribute to improving production efficiency in the oil industry and contribute to the development of the national economy.

Research results. 1. Based on laboratory tests of polymers, oil recovery coefficients for polymer injections of grades R-1 and GL-50 were determined. Based on laboratory studies, it was proposed to use an R-1 polymer for injection in high-viscosity deposits. 2. The composition of polymer and catholyte solutions has been determined, and the technology of exposure to heterogeneous layers has been improved. This composition was aimed at changing the rheological characteristics of oil in order to increase the oil recovery coefficient. 3. The accuracy of the experiments was determined using a mathematical least squares regression equation. Based on the similarity theory, the number of experiments was reduced, and the results were obtained through analytical calculations. 4. A comprehensive method of exposure based on the PAA+water-gas method has been developed and investigated. The possibility of increasing the oil recovery coefficient in highly viscous deposits has been confirmed experimentally. The use of this technology in homogeneous and heterogeneous formations has shown an increase in the oil recovery coefficient by 8% compared with the use of distilled water and PAA. The complex technology of pumping polymer solution (PAA) with electrochemically converted water (catholyte) and PAA+water-gas has shown its effectiveness experimentally. 5. The technical and economic efficiency of the PAA+water-gas method based on modeling is determined. This method has demonstrated high efficiency compared to other methods. Similarity theory is an important tool in the study of physical and chemical processes. This theory allows us to establish general patterns of processes in various conditions and scales, determine optimal conditions for experiments and effectively summarize the results. Conducting experiments on similarity theory may require significant time and financial resources. Therefore, researchers develop mathematical models and conduct many experiments under various conditions and scales to obtain the necessary data and test hypotheses. Based on laboratory studies, a technology of complex action has been proposed to increase the oil recovery coefficient in geological structures. This method is based on the principles of similarity theory and makes it possible to effectively increase oil production in various geological conditions.

Publications. The main results of the dissertation work were published in 12 scientific articles, including in leading peer-reviewed scientific journals recommended by the KKSON of the Ministry of Education and Science of the Republic of Kazakhstan - 5 editions, as well as in the journal included in the Scopus database - 2 articles, the rest of the article is published at International scientific conferences.

Conclusion. As a result of the conducted research, the key aspects of oil displacement using polymer solutions and combined technologies were studied in the thesis. The results showed that polymer solutions, including grades R-1 and GL-50, have a high potential to increase the efficiency of oil displacement, especially in combination with a water-gas mixture and electrochemically modified water. Research has also demonstrated the importance of taking into account the influence of salts in reservoir waters on displacement processes and the need to

optimize technologies for different types of formations. The use of combined technologies, including polymer solutions and water modifications, can significantly improve the efficiency of oil field development. The results of the work can be used to further improve oil extraction methods and develop new technologies, taking into account economic and environmental factors.

6) Analysis of the work of Zhetekova Lyazzat Bishebaevna, performed on the topic: "Improving the efficiency of exploitation of fields in Western Kazakhstan with hard-to-recover oil reserves" according to the educational program 8D07210 (6D0700800) - Oil and gas business.

The thesis is devoted to the development of methods and models for the assessment and classification of deposits of hard-to-recover oil in Kazakhstan. The study suggests new approaches to classifying oil, oil and gas and natural gas fields according to complex criteria, which makes it possible to more accurately assess the degree of complexity of their development. A classification method for hard-to-recover oils based on fuzzy cluster analysis, taking into account impurities in the oil composition, has also been developed. The work includes statistical analysis to predict production performance and technological efficiency, as well as the study of patterns of acid solubility in oil systems.

The thesis consists of an introduction, 4 chapters, main conclusions and recommendations, a list of references, including 131 titles and 4 appendices. The work contains 117 pages of text, 9 tables and 22 figures.

The relevance of the research lies in the fact that most of the oil fields in the Republic of Kazakhstan are currently in the exploitation stage, characterized by a decline in oil production. It should be noted that the share of high-viscosity, heavy oils now accounts for more than half of the explored global reserves and, according to various existing classifications, are considered hard-to-recover. In the near future, one of the very important issues will be improving the efficiency of developing fields with hard-to-recover oil reserves. A significant role in this should be assigned to the creation and improvement of methods for classifying fields with hard-to-recover reserves, technologies based on thermal impact, controlling and regulating the processes of oil recovery, and limiting water influx into wells. The successful application of thermal technologies is associated with the development of unconventional technological solutions, the physical essence of which not only offers high technical-technological efficiency but also economic efficiency, and extends the geological conditions for their application. In any geological conditions, for deep oil reservoirs, an important issue is the improvement of methods for controlling and regulating the development processes, ensuring high oil production rates under favorable filtration conditions, and limiting the growth rates of water cut in the produced product. As research results show, the insufficiently clear scientific justification for the decisions made when selecting methods of impact on reservoirs with hard-to-recover reserves significantly complicates the choice and implementation of technological solutions aimed at increasing the efficiency of extracting hard-to-recover oils.

