European Journal of Emerging Technology and Discoveries
ISSN (E): 2938-3617
Volume 2, Issue 9, September - 2024

TECHNICAL AND TECHNOLOGICAL SOLUTIONS TO INCREASE THE PRODUCTIVITY OF OIL AND GAS WELLS

(In the Case of the Tegermen 4 Mine)

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Abstract
This article contains information about wells in the Tegermen mine, their drilling, physical-technological properties of wells, and solutions to their problems. Also, project information and strategic structures of wells are studied.

Keywords: Mine, well, drilling, layer, seismological, well construction, relative gravity, viscosity.

Introduction

The Tegermen mine is administratively located in the Olot district of the Bukhara region of the Republic of Uzbekistan [1]. Tectonically, it is bounded by the north-western bend of the Dengizkol Valley uplift, which is located in the central part of the Chorjui ridge. Along the "-2130 m" closure, the Tegermen mine, the southwestern dome is 1.83 sq. km, the amplitude is 14 m, the northeastern dome is 3.11 sq. km, the amplitude is 6 m [2].

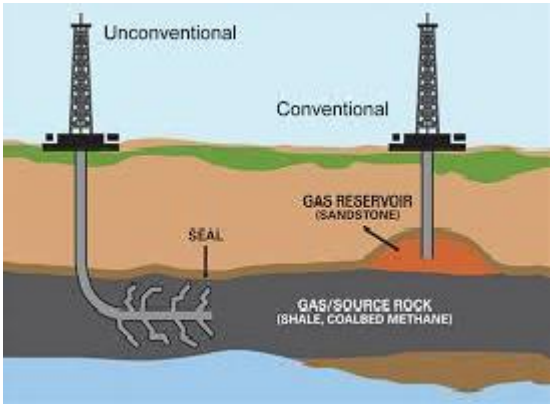

Figure 1. Oil and gas well drilling equipment.

According to the terrigen deposit: along the closing isogypse "-2495 m", the area of the uplift boundary is 11,547 sq. km, the amplitude of the area is 20 m. The dimensions of the lower

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ISSN (E): 2938-3617
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boundary of the layer along the closing isogypse of "-2650 m": the northeastern dome is 2.14 sq. km, the amplitude of the structure is 15 m, the central area is 0.353 sq. km, the amplitude of the area is 5 m, the area of the southwestern dome is 0.254 sq. .km, the amplitude of the field is 5 m.

Prospective hydrocarbon resources of category C_3:

Condensate (extract)-_____,

Gas (dry)-_____ million m^3.

Calculated value of the well _____ (tys. sum) – sum

The 4th exploration well of the Tegermen field is located at the intersection of seismic profiles Cross Line 712 and In Line 165, to clarify the distribution of the field and increase the area of hydrocarbon reserves, the project depth is 3000 m, the project layer is Paleozoic.

Table-1

<table>
<tr><th colspan="2">Project information:</th><th colspan="2">Actual information:</th></tr>
<tr><td colspan="2">The bottom of the well – 3000 м
Layer – Paleozoic
$P_{пл}$ = 249 атм., XVпр-264 атм., $P_{пл}$ = 300 атм. XVIII.</td><td colspan="2">The bottom of the well – м
Layer –
At altitude –189,6 м</td></tr>
<tr><td colspan="2">Well construction:
530 мм x 7 м, be strengthened,
426мм x 50 м, SKB up to the top,
299 мм x 380 м, SKB up to the top,
219 мм x 2320 м, SKB up to the top,
140 мм x 3000 м, SKB up to the top.</td><td colspan="2">Well construction:
530 мм x 7 м, fortified,
426мм x 52 м , SKB up to the top,
299 мм x 398 м, SKB up to the top,
219 мм x 2299 м, SKB up to the top,</td></tr>
<tr><td colspan="2">Drilling has begun - 18.01.2022 й.
Drilling is complete -</td><td colspan="2">Test work has begun:
Completion of construction works:</td></tr>
<tr><td colspan="2">Stratigraphic section</td><td colspan="2">Rapper intermediate layers</td></tr>
<tr><td>Real
Neogene + four. 0-259 м
Paleogene 259-363 м
Сузак 259-292 м
Buxoro 292-363м
Cretaceous period 363- м
Senon 363-626 м
Turon 626-1090 м
Cenomanian 1090-1374 м
Alb 1374-1672 м
Neo+apt 1672- 2040 м
Jurassic period 2040- м
Titan 2040-2294 м
Yuq.ang 2040-2060 м
Yuq.tuz 2060-2220 м
Middle consciousness 2220-2247 м
lower salt 2247-2294 м
lower consciousness 2294-2312 м м</td><td>Project
Neogene + four. 0-70 м
Paleogene 70-370 м
Cretaceous period 370-2060 м
Senon 370-830 м
Turon 830-1160 м
Cenomanian 1160-1380 м
Alb 1380-1700 м
Apt 1700-1780м
Neo+apt 1780-2060 м
Jurassic period 2060-2990 м
Titan 2060-2330 м
Oks+kim. 2330-2550 м
Calloway 2550-2670 м
Walk down 2670-2990 м
Paleozoic 2990-3000 м</td><td>Real
VIII 880-953 м
IX 1146-1212 м
X 1324-1374 м
XI 1420-1476 м
XII 1672-1754м
XIII 1812-1852 м
XIV м
XV м
XVa м
XVI м</td><td>Project
IX 1160-1270 м
X 1285-1380 м
XI 1420-1480 м
XII 1700-1780 м
XIII 1810-1860 м
XIV 1910-2010 м
XVнр 2330-2370 м
XVр 2390-2450 м
XVпр 2470-2550 м
XVa 2550-2600 м
XVI 2600-2670 м
XVII 2690-2760 м
XVIII 2800-2880 м
XIX 2900-2960 м</td></tr>
<tr><td colspan="2"></td><td colspan="2">Clay mixture indicators</td></tr>
<tr><td colspan="2"></td><td colspan="2">1. 0-50 м ; Y=1,12-1,16 г/sm^3; T=40-50 c: B=10-12 $см^3$/30 min.
2. 50-380 м; Y=1,16-1,18 г/sm^3: T=40-50 c: B=8-9 sm^3/30 min</td></tr>
</table>

