

Increasing Oil and Gas Production From The Crescentic Deposits Of South-Eastern Fergana

Khamrakulov Mansurzhon Abdukholikovich Senior lecturer

Namangan Engineering and Construction Institute.

Kurbanbayev Aslbek Otabekovich Student Namangan Engineering and Construction Institute.

Mukimjonov Nodirbek Khayrulla ugli Student Namangan Engineering and Construction Institute.

Mukimov Azizbek Ibrohimjon ugli Student Namangan Engineering and Construction Institute.

Abstract: Geological exploration, oil and gas production from the chalk deposits on the southeastern part of the Southern stage of the Fergana intermountain depression are explored and analyzed. Recommendations for increasing oil and gas production were issued.

The article is devoted to the study, analysis of geological exploration, oil and gas production from the chalk deposits of the southeastern part of the Southern stage of Fergana intermountain depression.

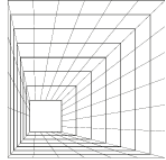
Key words: FID (Fergana intermountain depression), geological exploration, Cenozoic, Mesozoic, Cretaceous deposits, horizon, CFM (Central Fergana megasyncline), South stage, deposits, well, oil and gas content.

Cretaceous sediments of the FID are exposed within the mountain structures (beginning of study in the 19th century), especially widespread in Eastern and South-Eastern Fergana. In some cases it is narrow stripes, and in others - different in size isolated from each other area [5, p. 53].

In the adyr zone (in the southern stage of the FID) Cretaceous deposits discovered in fields and exploration areas by wells, and in CFM (Central Fergana megasyncline) - which occupy the main part of the FID territory (more than 60%) is chalk deposits almost not penetrated by wells and not studied [10, p. 7]



Fig No. 1. Map of oil and gas fields FMV[11,2020].



Cretaceous deposits in southeastern Fergana (in the Uzbek part of the territory) were discovered in the Andijan, South Alamyshik, Khojaabad fields - large oil and gas fields, Palvantash, Western Palvantash - medium oil and gas fields, Boston small oil and gas fields, East Khartoum, Khartoum, Uchtepa, Chakar - very small oil and gas fields, Khojaosman - tiny oil and gas fields, North Alamyshik - not significant oil and gas deposits [12,2019], on structures and squares Kokbulak, Aim, Kurgantepa, Khartoum - Kurutki, Shorkakir, Andijan-Boston, Kurutki, Grunchmazar, East Khojaabad, Eastern Khojaosman, Ailacha, Southern Andijan, Andijan - Sharikhan, Narai, Uchtepa, Chakar, Bulakbashi, Akbulak, Buzaryk, Bagishamol, Eastern Palvantash, Garbiy Khojaosman and others (including wellshydrogeology). Figure 1 shows oil and gas FMV deposits (see Figure No. 1).

The total stock of wells that penetrated Cretaceous deposits is more than 300 wells. The main well stock is located on Khojaabad field (together UGS), South Alamyshik and Khojaosmane.

For Cretaceous deposits, the branch of the Fergana Geophysical expedition" JSC "Uzbekgeofizika" has been prepared for drilling since 1954 year there are only 9 structures (Khojaosman-1954, Aim-1956, Shurkakyr-1962, Western Alamyshik-2000, Kokbulak-2004), Markaziy Avval (2014), Uchtepa (2016), Chakar (2017), Avval (2019) [11].

Of the 9 structures prepared for drilling, 4 have been opened deposits based on Cretaceous deposits - Khojaosman (prepared electrical prospecting work for drilling in 1954 and introduced into development since March 8, 1962 along the XVni-horizon of Lyakan (in operation until 1998), Markaziy Avval (since 2016), Uchtepa (since 2017), Chakar (since 2019).

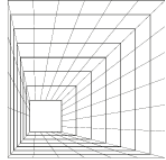
Currently, oil and gas production in the FMV (Fergana intermontane depression) is associated mainly with the Cenozoic (Paleogene, Neogene) and to a lesser extent with Mesozoic (Cretaceous and Jurassic), and in world practice and in western Uzbekistan, reserves and oil and gas production are associated mainly with the Mesozoic (Cretaceous and Jurassic) deposits. For example, we can cite deposits - Urengoy, Samotlor, Medvezhye (Russia), Bolivar (Venezuela), Bolshoy

Burgan (Kuwait), Aghajari (Iran), Bu Hasa, Murban Bab (UAE), White Tiger (Vietnam), Gazli, Kokdumalak (Uzbekistan), etc.

