

ISSN 2518-170X (Online),
ISSN 2224-5278 (Print)

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ

Х А Б А Р Л А Р Ы

ИЗВЕСТИЯ

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

NEWS

OF THE ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

ГЕОЛОГИЯ ЖӘНЕ ТЕХНИКАЛЫҚ ҒЫЛЫМДАР
СЕРИЯСЫ



СЕРИЯ
ГЕОЛОГИИ И ТЕХНИЧЕСКИХ НАУК



SERIES
OF GEOLOGY AND TECHNICAL SCIENCES

4 (424)

ШІЛДЕ – ТАМЫЗ 2017 ж.
ИЮЛЬ – АВГУСТ 2017 г.
JULY – AUGUST 2017

ЖУРНАЛ 1940 ЖЫЛДАН ШЫҒА БАСТАҒАН
ЖУРНАЛ ИЗДАЕТСЯ С 1940 г.
THE JOURNAL WAS FOUNDED IN 1940.

ЖЫЛЫНА 6 РЕТ ШЫҒАДЫ
ВЫХОДИТ 6 РАЗ В ГОД
PUBLISHED 6 TIMES A YEAR

АЛМАТЫ, ҚР ҰҒА
АЛМАТЫ, НАН РК
ALMATY, NAS RK

Б а с р е д а к т о р ы

э. ғ. д., профессор, ҚР ҰҒА академигі

И.К. Бейсембетов

Бас редакторының орынбасары

Жолтаев Г.Ж. проф., геол.-мин. ғ. докторы

Р е д а к ц и я а л қ а с ы:

Абаканов Т.Д. проф. (Қазақстан)
Абишева З.С. проф., академик (Қазақстан)
Алиев Т. проф., академик (Әзірбайжан)
Бакиров А.Б. проф., (Қырғыстан)
Беспәев Х.А. проф. (Қазақстан)
Бишимбаев В.К. проф., академик (Қазақстан)
Буктуков Н.С. проф., академик (Қазақстан)
Булат А.Ф. проф., академик (Украина)
Ганиев И.Н. проф., академик (Тәжікстан)
Грэвис Р.М. проф. (АҚШ)
Ерғалиев Г.Х. проф., академик (Қазақстан)
Жуков Н.М. проф. (Қазақстан)
Кенжалиев Б.К. проф. (Қазақстан)
Қожахметов С.М. проф., академик (Қазақстан)
Конторович А.Э. проф., академик (Ресей)
Курскеев А.К. проф., академик (Қазақстан)
Курчавов А.М. проф., (Ресей)
Медеу А.Р. проф., академик (Қазақстан)
Мұхамеджанов М.А. проф., корр.-мүшесі (Қазақстан)
Нигматова С.А. проф. (Қазақстан)
Оздоев С.М. проф., академик (Қазақстан)
Постолатий В. проф., академик (Молдова)
Ракишев Б.Р. проф., академик (Қазақстан)
Сейтов Н.С. проф., корр.-мүшесі (Қазақстан)
Сейтмуратова Э.Ю. проф., корр.-мүшесі (Қазақстан)
Степанец В.Г. проф., (Германия)
Хамфери Дж.Д. проф. (АҚШ)
Штейнер М. проф. (Германия)

«ҚР ҰҒА Хабарлары. Геология мен техникалық ғылымдар сериясы».

ISSN 2518-170X (Online),

ISSN 2224-5278 (Print)

Меншіктенуші: «Қазақстан Республикасының Ұлттық ғылым академиясы» РҚБ (Алматы қ.).

Қазақстан республикасының Мәдениет пен ақпарат министрлігінің Ақпарат және мұрағат комитетінде 30.04.2010 ж. берілген №10892-Ж мерзімдік басылым тіркеуіне қойылу туралы куәлік.

Мерзімділігі: жылына 6 рет.

Тиражы: 300 дана.

Редакцияның мекенжайы: 050010, Алматы қ., Шевченко көш., 28, 219 бөл., 220, тел.: 272-13-19, 272-13-18, <http://nauka-nanrk.kz/geology-technical.kz>

© Қазақстан Республикасының Ұлттық ғылым академиясы, 2017

Редакцияның Қазақстан, 050010, Алматы қ., Қабанбай батыра көш., 69а.

мекенжайы: Қ. И. Сәтбаев атындағы геология ғылымдар институты, 334 бөлме. Тел.: 291-59-38.

Типографияның мекенжайы: «Аруна» ЖК, Алматы қ., Муратбаева көш., 75.

