Report of the Dissertation Council on Geology, Hydrogeology and Geophysics at KazNITU named after K.I. Satpayev on decisions on awarding (refusal to award) the degree of Doctor of Philosophy (PhD) in the specialties 6D075500-Hydrogeology and engineering geology, 8D05202-Hydrogeology and engineering geology, 8D07104 – Oil and gas and ore geophysics for 2025 .

1. Number of meetings held.

The Dissertation Council for specialties 6D075500-Hydrogeology and engineering geology, 8D05202-Hydrogeology and engineering geology 8D07104 – Oil and gas and ore geophysics held 5 (five) meetings .

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

3. List of doctoral students with indication of the organization of training.

№	Full name of the doctoral student	Organization of training
1	Zhakyp Altynay Elubaykyzy	KazNRTU named after K.I.Satbayev
2	Chensizbayev Daniyar Borashuly	KazNRTU named after K.I.Satbayev
3	Shaiyakhmet Tanirbergen Kerimbekuly	KazNRTU named after K.I.Satbayev
4	Medeshova Nazgul Adilkhankyzy	KazNRTU named after K.I.Satbayev
5	Sirazhev Arman Nurlanovich	KazNRTU named after K.I.Satbayev

4. Brief analysis of dissertations reviewed by the council during the reporting year

During its work, the Dissertation Council reviewed five (5) theses in three (3) specializations. The titles of the dissertations by specialization are listed below:

№	Full name of the doctoral student	Subject of the work	Cipher and the name of the specialty
1	Zhakyp Altynay Elubaykyzy	«Engineering-geological assessment and conditions of the territory of Almaty city for development of agglomeration»	6D075500-Hydrogeology and engineering geology
2	Chensizbayev Daniyar Borashuly	"Formation of lithium-bearing industrial groundwater in the Shu-Sarysu depression on the example of the Kolkuduk site"	8D05202-Hydrogeology and engineering geology
3	Shaiyakhmet Tanirbergen Kerimbekuly	«3D modeling of the Beskempir deposit for estimation of mineral resources and engineering geological conditions»	6D075500-Hydrogeology and engineering geology
4	Medeshova Nazgul Adilkhankyzy	«Hydrogeochemical criteria for prospecting ore deposits on the example of the northwestern regions of the Torgai trough»	6D075500-Hydrogeology and engineering geology
5	Sirazhev Arman Nurlanovich	"Ore Deposits Study Using 3D Reflection Seismic and Seismic Tomography Methods in Complex Mining and Geological Conditions of Central Kazakhstan"	8D07104 – Oil and gas and ore geophysics

4.1 Analysis of the topics of the works reviewed

4.1.1 Brief analysis of the dissertation and Zhakyp Altynay Elubaykyzy on the topic: «Engineering-geological assessment and conditions of the territory of Almaty city for development of agglomeration», in the specialty 6D075500 - Hydrogeology and engineering geology

- *analysis of the topics of the works considered;*

The main objective of the research is to describe and zone the territory of the Almaty agglomeration according to the landslide zone and to conduct a detailed study of the landslide zone in selected experimental areas characterized by the development of the flooding process of buildings and structures in the northern part of Almaty and the landslide process on the slope of Mount Kok-Tobe.

To achieve this goal, the following tasks were solved:

- developing hazardous geological processes in Almaty were investigated and classified;
- Two experimental sites were selected. The first site included the Akbulak microdistrict, located in the northern part of Almaty, and the second site was a slope of Mount Kok-Tobe;
- a geofiltration model was created for predictive assessment of the development of the flooding process of buildings and structures in the northern part of Almaty.
- a numerical simulation of the flooding process of built-up areas in the northern part of Almaty within the experimental area of the Akbulak microdistrict was carried out using the Visual MODFLOW PRO software package;
- the stability coefficient of the landslide process was calculated on the experimental section of the slope of Mount Kok-Tobe using the GEO5 program, in a natural state and taking into account possible seismic impact.