Natural gas from chalk deposits - much needed for Fergana region receives FMV in the central part of the Southern stage at the Khankyz (XVII-horizon), Northern Khankyz (XVIII-horizon) fields horizon, Markaziy Avval (XVni—horizon) - the annual production of which amount to 10-15 million m³/year [12,2019].

Oil from chalk deposits in the southeastern part of South FMV stages are obtained only at the South Alamyshik fields (XVIII, X1X, XX1), Boston (XX-Cretaceous horizon). Daily oil production by wells of these fields is 15.5 t/s or 5.7 thousand tons. oil in year. The Uchtepa and Chakar fields have been in operation since 2016 and 2018.

In addition, in the UGS (underground gas storage) "Khojaabad" from the lower chalk horizons due to cyclic gas injection, residual oil - the initial production of which was about 5 thousand tons per year [12,2019].



As of January 1, 2021, 30 fields have been discovered in the Uzbek part of the FMV oil and gas. Currently only 23 are in operation deposits, and in the southeastern part there are only 10 (deposits Andijan, South Alamyshik, Khojaabad, Palvantash, Western Palwantash, Boston, Khartoum, East Khartoum, Uchtepa and Chakar). The Northern Alamyshik and Khodzhaosman fields have been liquidated.

From the beginning of development until January 1, 2021, oil and gas was obtained in 6 fields in the south-eastern part of Fergana (Southern Alamyshik - XVIII[^] XXII, Boston-XIX[^]XX, Palvantash-XIX[^]XXII, XVIII, Khartoum-XXII, Khojaabad-XIX[^]XXII, Khojaosman-XVIII) - total of 17 oil and gas deposits. Total production since the start of operation from these horizons ranges from 1.5 thousand tons. (XXII, South Alamyshik) up to 416.08 thousand tons (XVIII, South Alamyshik). A total of 1.6 million tons were extracted from these horizons. oil and 2.7 billion m³ of gas. . Commissioned in 2016 and 2018 Uchtepa and Chakar fields.

The entire stock of production wells in chalk deposits in southeastern part of Fergana - more than 15 (1-Boston, 1-Khojaabad, 6-South Alamyshik, wells were put into operation in Uchtepa and Chakare fields) [12,2019]. Currently, oil and gas potential has been established to be almost of the entire Cretaceous section in the southeastern part of Fergana, but these horizons Cretaceous regions are not regionally oil and gas bearing. Most number of clusters oil and gas is located in the Lower Cretaceous, this is due to the regional tire which is located above the XVni-horizon and in the roof of the Jurassic sediments.

In the Cretaceous sediments of the FID, a regional seal is identified (above XVIII-horizon), zonal (above XVI), local, less often zonal (above XVII, XV, XIV, XIII) and only local ones (over XXI, XX, XIX) [2]. Lithology of chalk caps - silty and sandy-silty clays, less often "clean". Thickness of clayey rocks (tires) of Cretaceous deposits on the area of the sedimentation basin is different (see table 1 and Figure No. 2).

Table 1
Thickness of individual formations in the southeastern part of the FMV

№ п/п	Retinue	Power
1.	Muyanskaya	More than 300
2.	Lyakanskaya	80-95
3.	Kyzylpilalskaya	240-350
4.	Kalachinskaya	75-100
5.	Exogyric (oyster)	100-110
6.	Yalovachskaya	90-100
7.	Variegated	300-400