Г л а в н ы й р е д а к т о р
д. э. н., профессор, академик НАН РК

И. К. Бейсембетов

Заместитель главного редактора

Жолтаев Г.Ж. проф., доктор геол.-мин. наук

Р е д а к ц и о н н а я к о л л е г и я:

Абаканов Т.Д. проф. (Казахстан)
Абишева З.С. проф., академик (Казахстан)
Алиев Т. проф., академик (Азербайджан)
Бакиров А.Б. проф., (Кыргызстан)
Беспаяев Х.А. проф. (Казахстан)
Бишимбаев В.К. проф., академик (Казахстан)
Буктуков Н.С. проф., академик (Казахстан)
Булат А.Ф. проф., академик (Украина)
Ганиев И.Н. проф., академик (Таджикистан)
Грэвис Р.М. проф. (США)
Ергалиев Г.Х. проф., академик (Казахстан)
Жуков Н.М. проф. (Казахстан)
Кенжалиев Б.К. проф. (Казахстан)
Кожаметов С.М. проф., академик (Казахстан)
Конторович А.Э. проф., академик (Россия)
Курскеев А.К. проф., академик (Казахстан)
Курчавов А.М. проф., (Россия)
Медеу А.Р. проф., академик (Казахстан)
Мухамеджанов М.А. проф., чл.-корр. (Казахстан)
Нигматова С.А. проф. (Казахстан)
Оздоев С.М. проф., академик (Казахстан)
Постолатий В. проф., академик (Молдова)
Ракишев Б.Р. проф., академик (Казахстан)
Сейтов Н.С. проф., чл.-корр. (Казахстан)
Сейтмуратова Э.Ю. проф., чл.-корр. (Казахстан)
Степанец В.Г. проф., (Германия)
Хамфери Дж.Д. проф. (США)
Штейнер М. проф. (Германия)

«Известия НАН РК. Серия геологии и технических наук».

ISSN 2518-170X (Online),

ISSN 2224-5278 (Print)

Собственник: Республиканское общественное объединение «Национальная академия наук Республики Казахстан (г. Алматы)

Свидетельство о постановке на учет периодического печатного издания в Комитете информации и архивов Министерства культуры и информации Республики Казахстан №10892-Ж, выданное 30.04.2010 г.

Периодичность: 6 раз в год

Тираж: 300 экземпляров

Адрес редакции: 050010, г. Алматы, ул. Шевченко, 28, ком. 219, 220, тел.: 272-13-19, 272-13-18,

<http://наука-нанрк.kz/geology-technical.kz>

© Национальная академия наук Республики Казахстан, 2017

Адрес редакции: Казахстан, 050010, г. Алматы, ул. Кабанбай батыра, 69а.

Институт геологических наук им. К. И. Сатпаева, комната 334. Тел.: 291-59-38.

Адрес типографии: ИП «Аруна», г. Алматы, ул. Муратбаева, 75

E d i t o r i n c h i e f

doctor of Economics, professor, academician of NAS RK

I. K. Beisembetov

Deputy editor in chief

Zholtayev G.Zh. prof., dr. geol-min. sc.

E d i t o r i a l b o a r d:

Abakanov T.D. prof. (Kazakhstan)
Abisheva Z.S. prof., academician (Kazakhstan)
Aliyev T. prof., academician (Azerbaijan)
Bakirov A.B. prof., (Kyrgyzstan)
Bespayev Kh.A. prof. (Kazakhstan)
Bishimbayev V.K. prof., academician (Kazakhstan)
Buktukov N.S. prof., academician (Kazakhstan)
Bulat A.F. prof., academician (Ukraine)
Ganiyev I.N. prof., academician (Tadjikistan)
Gravis R.M. prof. (USA)
Yergaliev G.Kh. prof., academician (Kazakhstan)
Zhukov N.M. prof. (Kazakhstan)
Kenzhaliyev B.K. prof. (Kazakhstan)
Kozhakhmetov S.M. prof., academician (Kazakhstan)
Kontorovich A.Ye. prof., academician (Russia)
Kurskeyev A.K. prof., academician (Kazakhstan)
Kurchavov A.M. prof., (Russia)
Medeu A.R. prof., academician (Kazakhstan)
Muhamedzhanov M.A. prof., corr. member. (Kazakhstan)
Nigmatova S.A. prof. (Kazakhstan)
Ozdoyev S.M. prof., academician (Kazakhstan)
Postolatii V. prof., academician (Moldova)
Rakishev B.R. prof., academician (Kazakhstan)
Seitov N.S. prof., corr. member. (Kazakhstan)
Seitmuratova Ye.U. prof., corr. member. (Kazakhstan)
Stepanets V.G. prof., (Germany)
Humphery G.D. prof. (USA)
Steiner M. prof. (Germany)

News of the National Academy of Sciences of the Republic of Kazakhstan. Series of geology and technology sciences.