4.1.2 Brief analysis of the dissertation of Chensizbayev Daniyar Borashuly on the topic "Formation of lithium-bearing industrial groundwater in the Shu-Sarysu depression on the example of the Kolkuduk site", according to the educational program 8D05202-Hydrogeology and engineering geology

- *analysis of the topics of the works considered;*

The main objective of the work is to comprehensively study the formation of lithium-bearing industrial groundwater in the Shu- Sarysu depression using the example of the Kolkuduk site , with the aim of developing effective methods for their use for lithium extraction.

To achieve this goal, the following tasks were solved:

Geological and hydrogeological study of the region (analysis of the geological structure, hydrogeological features of the Shu -Sarysu depression).

Assessing the factors that influence the formation of lithium-bearing groundwater. Studying the chemical composition of groundwater.

Study of lithium concentration and distribution in groundwater, determination of lithium levels in groundwater at various depths and locations, and identification of the most promising areas for lithium extraction.

Analysis of existing lithium extraction technologies. Development and optimization of lithium extraction methods.

4.1.3 Brief analysis of the dissertation and Shaiyakhmet Tanirbergen Kerimbekuly on the topic: «3D modeling of the Beskempir deposit for estimation of mineral resources and engineering geological conditions», in specialty 6D075500 - Hydrogeology and engineering geology.

- *analysis of the topics of the works considered;*

The purpose of the work

Development of a scientific and practical method for assessing engineering and geological conditions of mineral deposits using the basics of 3D modeling during underground mining of vein ore bodies.

Research objectives

the Beskempyr deposit ;

2. Analysis of the hydrogeological conditions of the studied deposit in the engineering-geological aspect to determine the influence of groundwater on the development of the deposit by underground mining;

3. Assessment of engineering-geological conditions and mineral resources of the Beskempire gold deposit ;

4. Forecast of the stability of the rock mass and the likelihood of occurrence of negative geological processes and phenomena in mine workings.

4.1.4 Brief analysis of the dissertation and Medeshova Nazgul Adilkhankyzy on the topic: «Hydrogeochemical criteria for prospecting ore deposits on the example of the northwestern regions of the Torgai trough» in the specialty 6D075500-Hydrogeology and engineering geology.

- *analysis of the topics of the works considered;*

The main objective of the dissertation is to develop hydrogeochemical criteria for searching for ore deposits using the example of the northwestern regions of the Torgai trough.

To achieve this goal, the following tasks were solved :

1. Collection, processing and analysis of geological and hydrogeological data on northwestern Torgai .

2. Hydrogeochemical data for 10 ore prospecting sites are summarized.

3. Data on mineral deposits in northwestern Torgai have been summarized .

4. Hydrogeochemical zoning was identified and calculated for the first time. For the first time, the parameters of the concentration factor (CF) and the standardized contrast coefficient (SCC) were calculated for some ore components.

4.1.5 Brief analysis of the dissertation and Sirazhev Arman Nurlanovich on the topic: "Study of ore deposits using 3D seismic exploration and multi-wave seismic tomography methods in complex mining and geological conditions of Central Kazakhstan", according to OP 8D07104 – Oil and Gas and Ore Geophysics.

- *analysis of the topics of the works considered;*

Objective of the work: Development of technology for modeling geologically complex ore objects based on three-dimensional seismic exploration in combination with geological and geophysical data.

Research objectives:

1) in combination with the use of modern procedures for digital recording and processing of seismic signals, obtaining high-resolution seismic data in the time and depth domains;

2) analysis of the wave field and construction of velocity models with the identification of zones of change in elastic properties associated with geological heterogeneity and zones of mineralization of copper sandstones;

3) conducting structural and dynamic interpretation of seismic data and constructing a seismogeological model of copper mineralization Zhezkazgan type.

4.2. The connection of the dissertation topics with the areas of scientific development that have been formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs :

4.2.1 Dissertation of Zhakyp Altynay Elubaykyzy corresponds to the priority areas of scientific development approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan, in particular:

- Rational use of natural resources, including water, geology, processing, new materials and technologies, safe products and designs.