Scientific results within the requirements for dissertations. This dissertation work aligns with one of the key directions of scientific progress approved by the Higher Scientific and Technical Commission of the Government of the Republic of Kazakhstan. In particular, the work relates to the direction "Ecology, Environmental Protection, and Rational Use of Natural Resources," as well as the sub-theme "Development and Operation of Oil and Gas Fields." The results of the research aim to improve oil recovery efficiency and the effective use of natural resources, which fully aligns with the strategic goals and priority scientific and technological directions of Kazakhstan.

Scientific novelty: The fundamental principles of creating and practically using a methodology for classifying fields of various types (oil, oil-gas, and gas) based on a set of characteristics have been scientifically substantiated, allowing for the assessment of the complexity of reserve extraction (composition, properties, and deposit conditions). A method for classifying hard-to-recover oil fields in Kazakhstan has been proposed, based on a set of characteristics that determine the difficulty of their extraction. This method is based on fuzzy

cluster analysis and differs from previously proposed methods by accounting for impurities present in the oil composition. A parameter has been proposed that characterizes the complexity of reserve extraction, taking into account a set of characteristics that describe not only the deposit conditions and properties but also the composition of hard-to-recover oils. As a result of statistical analysis, a method and expressions have been proposed for predicting oil production values for the subsequent period and the technological effectiveness of fund utilization. Patterns between total solubility, concentrations of hydrochloric and hydrofluoric acids have been studied, and corresponding expressions have been obtained.

The practical significance of the work lies in the fact that the author has conducted a comprehensive analysis of hard-to-recover existing oil reserves. The classification methods revealed key characteristics and features that affect the complexity of their production, such as viscosity, density, composition and conditions of oil occurrence. This allowed us to identify the shortcomings and limitations of existing classification methods and lay the foundation for developing a more accurate and comprehensive approach. Based on the analysis, the author has developed a new classification method for hard-to-recover oil reserves, taking into account their physico-chemical properties, composition and geological conditions of occurrence. The method is based on the use of fuzzy cluster analysis, which makes it possible to more accurately take into account the complex relationships between various features and make sound recommendations for the development of deposits. In the course of the study, a detailed statistical analysis of the dynamics of oil production at the field in question was carried out. Based on the data obtained, predictive models have been developed that allow estimating future production values with a high degree of accuracy. This makes it possible to plan the exploitation of deposits more efficiently and make informed decisions on the management of production processes. The author analyzes the effectiveness of using funds from producing wells, as well as evaluates the effectiveness of geological and technical measures carried out at the field. As a result of the study, key factors affecting the performance of wells were identified and recommendations were proposed for optimizing their operation to increase the overall efficiency of oil production. A statistical analysis of the data obtained during the application of hydrochloric acid treatment at the deposit has been carried out. Patterns affecting the effectiveness of this method have been identified and its technological effectiveness has been evaluated. The results of the study confirmed the expediency of using hydrochloric acid treatment in the conditions of the deposit under consideration and allowed us to provide practical recommendations for improving its application.

Research results. The author has analyzed methods for classifying hard-to-recover oil reserves, identified their shortcomings, and developed a new approach based on fuzzy cluster analysis. This method takes into account the physico-chemical properties, composition, and geological conditions of the oil, which allows for more precise field development.

Statistical analysis of oil production has also been performed and predictive models have been developed for effective planning. An assessment of the effectiveness of wells and geological and technical measures was carried out, with recommendations for optimizing their operation. The analysis of hydrochloric acid treatment revealed patterns affecting its effectiveness, and improvements were proposed to improve technological efficiency.

Publications. Based on the materials of dissertations, 13 papers have been published, including -2 publications in journals included in the Scopus database, -3 articles in scientific publications proposed by the Committee for Quality Assurance in Science and Higher Education, the rest of the articles have been published in international scientific publications. and practical conferences.