ISSN 2518-170X (Online),

ISSN 2224-5278 (Print)

Owner: RPA "National Academy of Sciences of the Republic of Kazakhstan" (Almaty)

The certificate of registration of a periodic printed publication in the Committee of information and archives of the Ministry of culture and information of the Republic of Kazakhstan N 10892-Ж, issued 30.04.2010

Periodicity: 6 times a year

Circulation: 300 copies

Editorial address: 28, Shevchenko str., of. 219, 220, Almaty, 050010, tel. 272-13-19, 272-13-18,
<http://nauka-nanrk.kz/geology-technical.kz>

© National Academy of Sciences of the Republic of Kazakhstan, 2017

Editorial address: Institute of Geological Sciences named after K.I. Satpayev
69a, Kabanbai batyr str., of. 334, Almaty, 050010, Kazakhstan, tel.: 291-59-38.

Address of printing house: ST "Aruna", 75, Muratbayev str, Almaty

NEWS

OF THE NATIONAL ACADEMY OF SCIENCES OF THE REPUBLIC OF KAZAKHSTAN

SERIES OF GEOLOGY AND TECHNICAL SCIENCES

ISSN 2224-5278

Volume 4, Number 424 (2017), 276 – 280

UDC 622.323(574.1)

S. M. Ozdoyev, N. Tileuberdi

K. I. Satpaev Institute of geological sciences, Almaty, Kazakhstan.

E-mail: Nureke-17@mail.ru, ozdoyevsultan@mail.ru

**THE GEOLOGICAL PREREQUISITES
FOR INCREASING OIL PRODUCTION
AT THE NORTH KARAMANDYBAS FIELD**

Abstract. In this research the geological structure of the North Karamandybas oil field, its oil-bearing deposits, their association with the age groups of the sedimentary strata are considered. According to the structural plan of the local uplift of Northern Karamandybas structure, it is found that the lower Triassic rocks under the Jurassic deposit surface have moved 1 km to north-east comparatively. The risk of discovery of new hydrocarbon deposits in the Triassic and Paleozoic deposits is excluded. The risk has been taken to discover the new hydrocarbon deposits.

Keywords: North Karamandybas field, deposits, oil, sedimentary basins, Jurassic, Triassic, isohypses, reflecting horizons, discovery, brachianticlinal, hydrocarbons.

Implementation of the decisions of the President of the country N. A. Nazarbayev on the development of the oil and gas extraction industry can not be carried out without replenishing hydrocarbon reserves and increasing their production. At this time, the main reserves and their extraction are centralized in the territory of Western Kazakhstan. Investigators of oil and gas geology associate discovery of new fields with the shelf zone of the Caspian Sea, which is associated with significant costs.

Exploration work in the sedimentary basins of East Kazakhstan has been poorly studied except for South Turgai and requires substantial capital expenditures. Therefore, the use of potential opportunities for old fields with developed infrastructure is economically viable and deserves special attention. For example, the largest deposits Zhetybai and Uzen in Mangystau province have been in operation for sixty years, the recoverable reserves are not infinite. The need for advanced work - scientific research and exploratory drilling has arisen to increase the reserves of hydrocarbon raw materials and to provide employment for the near and far future of highly qualified specialists in the oil and gas extraction industry.

Oil and gas deposits of the Mangystau region are mainly associated with structures characterized by a complex geological structure. Reserves of oil and gas are installed mainly in the Jurassic deposits and in the Cretaceous and Triassic rocks and are confined to the arched parts of local structures [1, 2].

In all sedimentary basins of Kazakhstan Jurassic deposits according to geochemical data are the generators of oil and gas. Proceeding from this, the prospecting works in the Soviet Union were aimed at the discovery of a deposit of oil and gas in the Jurassic deposits. As a consequence, they are most well studied. Lower lying pre-Jurassic layers have been studied much worse and have been opened with rare wells. Nevertheless, for the time being, 17 hydrocarbon deposits have been discovered in the Triassic layers of Mangystau oblast. Three of these are in the lower Triassic: North-West Zhetybai, Tasbulat, Oymash; Seven are in the middle layer : Atambay, South Zhetybai, Pionerskoe, Ashiagar, Severnoye Pridorozhnoye, Aral'yube, Rakushechnoe and seven are in the upper layer: Kamenistoye, Normal East, Western Aktas, Pridorozhnoye, Severnaya Karagie, Mahat, Zharty, thus proving their high prospects for discovery New oil and gas fields.