Oks+kim. м Calloway м **Run sweat м**		**3. 380-2320 м; Y=1,20-,22 g/sm^3; T=40-60 c : B=8-9 sm^3/30 min** **3. 2320-3000 м; Y=1,10-1,16 г/sm^3; T=50-60: B=4-6 см^3/30 min**
Sampling Intervals (Real)		Sampling Intervals (Project)
		2330-2337 м; **2390-2397 м;** **2470-2477 м;** **2700-2707 м;** **2810-2817 м;** **2850-2857 м;** **2910-2917 м;**

Drilling in the well began on 18.01.2024. Drilling in the range of 0-52 m was carried out in a natural clay mixture. A Ø 426 mm extension guide pipe was lowered into the well to a depth of 52 m and cemented up to the wellhead.

Further drilling was carried out in the range of 52-400 m with a mud mixture with the following parameters: specific gravity-1.10-1.12 g/cm^3, viscosity-50-55 s, water yield- 10 cm3/30 min.

23.01.2024 The following types of geophysical research were carried out in the well:

1. St. logging with 2 probes in the range of 400-0 m, PS,
2. Cavernomer+profilomer between 400-0 m,
3. GK+NGK in the range of 400-0 m
4. Inclinometry in the range of 400-0 m.

On 25.01.2023, a Ø 299 mm conductor pipe was lowered into the well to a depth of 398 m, TsKB up to the top. Further drilling was carried out in the interval 398-1558 m with a mud mixture with the following parameters: specific gravity-1.24-1.25 g/cm3, viscosity-60-70 s, water yield- 7 cm3/30 min.

The following types of geophysical research were carried out in the well:

1. St. karataj 2 probes in the range of 398-1558 m, PS.
2. Cavernomer + profilomer in the range of 398-1558 m,
3. Inclinometry in the range of 398-1558 m,
4. GK+NGK in the range of 350-1558 m,
5. ICTs in the range of 398-0 m.

Further drilling was carried out in the 1558 - m interval with a mud mixture with the following parameters: specific gravity - 1.24-1.26 g/cm3, viscosity - 60-70 s, water yield - 7-8 cm3/30 min.

17.04.2024 The following types of geophysical research were carried out in the well:

1. St. karataj 2 probes in the range of 1500-2009 m, PS.
2. Cavernomer + profilomer in the range of 398-2009 m,
3. Inclinometry in the range of 1500-2009 m,
4. GK+NGK in the range of 1500-200 m,
5. 1500-2009 m BKZ s 5th probe IK, BK.

ISSN (E): 2938-3617
Volume 2, Issue 9, September - 2024

Summary

As a result of drilling up to 2000 m as a result of exploration of the wells of the Tegermen mine, their karatage, Cavernomer, profilomer, inclinometry and geophysical research were carried out in the well. The specific gravity of the well is 1.24-1.25 g/cm3, the viscosity is 60-70 s, the water yield is 7 cm3/30 min. Formed.

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