Conclusion. The thesis is devoted to improving methods for classifying hard-to-recover oil reserves and improving the efficiency of wells at a late stage of field development. The author has developed a new approach to classification based on fuzzy cluster analysis, taking into account physico-chemical properties, composition and geological conditions. A detailed statistical analysis of oil production has been carried out, forecast models have been developed

and recommendations for optimizing well operation have been proposed. The results of the study confirm the expediency of using new methods and approaches that increase the efficiency of field exploitation. The work corresponds to the priority areas of scientific development and is of high practical importance.

7) Analysis of the work of Elmira Konebaevna Merekeeva, performed on the topic: "Structure, conditions of sediment formation, patterns of reservoir placement and oil and gas potential of the Lower Jurassic and Triassic deposits of the Zhazgurlinsky depression" according to the educational program 8D07208 – Geology and exploration of mineral deposits.

The dissertation is devoted to the study of the geological structure and oil and gas potential of the Zhazgurlinsky depression, using the methods of seismic exploration MOGT-3D and GIS. The main focus is on the study of productive Triassic and Jurassic sediments, as well as assessing the prospects for oil and gas deposits. The studies confirmed the effectiveness of the exploration strategy, which reduced the risks and costs of drilling, and recommended drilling wells in promising areas with oil and gas occurrences.

The dissertation consists of an introduction, 4 sections, general conclusions and recommendations, contains 99 figures, 5 tables, 5 appendices, and a list of references from 100 sources.

The relevance of the study lies in the fact that the potential of the oil and gas industry in Kazakhstan is determined by the proven reserves of oil and gas, as well as their prospective and forecast resources. The previous ones are related to deposits that were discovered earlier and, thus, are currently being developed or are in development, otherwise temporarily preserved. Prospective and predictive resources are insufficiently scientifically grounded in terms of local seizures of various types (prospective and consolidated predictive resources) or from the point of view of large structural elements of the massif and lithological-stratigraphic complexes. Work is underway on an ongoing basis to assess the reserves of deposits discovered in Kazakhstan, as well as measures for a comprehensive assessment of promising resources, which is a sufficient basis for differentiating the current state and prospects for the future development of the oil and gas industry in the Republic of Kazakhstan. The real possibility of increasing the proven reserves of autonomous gas is associated with the discovery of new deposits in the Kazakh sector of the Caspian Sea, including large ones. Both the deposits and deposits associated with the Mesozoic complexes, which are productive here, do not contain hydrogen sulfide, which makes it possible to quickly start development.

Scientific results within the framework of the requirements for dissertations. Conducting a lithological and mineralogical study of rocks of the Lower Mesozoic of the Zhazgurlinsky depression, which contributes to a deeper understanding of the geological history of the region and can be used to search for minerals and plan construction projects. As a result of the work, secondary structural elements were identified in the zone of deflection of the Zhazgurla depression, which are of interest for geological research and field development. Jurassic-Triassic sediments have also been studied, which are important reservoir rocks with great potential for further research and the search for large traps in the coastal parts of the lowlands.

Scientific novelty. For the first time, the applied method of processing and interpreting 3D seismic data provided detailed information about the structure of the section of the perspective intervals of Cretaceous and Jurassic sediments, as well as reliable data on the structure of the Triassic section. The analysis of the stratigraphy and lithology of the region is carried out. New research results for the stratigraphy and oil and gas content of the Zhazgurlinsky depression are:- obtaining new information about the structure of deeper regionally promising Triassic sediments;- reliable study of the geological structure of productive Triassic and Jurassic sections within the study area;- the use of modern technologies for in-depth analysis of seismic attributes has allowed us to obtain detailed data on the structure of productive horizons, which is an important factor in planning exploration drilling;- clarifying the boundaries of tectonic and structural shielding, wedging;- based on the analysis and generalization of geological and geophysical materials and the manifestation of oil and gas potential, a diagram of

the prospects for oil and gas potential of the Mesocainozoic deposits of the Zhazgurlinsky depression has been compiled.

The practical significance of the work lies in the fact that the regional seismic studies carried out in the Caspian Sea made it possible to carry out tectonic zoning of the Mangyshlak sedimentary basin as a whole within Kazakhstan, covering the marine part of its territory. The scientific results obtained will be applied to the implementation of exploration projects for oil and gas. The target consumers of the obtained results are scientific institutes of the Republic of Kazakhstan.