One of the promising structures with an established oil content in the Jurassic sediments and the prospect of incrementing reserves by discovering new oil deposits in the Triassic rocks is the North Karamandybas deposit, located in Mangystau province, 39 km from Zhanauzen to north-west [3].

On the structure of the Northern Karamandybas on the surface of the Jurassic deposits (III horizon), the contour of the brachianticline is enclosed by a 960 m with isohypsum and measures 4.0x2.0 km (Figure 1), where the nine main productive horizons are found in the Middle Upper Jurassic layer. Deposits are identified in 6 horizons, 5 of them are in the Bayosian tier of the Middle Jurassic, and 2 of them are in the Bathonian Stage and 2 of them are deposits in the Callovian Tier in the Upper Jurassic (Figure 2).

The diagram of the drilled wells on the North Karamandybas structure shows that on the structural map along the reflecting horizon III (the roof of the Jurassic) to the arch of the local uplift, the wells №10, №3 and №11 are closest to each other and they have opened oil reservoirs. Well №1 drilled in the north-west is at a distance of 2 km from the local uplift, well №2 at a distance of 3.2 km to the east and №13 well is located in the north-east of the center of the local uplift at a distance of 1 km. All three wells №1, №2 and №13 are located out of the oil-bearing contour (Figure 1).

The fact is that according to the data of the isolines of depths on the structural map on the roof of the Indian layer of the Lower Triassic sediments on the site of a local uplift along the roof of all the productive horizons of the Jurassic deposits, along the surface of the complicated relief by faulty tectonics, a deflection of the sublatitudinal strike from northwest to southeast With depth marks - from 2.6 to 2.9 km (Figure 3).

The inversion Triassic structure with a biconvex lenticular form due to its formation is due to regional tangential tectonic movements on the Turan plate, where the bifurcation of the sedimentary strata occurred approximately in the Middle Triassic time.

