



CASE HISTORY

IMPROVEMENT OF DRILLING PERFORMANCE BY KAZDUCO SERVICES

Country:.....**Kazakhstan**
Area:.....**Atyrau**
Customer:.....**Samek**

OBJECTIVE:

KazDuCo was awarded the project for bitservices.
The objective is to improve performance, hole quality and optimize the process of bit/ BHA selection.
For this purpose KazDuCo uses their bits and experienced field engineers.

EXECUTION:

Since August 2012 the wells that are shown in table 1 below are drilled.
The well TD's were between 1000 – 1100 mAH and were drilled in 12 1/4" and 8 1/2" hole size. The 12 1/4" section was drilled with 4 bladed PDC and tricones, and the 8 1/2" section with PDC's.

The wells drilled showed improved drilling performance compared to the offset wells.
Table 2 shows the offset wells.
Table 1 shows the performance of wells drilled with KazDuCo Services, the ROP was doubled.
The 8 1/2" sections are now drilled in one run from shoe-to-shoe where multiple runs were needed in the past.
Table 5 shows a breakdown of the interval per formation type.

8 1/2" KDC568M

8 1/2" KDC657MX





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Table 1 Well drilled with KazDuCo Services in August – December 2012

Well	Well type	Size	Depth in / Depth out	Interval	Drilling hours	Av.ROP	Reason of Pull out	Size	Depth in / Depth out	Interval	Drilling hours	Av.ROP	Reason of Pull out	Total interval	Total ROP
BCHW-1	Vertical	12 1/4"	28-350	322	24.1	12.9	TD	8 1/2"	338-1430	1092	33.8	32.3	TD	1414	24.4
DOSNW-1	Vertical	12 1/4"	24-351	327	14.2	23	TD	8 1/2"	332-1334	1002	25.1	39.9	TD	1329	33.8
ESKN-1	Vertical	12 1/4"	29-357	328	16.2	20.2	TD	8 1/2"	357-1507	1150	44.5	25.8	TD	1478	24.3
TOLW-1	Vertical	12 1/4"	29-366	337	13.5	24.9	TD	8 1/2"	366-1540	1174	39.1	30	TD	1511	28.7
BSBN-1	Deviated KOP 583m	12 1/4"	28-340	312	11.7	26.6	TD	8 1/2"	340-1328	988	83.2	8.9	TD	1300	13.7

Table 2 Offset wells drilled prior to the use of KazDuCo Services

Well	Well type	Size	Bits used	Depth in / Depth out	Interval	Drilling hours	Av.ROP	Reason of Pull out	Size	Bits used	Depth in / Depth out	Interval	Drilling hours	Av.ROP	Reason of Pull out
BOR-3	Vertical	12 1/4"	1	41-559	518	37	14	TD	8 1/2"	4	542-891	331	20	16.6	HR
											891-1420	520	71	7.3	HR
											1535-1688	153	34	4.5	TD
											1570-1589	19	3.2	5.9	TD
BOR-1	Vertical	12 1/4"	2	45-430 430-726	385 296	33.2 47	11.6 6.3	TQ TD	8 1/2"	3	726-852	126	15.3	8.2	BHA
											852-1755	903	85.3	10.6	TD
											1755-1755	-	-	-	BHA
											550-919	369	58.7	6.3	PR
BOR-2	Vertical	12 1/4"	1	53-550	497	52.5	9.5	TD	8 1/2"	3	919-1403	484	31.9	15.2	PR
											1403-1760	357	44.8	7.9	TD
											430-874	443	46.2	9.6	HR
ZMA-A15	Deviated	12 1/4"	1	52-430	378	28.6	13.2	TD	8 1/2"	3	874-1271	397	36.6	10.8	HR
											1271-1525	254	54.4	4.7	HR

Table 3 Top 2 of total meters drilled per bit for Vertical wells

Bit type	Total meters drilled	ROP	Number of well per bit	Drilled wells
8 1/2"KDC657MX s/n 121157	2094	35.5	2	BCHW-1; DOSNW-1
8 1/2"KDC657MX s/n 121462	2324	27.8	2	ESKN-1; TOLW-1

Table 4 Top 2 of total meters drilled per bit for Deviated wells

Bit type	Total meters drilled	ROP	Number of well per bit	Drilled wells
12 1/4" KDC648M s/n101348	312	26.6	1	BSBN-1
8 1/2"KDC568M s/n121463	988	8.9	1	BSBN-1



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Table 5 ROP for Formation intervals

Well	Bit	Formation	From / to	Interval	ROP	
BCHW-1	12 1/4 " GTX-G3	Cretaceous	24-256	228	10.9	
	12 1/4 " MXL-C18		256-350	94	29.2	
	8 1/2" KDC657MX		350-720	370	32	
			Base J-3 Limestone	720-875	155	25
			Middle Jurassic	875-1137	262	27
			Base Jurassic	1137-1231	94	30
			Triassic Marker	1231-1442	211	29
			Top Kungurian Salt	1442-1462	20	30
DSNW-1	12 1/4 " MXL-C18	Cretaceous	24-351	327	23	
	8 1/2" KDC657MX		351-642	291	60	
			Base J-3 Limestone	642-1139	497	40
			Base Jurassic	1139-1178	39	37
			Triassic	1178-1355	177	39
			Top Kungurian Salt	1355-1375	20	15
ESKN-1	12 1/4 " MXL-C18	Cretaceous	28-357	329	23	
	8 1/2" KDC657MX		357-767	440	45	
			Upper Jurassic	767-895	128	41
			Middle Jurassic	895-1153	258	40
			Base Jurassic	1153-1266	113	40
			Triassic	1266-1505	239	25
			Top Kungurian Salt	1505-1507	2	25
BSBN-1	12 1/4" KDC648M	Cretaceous	28-340	312	26	
	8 1/2" KDC568MX		340-675	325	22.5	
			Middle Jurassic	675-716	41	12
			Triassic Marker	716-1154	438	10
			Base Jurassic	1154-1213	59	9
			Triassic Marker	1213-1287	74	9
			Top Kungurian salt	1287-1328	41	9

CONCLUSION:

The objective was met. The performance is optimized and is still ongoing. The best PDC for the 8 1/2" vertical sections is the KDC657MX. Besides the increased ROP, it can drill multiple wells prior to repair. The best bit for the directional sections is the KDC568MX. The bit showed very good steerable performance. There were no hanging problems or problems with toolface control.