-Ecology, environment and rational use of natural resources;

The work makes a significant contribution to science and its importance is well documented, as evidenced by

the need for a detailed study of hazardous geological processes and their impact on public safety, infrastructure development and urban planning activities.

4.2.2 The dissertation of Chensizbayev Daniyar Borashuly corresponds to the priority areas of scientific development approved by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan, in particular:

rational use of underground industrial waters, including water resources, geology, processing of mineral raw materials, new materials and technologies;

This study expands existing knowledge in the fields of geology and hydrogeology, as well as lithium extraction technologies, creating a basis for further scientific and technological developments.

The work makes a significant contribution to the development of hydrogeological science, which is confirmed by the need for a comprehensive study of the conditions of formation of lithium-bearing industrial groundwater in the Shu -Sarysu depression, as well as substantiation of the prospects for their rational and efficient use in the context of growing demand for lithium.

4.2.3 Topic of the dissertation Shaiyakhmet Tanirbergen Kerimbekuly Fully aligns with the strategic objectives set by the state and makes a significant contribution to the development of science and technology in the Republic of Kazakhstan. It is closely linked to the key scientific development areas established by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan, as well as to state programs, including the Gas Industry Development Program of the Republic of Kazakhstan for 2022–2026. This connection is manifested in the following aspects:

1. Compliance with scientific development directions

Within the framework of paragraph 3 of Article 18 of the Law "On Science", the dissertation addresses the following priority areas:

• Rational nature management: Engineering geology of the MPI is of great practical importance in solving problems related to the rational use of the geological environment and its protection from the negative impact of mining enterprises. Proposals and recommendations based on the results of engineering and geological studies at the deposit are especially necessary in the design and planning of mining operations at great depths and scales, and the reconstruction of existing mine fields.

• Development of the geological exploration industry, namely in the area of hydrogeology and engineering geology: The use of innovative technologies for modeling and data analysis improves the quality of the assessment of the IGU MPI, which is important for ensuring the safe and rational development of the field

• Digitalization of science and production: The use of advanced software to create a digital database and 3D models reflects the integration of digital technologies into science and mining.

2. Compliance with government programs

The research topic is directly related to the implementation of:

• State Program for Industrial and Innovative Development of the Republic of Kazakhstan for 2020–2025: The research contributes to the development of high-tech approaches in geological exploration, hydrogeology and engineering geology, including digitalization and the use of big data.

• Science development programs for 2022–2026: The dissertation is aimed at generating new knowledge in ensuring the rational use of natural resources, improving the safety and efficiency of operation and environmental protection in Kazakhstan, which contributes to strengthening the country's scientific potential.

4.2.4 . Medeshova Nazgul Adilkhankyzy

Key points to be defended: Groundwater in the study region is highly diverse, both in terms of total mineralization and chemical composition. It has been established that major cations enter solution

during the weathering of silicate rocks. In the Gibbs diagrams, the data points are equally distributed between the rock weathering and evaporative concentration fields, indicating a significant contribution to the chemical composition of fresh HCO3Ca waters from both the host rocks and evaporative concentration processes during the formation of saline groundwater with Cl-Na and Cl-SO4Na /

2 . Primarily, the occurrence of saline waters (more than 10 g/dm^3) is due to continental salinization processes, given the study area's arid climate. Overall, the predominant compositions are HCO3-Cl Ca-Mg-Na, SO4-HCO3-Cl Na-Ca-Mg, SO4-HCO3-Cl Mg-Ca-Na, and SO4-Cl-HCO3 Ca-Mg-Na. The highest concentrations of Bi, As, Mo, Cu, and Zn are found in the waters. The background (zonal) microcomponent composition of groundwater in the studied region is represented by the following sequence from largest to smallest (mg/dm3): Zn3.65 > Cu1.43 > V1.15 > Cr0.99 > Co0.39 > Pb0.20 > Bi0.18 > Mo0.17 > Sn0.14 > As0.12 > Be0.09 > Ag0.05.