Research results. As a result of processing and interpreting MOGT-3D and GIS data from the Zhazgurlinsky depression in the Ulkendale, Tuchusken, Kurganbai, Bayram-Kyzyladyr, Demal, Kumak, Alak, Mahat-Coastal areas, the following conclusions can be drawn: 1. The field seismic survey methodology used provided a reliable study of the geological structure of the productive Triassic and Jurassic sections, and also provided new information about the structure of deeper, regionally promising Triassic deposits. 2. The applied technique of processing and interpreting 3D seismic data provided detailed information on the structure of the section of the perspective intervals of Cretaceous and Jurassic sediments, as well as reliable data on the structure of the Triassic section. 3. The use of modern technologies for in-depth analysis of seismic attributes has made it possible to obtain detailed data on the structure of productive horizons, which is an important factor in planning exploratory drilling.

Publications. The main provisions of the dissertation work have been published in 9 scientific papers, including 2 articles published in journals included in the Scopus and Clarivate Analytics database (42 percent), 3 articles recommended by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Education and Science of the Republic of Kazakhstan "Oil and Gas", 3 articles published in journals of international scientific and technicalpractical conference. In the period 07.04-20.04.2021, from April 7 to April 20, 2021, a scientific internship was completed (Appendix A). According to the results of the report, a certificate was obtained (Appendix B), 1 the article was published in the scientific journal Bulletin of Technical Sciences of Kostanay Socio-Technical University named after Academician Zulkharnai Aldamzhar.

Conclusion. The results obtained confirmed the economic effectiveness of the exploration strategy and 3D seismic exploration based on advanced exploration drilling, which significantly reduces exploration risks and saves significant funds spent on drilling "dry" wells.

4.2. The relationship of the topic of dissertations with national state programs, as well as targeted republican and regional scientific and scientific-technical programs.

The dissertations of G.E. Kunayeva and R.A. Bekbaeva correspond to the priority direction of science development approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in the direction 1. Ecology, environment and rational use of natural resources: vol. 21) Development and operation of oil and gas fields.

The thesis of Borash A.R. solves the problem of increasing the utilization rate of groundwater reserves of the Tonirekshinsky groundwater deposit. Its content corresponds to the State programs "Drinking Water" (2003-2010) and "Ak-Bulak" (2011-2020), as well as the State Program for the Development of Regions (2020-2025), as well as priority areas approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan on the priority "Rational use of natural resources, including hydrocarbons raw materials, water resources, geology, processing, new materials and technologies, safe products and structures."

The dissertation of N. Tauova corresponds to the priority direction of science development, approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in the direction 1. Ecology, environment and rational use of natural resources: V.T. Part 2. Development and operation of oil and gas fields. Its content

corresponds to the National Development Plan of the Republic of Kazakhstan until 2025 (2018-2025), as well as the State Program for the Development of Regions (2020-2025).

The dissertations of A.S. Khadieva and L.B. Zhetekova correspond to one of the priority directions of scientific development approved by the Higher Scientific and Technical Commission of the Government of the Republic of Kazakhstan.In particular, this work corresponds to the direction 1) "Ecology, environmental protection and efficient use of natural resources", including 21) "Development and operation of oil and gas fields". The research results are aimed at improving the efficiency of oil production and the rational use of natural resources, which fully corresponds to the strategic goals of our state and priority areas of scientific and technological development.

The dissertation work of E. Merekeeva was carried out within the framework of the state grant of the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan "Young Scientist" 2022-2024 No. AR15473398 within the framework of the project "Detailed study of the geological structure of productive horizons of oil and gas prospective objects of the Zhazgurlinsky depression".

4.3. Analysis of the level of implementation of the results in practice

1) The research results of G.E. Kunaeva demonstrate a high level of practical significance, as they provide accurate forecast calculations to improve the efficiency of oil field development. The adaptation of the three-dimensional hydrodynamic model to the actual operating data of the wells allowed us to obtain a high degree of reliability of the development forecast, which is important for optimizing the production process. The implementation of the results at a real facility has demonstrated the potential to improve the dynamics of oil reserves production through the transformation of the existing development system, including the use of horizontal wells. This makes it possible to significantly increase the efficiency of field development and reduce operational risks.

2) The research results of R.A. Bekbaeva demonstrate a significant contribution to the practical development of multilayer deposits, in particular, using the example of the Ayrankol and Arystanovskoye fields. The developed methods and technologies, including the introduction of simultaneous and separate exploitation (REM), ensure effective control over the development of reserves, increase production efficiency, reduce capital and operating costs, as well as shorten the time for field development. The projected daily efficiency of implementing the ORE technology at the Ayrankol wells was 322.1 t/day, and the average payback period for the technology was 0.65 months. The application of the developed methods for selecting equipment and analyzing the hydrodynamic characteristics of wells contributed to optimizing production and improving technical and economic indicators. The implementation of these technologies and techniques at real facilities demonstrates their practical significance and the possibility of wide application in the oil industry.