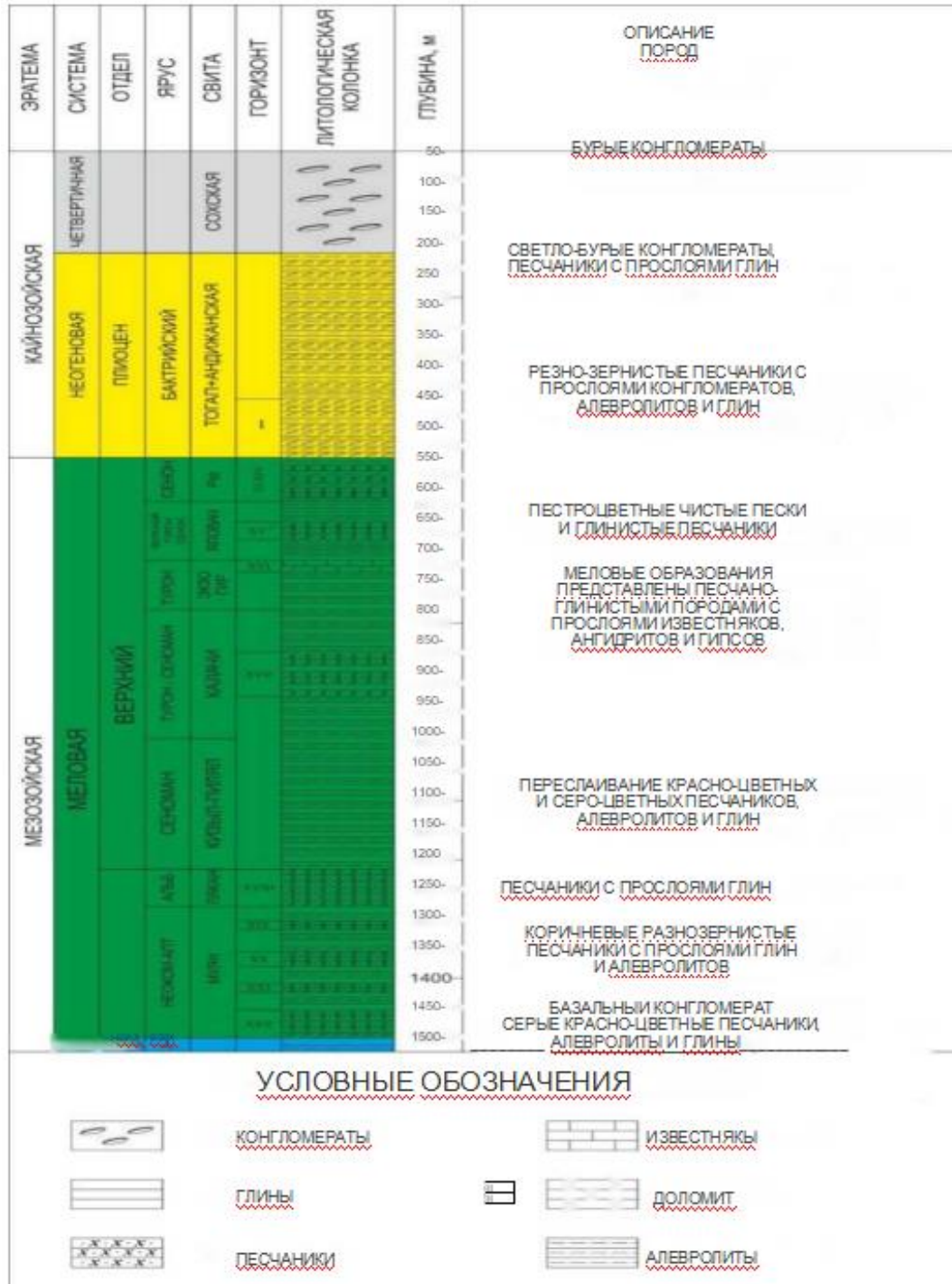
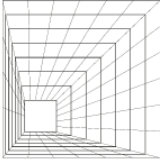
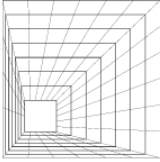


Fig No: 2. Geological and geophysical section of the well of the Uchtepa field.

In the presence of deposits with excess pressure above critical above the cover there are additional horizons: for example - XVIIIa, XVIII6, XVIIIb, XVnr in Khojaabad.

The depth of the roof of the chalk deposits is from 530m (Shorkakyr-1) up to 3497m (Kurutki-2), and the depth of the Cretaceous base sediments from 760 m (Shorkakir-1) to 4160



m (Khartoum-Kurutki-18).

Table 2
Placement of deposits depending on the location of disturbances
in structures.