3. The most contrasting hydrogeochemical anomalies are recorded for Cu, Zn, Sn, and Bi. The first type of anomaly is characterized by a copper-pyrite association of exploration hydrochemical elements: elevated contents of Cu, Zn, and Co, and the presence of As and Sn. The second type of anomaly is characterized by a polymetallic group of hydrochemical exploration features: along with elevated contents of Cu and Zn, Bi, Pb, Ga, As, Ag, Cr, and V are recorded. The third type of anomaly is characterized by elevated contents of Cu and the presence of Mo, Be, and Bi, elements characteristic of rare-metal mineralization.

4.2.5 . Connection of dissertation topics Sirazhev Arman Nurlanovich with the directions of scientific development, which are formed by the Higher Scientific and Technical Commission under the Government of the Republic of Kazakhstan in accordance with paragraph 3 of Article 18 of the Law "On Science" and (or) state programs

The author was directly involved in research on scientific projects:

- 0265-18-ГК "Three-dimensional seismic exploration for modeling ore deposits in complex mining and geological conditions of Kazakhstan", performed by LLP "Kazakhstan Leading Institute for Design of Non-Ferrous Metallurgy Enterprises " Kazgiprotsvetmet " under the grant funding program of JSC "Science Fund" of the Ministry of Education and Science of the Republic of Kazakhstan, in 2018-2021 ;
-IRN AP19680360 "Modeling the stress-strain state of rock masses during the development of ore deposits based on complex geomechanical and geophysical studies" under the grant funding program of JSC "Science Fund" MNVORK, carried out by employees of the Department of Geophysics of KazNITU named after K.I. Satpayev in 2023-2025.

4.3. Analysis of the level of implementation of dissertation results in practical activities.

4.3.1 Practical significance dissertation Zhakyp Altynay Elubaykyzy .

The dissertation has practical significance; its results and proposed recommendations, including the use of geofiltration models for flood monitoring and slope stability assessment, have high applied value for urban development and safety in Almaty.

4.3.2. Chensizbayev Daniyar Borashuly dissertation has practical significance , as the obtained results and proposed recommendations can be used to assess the lithium-bearing potential of groundwater, forecast its reserves, and develop and validate technological solutions for lithium extraction at the Kolkuduk site . This contributes to increased economic efficiency in the development of the mineral resource base and sustainable development of the region. The obtained data can serve as a scientific basis for further research and the development of innovative approaches and technologies in the field of mineral extraction and rational environmental management.

4.3.3 Analysis of the level of implementation of the results of Shaiyakhmet Tanirbergen Kerimbekuly dissertations in practical activities :

The findings and results of this dissertation are of great scientific and practical interest to hydrogeologists and engineering geologists working at underground deposits. This dissertation assessed the geological properties of a vein gold deposit in a digital environment using 3D modeling. The research results were processed in modern mining and geological information systems, creating a database of engineering and geological surveys and various 3D models of the deposit, which are used to determine the anisotropy of engineering and geological parameters within the rock mass. The software then enables a qualitative and quantitative assessment of the geological properties of the deposit, predicting the complexity of its development, and predicting adverse geological processes and phenomena. Thus, by adapting the fundamentals of 3D modeling to solve problems in engineering geology at the Mining and Mining Institute, this field reaches a new level in both its scientific and practical aspects. Therefore, this dissertation has enormous scientific and practical significance.

the Beskempyr mine workings over several years. He formatted the obtained research results into a digital environment, using Micromine and Leapfrog software . This included database creation, interpretation of engineering and geological components, and construction of 3D wireframe and block models, establishing patterns in the variability of rock mass properties, qualitative and quantitative assessment of the IGU MPI and forecast of IGU changes, the challenges of deposit development with the development of mining operations, and developing recommendations for accounting for adverse geological phenomena and processes.

Factual material and research methods. This dissertation is based on the results of scientific research into the engineering and geological conditions of the Akbakayskoye ore field's vein gold deposits, conducted in their exploration and production workings. Mathematical methods for processing the obtained quantitative data and a digital 3D modeling format were used to analyze and summarize the research results.

Research was conducted in the innovative geological and mineralogical laboratory Satbayev University , where thin sections and polished sections were prepared and studied from samples of ores and ore-bearing rocks taken from exploration workings of the Beskempire deposit .