3) The results of the conducted experimental studies of Such N. demonstrate high practical significance in the context of oil production and ecology. The developed methods of dynamic and static soil sounding, as well as seismic interpretation, have made it possible to clarify the geological structure and hydrogeological conditions of oil fields. The detection of an increased chloride content in waters and soils has led to the development of a new technology to reduce the aggressive effects of these substances. The proposed technology for producing a grouting solution based on sulfur waste and aluminum chloride is a promising solution to the problem, which makes it effective for practical use on drilling rigs. The introduction of these technologies can significantly increase the reliability and safety of drilling operations, improve well operating conditions and minimize environmental risks associated with aggressive chloride exposure.

4) The results of the work of Borash A.R. The dissertation contains a serious theoretical part and research methods. As part of the tasks of the dissertation, a patent for inventions was

obtained from the National Institute of Intellectual Property of the Republic of Kazakhstan. The research results have significant potential for improving technologies for developing water intake wells in the Tonirekshinsky field. The developed device for creating an implosion effect and methods for optimizing the design of wells ensure an increase in the effectiveness of the impact on aquifers and minimize the risks of damage to the casing. The introduction of these technologies will improve well productivity, reduce operating costs, and increase the durability of equipment, which has a positive impact on the economic efficiency of drilling operations.

5) The results of the conducted research by A.S. Khadieva have significant potential for practical application in the oil industry. The developed complex method of influencing the reservoir with polymer compositions, water-gas emulsion and electrochemically modified water opens up new opportunities for increasing the oil recovery coefficient. The proposed special regression equation for determining the oil recovery coefficient using polyacrylamides of various concentrations makes it possible to effectively plan experiments, eliminating the need for additional research. This significantly reduces the cost of time and resources. Recommendations on the use of polymers of grades R-1 and GL 50, based on their high potential in improving the efficiency of oil production, provide a practical guide for the application of these technologies in oil fields. The implementation of these results can lead to a significant increase in well productivity and lower operating costs for oil production, which will have a positive impact on the economic efficiency of production.

6) The results of the research of L.B. Zhetekova's dissertation are of significant practical importance for optimizing the processes of developing hard-to-recover oil reserves. The developed new classification method using fuzzy cluster analysis provides more accurate recommendations for oil production, taking into account the physico-chemical properties and geological conditions. Predictive models based on statistical analysis of production dynamics enable more efficient planning and management of field operations. The revealed patterns in the use of hydrochloric acid treatment and the proposed recommendations for optimizing production processes contribute to improving the productivity and efficiency of well operation. The implementation of these technologies in practice will improve technical and economic performance and improve the sustainability of production processes at the fields.

7) In the work of E. Merekeeva, the results of the application of 3D seismic exploration to study the geological structure and oil and gas potential of the Zhazgurlinsky depression open up significant opportunities for improving practical processes in the exploration and production of hydrocarbons. Detailed data on the structure of Cretaceous, Jurassic, and Triassic sediments, as well as accurate information on productive horizons and boundaries of tectonic shields, significantly improve the accuracy of exploration drilling planning. The introduction of technologies for in-depth analysis of seismic attributes makes it possible to more effectively identify promising oil and gas bearing zones, optimize field development processes and increase the overall efficiency of exploration. Thus, the research results have direct practical significance for improving the efficiency of the oil and gas industry in the region.

5. Analysis of the work of official reviewers (with examples of the most substandard reviews)

Reviewers of doctoral students' dissertations for the degree of Doctor of Philosophy (PhD) were appointed in accordance with the requirements of the Standard Regulations on the Dissertation Council.