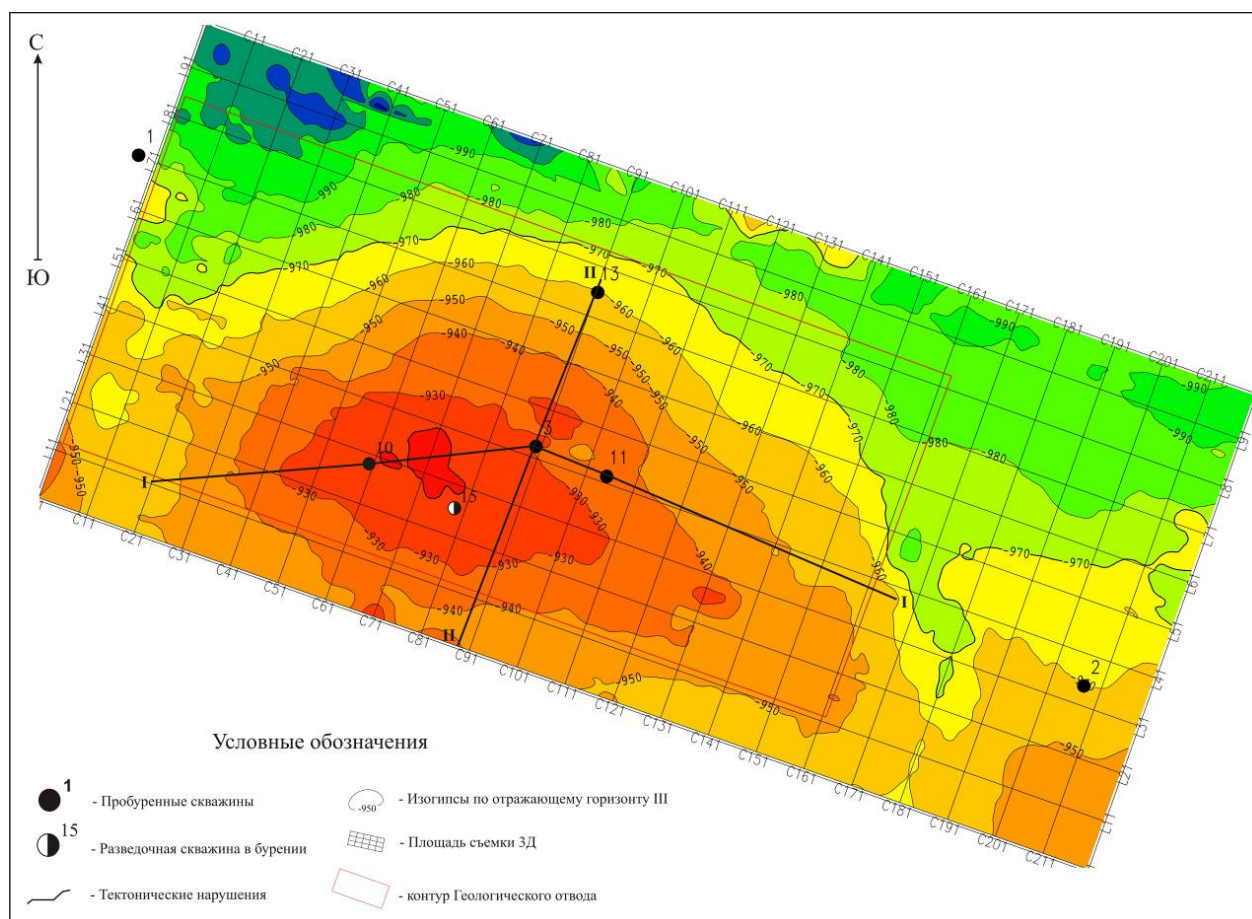


Figure 1 – Structural map of the III reflecting horizon of the North Karamandybas deposit (based on PGD services)

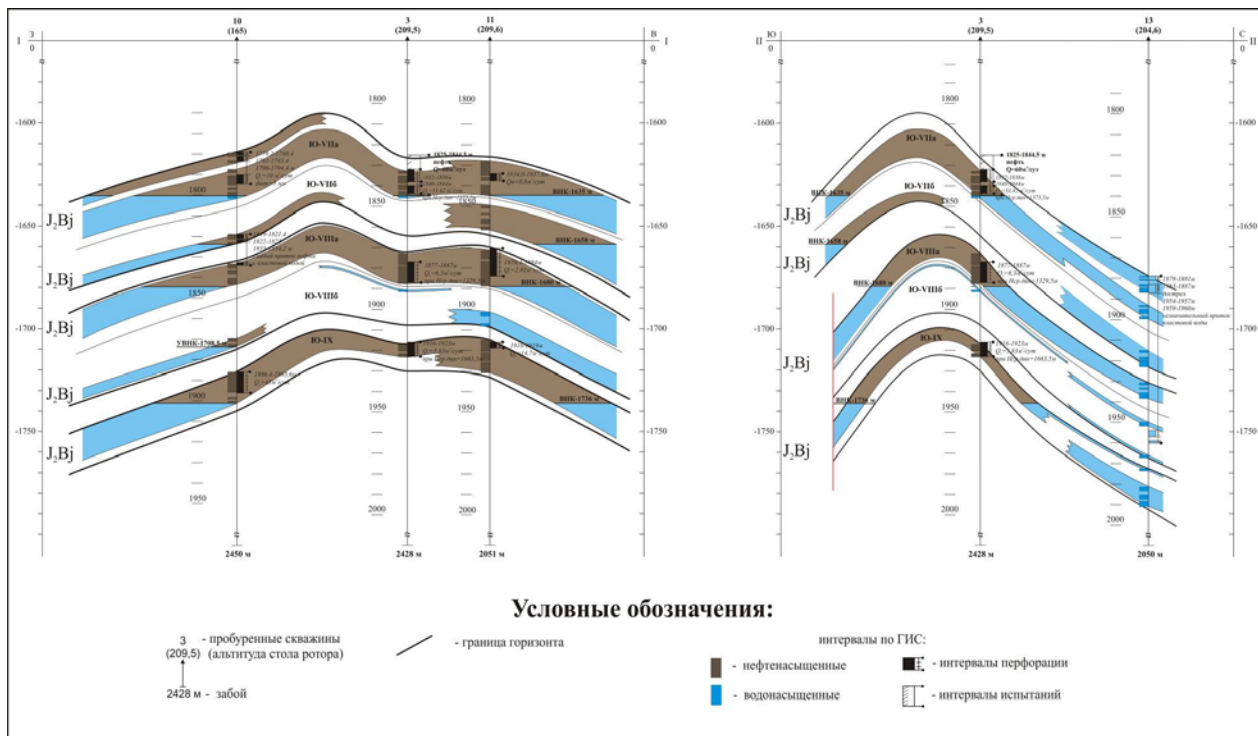


Figure 2 – Geological profiles along the I-I, II-II line of the North Karamandybas field.
Scale: horizontal: 1: 10000, vertical: 1: 10,000