The main factual material was obtained as a result of special engineering and geological studies at the Beskempire gold deposit to ensure the expansion of its exploitation front.

Publications and validation of the work. The results of the research work were validated in the form of 12 published scientific articles, including two works in journals included in the Scopus database and three articles in scientific journals recommended by the Committee for Quality Assurance in Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan. They were presented and discussed in the form of papers at international, national, and university scientific conferences: in Uzbekistan – the proceedings of the international scientific conference dedicated to the 100th anniversary of the birth of Academician of the Academy of Sciences of the Republic of Uzbekistan Ibrahim Khamrabaevich . Khamrabaeva (2021); in the proceedings of the Satpayev Readings: 2019-2021.

4.3.4. Practical significance of the work of Medeshova Nazgul Adilkhankyzy:

Detailed petrophysical studies can improve the reliability of forecasting the parameters of terrigenous reservoirs of suprasalt complexes when solving inverse geophysical problems, especially at fields in the late stage of development, in peripheral areas of fields, in poorly studied areas and new regions of Kazakhstan.

The petrophysical models of terrigenous reservoirs of the Jurassic and Triassic oil and gas bearing horizons of the S. Nurzhanov and Zapadnaya Prorva fields presented in the work can be used to increase and evaluate the remaining oil reserves of the S. Nurzhanov and Zapadnaya Prorva fields.

The developed methodology for the comprehensive interpretation of well data for Jurassic and Triassic terrigenous reservoirs of the Prorvinskaya group of fields can be applied in the study of sections of other oil and gas provinces with similar sedimentation conditions.

4.3.5. Analysis of the level of implementation of the results of dissertations of Sirazhev Arman Nurlanovich in practical activities.

Based on the results of studies of the ore body contours identified in the seismic wave field, drilling exploratory boreholes with depths of 550-820 meters was recommended. The subsoil user company drilled six verification boreholes at new ore targets, all of which confirmed the presence of copper mineralization . The original technology for modeling ore sections using 3D seismic exploration, developed and implemented during the study, is recommended for use by mining companies both during the testing of seismic recording and processing technologies, and in solving problems related to the further optimization of seismic methods in prospecting and studying the geological structure of ore regions. The use of seismic exploration in combination with geophysical methods in solving forecasting and prospecting and prospecting and exploration problems will improve the information content and reliability of the predictive component of the applied geophysical methods at various stages of real-world exploration.

The technology is recommended for testing to identify ore objects of other genetic types.

5. Analysis of the work of reviewers (with examples of the most poor quality reviews).

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

In order to ensure compliance with the requirements of the Model Regulations on the Work of the Dissertation Council, each reviewer was sent a memo with requirements for the content and format of the review of the dissertation work.

All reviews were submitted on time and in accordance with the requirements of the Committee for Quality Assurance in Science and Education of the Ministry of Higher Education of the Republic of Kazakhstan.

There are no negative reviews.

6. Suggestions for further improvement of the system of training scientific personnel – ensure high-quality consideration of works at the department's seminars.

7. The number of dissertations for the degrees of Doctor of Philosophy (PhD), Doctor of Science in the field by specialty (area of personnel training):

	Speciality 6D075500 - Hydrogeology and engineering geology	Specialty 8D05202 – " Hydrogeology and engineering geology"	Speciality 8D07104 – Oil, Gas, and Ore Geophysics
dissertations accepted for defense (including those of doctoral students from other universities);	3	1	1
dissertations withdrawn from consideration (including those of doctoral students from other universities)	-	-	-

dissertations that received negative reviews from reviewers (including doctoral students from other universities);	-	-	-
dissertations with a negative decision following the defense (including doctoral students from other universities).	-	-	-
Including from other training organizations	-	-	-
With a negative decision based on the results of the defense	-	-	-
Including from other training organizations	-	-	-
Total number of defended dissertations	3	1	1
Including from other training organizations	-	-	-

Chairman
Dissertation Council **M. Absametov**

Scientific Secretary
of the Dissertation Council **E. Auyelkhan**