Information about the appointed reviewers is provided below:

№	Full name of the doctoral student	Reviewers	
		Full name of reviewer 1 (position, academic degree, title, number of publications in the specialty)	Full name of reviewer 2 (position, academic degree, title, number of publications in the specialty)

1	Kunaeva G.E.	Akhmetov Nurken Makhsutovich - Doctor of Technical Sciences, Associate Professor of the Faculty of Oil and Gas, Vice-Rector for Academic Affairs and International Cooperation, Atyrau University of Oil and Gas named after Safi Utebayev.	Yskak Ardaq Sergazykyzy – Doctor of Philosophy (PhD), Department of Petroleum Engineering, Kazakh National Research Technical University named after K.I. Satpaev.
2	Bikbayeva R.A.	Ibyldaev Muratbay Khydyrovich – Candidate of Technical Sciences, Associate Professor, Head of the Department of "Transport and Mechanical Engineering," Tarrant Regional University named after M.Kh. Dulati.	Alisheva Zhanat Nūrkūatovna – PhD, Acting Associate Professor of the Department of Physical Chemistry, Catalysis, and Petrochemistry, Kazakh National University named after al-Farabi.
3	Borash A.R.	Portnov Vasily Sergeyevich – Doctor of Technical Sciences, Professor of 25.01.00 – Geology and Mineralogy, Karaganda Technical University named after Abilkass Saginov.	Tikebaev Talgat Asanbayevich – Doctor of Philosophy (PhD), Kazakhstan-British Technical University, School of Energy and Oil & Gas Industry.
4	Tauova N.R.	Portnov Vasily Sergeyevich – Doctor of Technical Sciences, Professor of 25.01.00 – Geology and Mineralogy, Karaganda Technical University named after Abilkass Saginov.	Asubaeva Saltanat Kalykbaevna – Candidate of Geological and Mineralogical Sciences, Associate Professor of the Department of Geological Survey, Prospecting, and Exploration of Mineral Deposits, Kazakh National Research Technical University named after K.I. Satpaev.
5	Khadieva A.S.	Alisheva Zhanat Nūrkūatovna – Doctor of Philosophy (PhD), Acting Associate Professor of the Department of Physical Chemistry, Catalysis, and Petrochemistry, Kazakh National University named after al-Farabi.	Imanbaev Yerzhan Imanbayuly – Doctor of Philosophy (PhD), Associate Professor (Docent) at the Republican State Enterprise on the Right of Economic Management "Institute of Combustion Problems."
6	Zhetekova L.B.	Kuttybaev Aidar Ermekkalievich – Candidate of Technical Sciences, Professor of the Department of Mining, Kazakh National Research Technical University named after K.I. Satpaev.	Mashrapova Moldir Abdu-muslimovna – Doctor of Philosophy (PhD), Senior Researcher at the LLP "Institute of Geological Sciences named after K.I. Satpaev."
7	Merekeeva E.K.	Omarova Gulnara Magaulyanovna – Doctor of Philosophy (PhD), Associate Professor of the Department of Geological Survey, Prospecting, and Exploration of Mineral Deposits, Satbayev University.	Borahs Bokenbay Rabbimuly – Doctor of Philosophy (PhD) in the specialty 8D07208 – Geology and Exploration of Mineral Deposits.

To ensure compliance with the requirements of the Model Regulation on the work of the Dissertation Council, a memo outlining the requirements for the content and formatting of the review on the dissertation work was sent to each reviewer.

All reviewers submitted their reviews of the dissertation works, formatted in accordance with the requirements of paragraph 28 of the Model Regulation on the Dissertation Council, within the established timeframe, no later than 5 (five) working days before the defense of the dissertation. The reviews of the reviewers meet the required standards.

6. Suggestions for further improvement of the system for training scientific personnel.

Introduce into practice the collection of reviews on the dissertation work from leading scientists of universities, research institutes, and enterprises where the results of the work were implemented.

7. The number of dissertations for the degree of Doctor of Philosophy (PhD), Doctor by profile, broken down by specialties (areas of personnel training).

Dissertation Council	8D07208 – Geology and Exploration of Mineral Deposits.	8D07210 (6D070800) – Oil and Gas Business
Dissertations accepted for defense (including those of doctoral candidates from other universities).	3	4
Dissertations removed from consideration (including those of doctoral candidates from other universities)	-	-
Dissertations for which negative reviews from reviewers were received (including those of doctoral candidates from other universities)	-	-
Dissertations for which negative reviews from reviewers were received (including those of doctoral candidates from other universities)	-	-

Chairman of the Dissertation Council,
Doctor of Technical Sciences,
Professor **B.T. Ratov**

Scientific Secretary of the Dissertation Council, Candidate of Technical Sciences, Associate Professor **R.U. Bayamirova**

ҚОЛЫН РАСТАЙМЫН
ПОДПИСЬ ЗАВЕРЯЮ
Адами ресурстар басқармасы
қолы/подпись