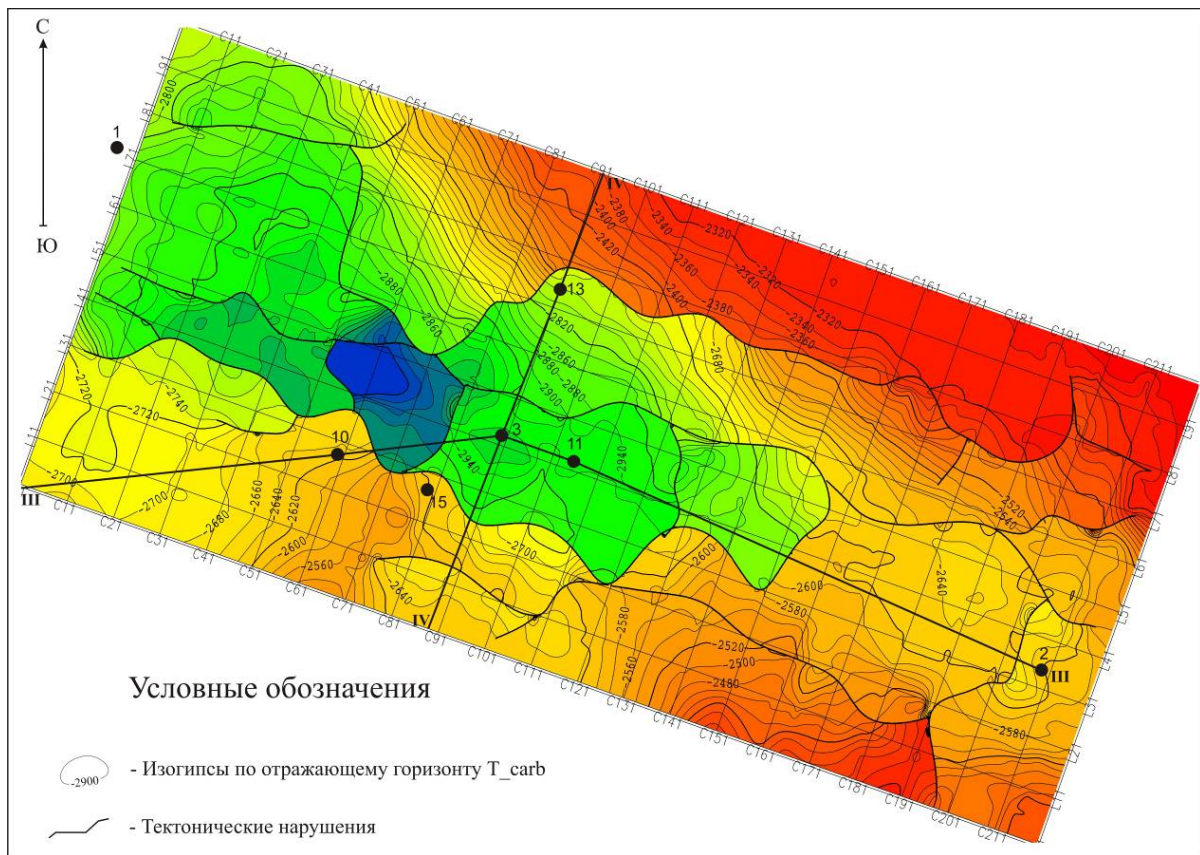


Figure 3 – Structural map on the roof of the reflecting horizon of the Lower Triassic deposits of the North Karamandybas deposit (based on PGD services)

The inherited structure of the geological structural plan of the Northern Karamandybas area is observed from the Upper Triassic time. This is evidenced by all maps of reflecting horizons and a map constructed according to V_1 reflecting horizon stratigraphically related to the roof of Triassic deposits, isohypses contour is 2250 m, the brachianticlinal has dimensions 4.1×1.8 km with an amplitude of 70 m [3].

On the seismic profile compiled according to the materials of PGD Services, the structure of the North Karamandybas area structure along the surface of the Triassic sediments moved to the northeast closer to the well No. 13 by more than 1 km (Figure 4). This suggests that, at least from the Middle Triassic, tangential movements on the Turan plate with a general northward direction have made adjustments to restructure the structural plan not only of the Lower Triassic complex of the North Karamandybas area but also in the structure of the deeper rocks of the Triassic and Paleozoic Sediments [4].

A thorough analysis of the available geological and geophysical data and a conclusion on the displacement of the structural plan of the local arch of elevation along the lower-lying Triassic surface of the lower stratum by geophysical materials, and at the North Karamandybas deposit, promising opportunities to build up additional hydrocarbon reserves.