	Place of Birth	Violation on the wing	Type of problems	Product
1	Western Palvantash	-//-	uplift	no product
2	Palwantaыр	-//-	-//-	gas
3	Andijan	-//-	-//-	no product
4	Khartoum	-//-	-//-	gas and oil
5	Boston	-//-	-//-	oil and gas
6	Northern Alamyshik	-//-	-//-	no product
7	Southern Alamyshik	-//-	-//-	oil
8	Khojaosman	-//-	reset	oil
9	Khojaabad	-//-	Thrust	gas
10	Sharihan	-//-	-//-	gas and oil

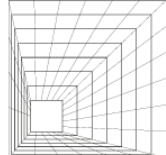


When testing wells of chalk deposits in the south-eastern part Fergana, oil and gas products were discovered in 37 deposits (see table no.3).

Table 3

Horizons You're chalk	Name of deposits								Total horizons tov
	Southern Alamyshik	Boston	Palva ntash	West Palvantash	Khartu m	Khodj aosma n	Andijan	Khojaabad	

	chic			tsh					
X I	-		-	-		-	-	-	0
X II	-			-		-	-	-	1
X III	-			G GP		-	-	-	2
X IV	-			G GP		-	-	-	2
X V	-		H GP			-	-	-	1
X VI	-		H GP	H GP		-	-	-	2
X VII	-		H GP			-	-	-	1
X VIII	•			H GP		H GP		α	5



X IX	•		-	-			-	-	3
X X	α		H GP		Π	α		H GP	6
X XI	•	GP	H GP		Π	α	P GP	H GP	7
X XII	α	GP	H GP			α	G GP	H GP	7
I	5		1	4		5	2	4	3
TOGO			0						7

Условные обозначения: • -in operation for oil.

- liquidated after oil exploitation.

- liquidated after gas production.

OGP - oil and gas manifestation.

GP - gas manifestation.

This table also shows that the accumulation of oil and gas is associated with Lower Cretaceous deposits (XVIII-XXII-ропу3OHTax).

For the first time in 1947, oil-bearing horizons of the Cretaceous were identified in Palvantashe, before that the main horizon was the Paleogene. From 1947 to On October 1, 2015, 17 Cretaceous deposits (horizons) were put into operation sediments, although oil and gas products were discovered in 37 horizons.

Table No. 4 shows the geochronological scale of the Cretaceous sediments of the southeastern part of the Southern stage of the FMV[2].

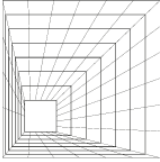


Table 4
Geochronological scale of Cretaceous deposits of the southeastern part South of the FMV step.

Paradise	System	Department	Tier	Retinue	Productive horizons
	M E L	upper -	Senon	Variegated	X1,X11,X III,XIV
			тупон	Jalovacska	XV,XV ^{fl}
		- //-	- //-	Oyster	XVI
		- //-	Cenomanian	Kalachinskaya	XVIF,X VII ⁶ XVII ^B
		- //-	- //-	Kyzylpilalskaya	xvir
		lower	alb	Lyakanskaya	XVIII
		- //-	neocompt	Muyanskaya	XIX-XXII

At the end of the article on Cretaceous deposits of the southeastern Fergana, the following conclusions and recommendations can be made:

1) To increase oil and gas production in the FMV, we recommend increase the volume of seismic survey work in order to prepare structures for drilling in chalk



deposits;

2) To detect productive horizons when seismic survey work, pay special attention to the wings structures;

3) Based on well drilling data, new structural maps will be built along the horizons of Cretaceous deposits (Khojaabad, South Alamyshik, Khojaosman, Boston, Palvantash, etc.);

4). Seismic exploration and drilling of wells first of all need conducts FMV at the Southern stage (shallow depth, almost without AHPD -abnormally high reservoir pressures);

5). During SRR (seismic exploration) and drilling, special pay attention to the Lower Cretaceous deposits (XVII: XXII);

6). Search for new oil and gas resources in Cretaceous deposits

can be done by studying well logs of drilled wells and construction of geological maps (structural maps by horizons Cretaceous deposits, development maps based on total and current selections oil, maps of water cut along the horizons of Cretaceous deposits, longitudinal and transverse profiles, geological and geophysical sections, etc.) for 6 fields in the south-eastern part of Fergana (South Alamyshik, Khojaabad, Boston, Palwantash, Khartoum, Khojaosman).

7).To determine the productivity of chalk deposits in the CFM (which occupies more than 60% of the FMV territory) in the western part (in the area Varyk-P-Besharyk-Kalyamush) after seismic exploration and electrical prospecting work to drill one well in order to determine oil and gas potential of chalk deposits;

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