Based on the available materials about the depth of the drilled well № 13-2050 m, which is located closer to the elevated elevation and to the lower deep Triassic and Paleozoic horizons, it is recommended to drill its depression to a mark of 3300 m (Figure 4). When carrying out relevant prospecting works, it is possible to discover new hydrocarbon deposits in the Lower Triassic and Paleozoic deposits. The discovery of deposits should be expected within the depths of 2300-3300 m to increase the volumes of the already explored reserves of Jurassic rocks.

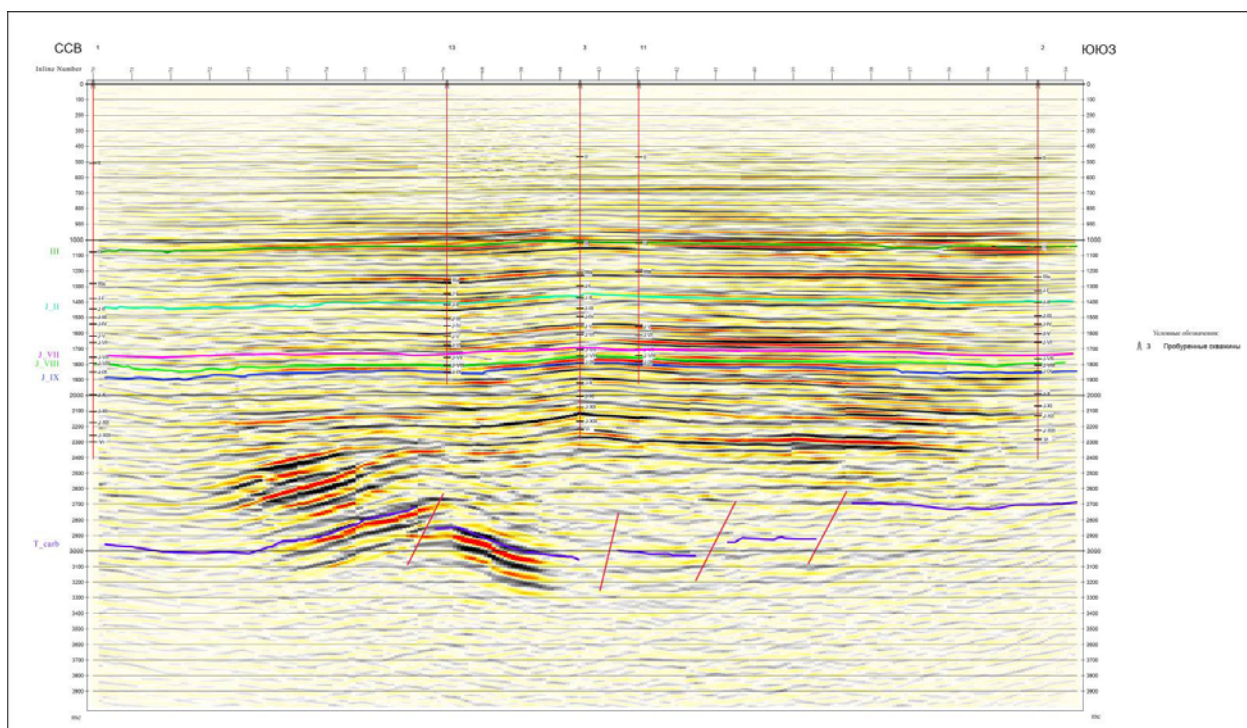


Figure 4 – Seismic profile along the line of wells 1, 13, 3, 11, 2 of the North Karamandybas field.

Scale: 1:10 000

REFERENCES

- [1] Chakabaev S.E., Kononov Y.S., Vatsoyevsky E.S., Ivanov V.A., Shakhovoy A.I. Geology and oil and gas potential of Southern Mangyshlak. Almaty: Science, 1967. 225 p.
- [2] Chakabaev S.E., Kononov Y.S., Ivanov V.A. Stratigraphy and collector properties of Jurassic deposits of South Mangyshlak in connection with their oil and gas content. M.: Nedra, 1971. 167 p.
- [3] Reference book. Deposits of oil and gas in Kazakhstan / Authors: Votsalevsky E.S., Bulekbaev Z.E., Iokuzhiev B.A. and others. Almaty, 1999. 372 p.
- [4] Zholtaev G.Zh., Mysaev I.N. Physico-lithological characteristics and structure of the Jurassic-Triassic oil and gas bearing complexes of the Southern Mangyshlak // Bulletin of KazNTU. 2015. N 4. P. 47-52.

С. М. Оздоев, Н. Тілеуберді

Қ. И. Сәтбаев атындағы геологиялық ғылымдар институты, Алматы, Қазақстан

**СОЛТҮСТІК ҚАРАМАНДЫБАС КЕНОРНЫНЫҢ МҰНАЙ ӨНДІРІСІ
ҚОРЫН АРТТЫРУДЫҢ ГЕОЛОГИЯЛЫҚ АЛҒЫШАРТЫ**

Аннотация. Солтүстік Қарамандыбас мұнай кенорнының геологиялық құрылысы, оның мұнайлы шоғырлары, олардың шөгінді қабаттардың жас тобына орайластырылуы көрсетілген. Солтүстік Қарамандыбас күмбезді құрылымының жергілікті дөңесі құрылымдық планының қозғалысы шамамен юра қабатының үсті, төмен жатқан төменгі триас жыныстарынан солтүстік-шығысқа қарай 1 км қозғалғандығы айқындалды. Триас және палеозой қабаттарынан көмірсутектің жаңа шоғырын ашу тәуеклі жасалынды.

Түйін сөздер: Солтүстік Қарамандыбас кенорны, шоғырлар, мұнай, шөгінді бассейндер, юра, триас, изогипстер, шағылдырушы горизонт, ашу, брахиантиклиналь, көмірсутектер.

С. М. Оздоев, Н. Тлеуберди

Институт геологических наук им. К. И. Сатпаева, Алматы, Казахстан

**ГЕОЛОГИЧЕСКИЕ ПРЕДПОСЫЛКИ УВЕЛИЧЕНИЯ ЗАПАСОВ НЕФТЕДОБЫЧИ
НА МЕСТОРОЖДЕНИИ СЕВЕРНЫЙ КАРАМАНДЫБАС**

Аннотация. Рассмотрено геологическое строение нефтяного месторождения Северный Карамандыбас, его нефтеносные залежи, их приуроченность к возрастным группам осадочных толщ. Выяснено смещение структурного плана локального поднятия купола структуры Северный Карамандыбас относительно поверхности юрских отложений по ниже залегающим породам нижнего триаса на 1 км к Севере-Востоку. Исключен риск открытия новых залежей углеводородов в триасовых и палеозойских отложениях.

Ключевые слова: месторождение Северный Карамандыбас, залежи, нефть, осадочные бассейны, юра, триас, изогипсы, отражающие горизонты, открытие, брахиантиклиналь, углеводороды.

**Publication Ethics and Publication Malpractice
in the journals of the National Academy of Sciences of the Republic of Kazakhstan**

For information on Ethics in publishing and Ethical guidelines for journal publication see <http://www.elsevier.com/publishingethics> and <http://www.elsevier.com/journal-authors/ethics>.

Submission of an article to the National Academy of Sciences of the Republic of Kazakhstan implies that the described work has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see <http://www.elsevier.com/postingpolicy>), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. In particular, translations into English of papers already published in another language are not accepted.

No other forms of scientific misconduct are allowed, such as plagiarism, falsification, fraudulent data, incorrect interpretation of other works, incorrect citations, etc. The National Academy of Sciences of the Republic of Kazakhstan follows the Code of Conduct of the Committee on Publication Ethics (COPE), and follows the COPE Flowcharts for Resolving Cases of Suspected Misconduct (http://publicationethics.org/files/u2/New_Code.pdf). To verify originality, your article may be checked by the Cross Check originality detection service <http://www.elsevier.com/editors/plagdetect>.

The authors are obliged to participate in peer review process and be ready to provide corrections, clarifications, retractions and apologies when needed. All authors of a paper should have significantly contributed to the research.

The reviewers should provide objective judgments and should point out relevant published works which are not yet cited. Reviewed articles should be treated confidentially. The reviewers will be chosen in such a way that there is no conflict of interests with respect to the research, the authors and/or the research funders.

The editors have complete responsibility and authority to reject or accept a paper, and they will only accept a paper when reasonably certain. They will preserve anonymity of reviewers and promote publication of corrections, clarifications, retractions and apologies when needed. The acceptance of a paper automatically implies the copyright transfer to the National Academy of Sciences of the Republic of Kazakhstan.

The Editorial Board of the National Academy of Sciences of the Republic of Kazakhstan will monitor and safeguard publishing ethics.

Правила оформления статьи для публикации в журнале смотреть на сайте:

www.nauka-nanrk.kz

ISSN 2518-170X (Online), ISSN 2224-5278 (Print)

<http://geolog-technical.kz/index.php/kz/>

Верстка Д. Н. Калкабековой

Подписано в печать 11.07.2017.

Формат 70x881/8. Бумага офсетная. Печать – ризограф.

18,2 п.л. Тираж 300. Заказ 4.