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MS Directional Survey Data Certification

MS Directional Job Number: DDMO-180602
Survey Type: MWD
Operating Company: ConocoPhillips Company
Well Name & Number: Zia Hills 25E FED COM 403H
Location: Lea County, NM
API Number: 30-025-43377
Tie In Depth: Surface
Surveyed Depths: 205' – 4,766' MD
Projected TD Survey: 4,825' MD
Dates Performed: 06/28/2018 – 07/13/2018

I certify that the data is true, correct and complete and within the limitations of the tool set forth by MS Directional; that I am authorized and qualified to make this report and that I have reviewed this report and find it conforms to the principles and procedures as set forth by MS Directional.

Fallon Kosechata

Digitally signed by: _____

MWD Surveyor Name: Fallon Kosechata

Date: 09-07-2018

Email: fkosechata@msdir.com

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SURVEY CALCULATION PROGRAM

9/7/18 12:03

V09.04.02

Company:	ConocoPhillips Company	Magnetic Declination:	6.54	REFERENCED TO GRID NORTH
Well Name:	Zia Hills 25E FED COM 403H			
Location:	Lea County, NM			
Rig:	Nabors #891			
Job Number:	DDMO-180602			
API #:	30-026-43377			

Vertical Section Azimuth:	179.60	Proposed Direction:	179.60
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Survey Calculation Method:		Minimum Curvature									
PTB:	MD	INC	AZM	TVD	N/S	E/W	VS				
	4,825	1	190.9	4824.24	-11.98	8.84	12.04				
#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
TIE IN	0	0.00	0.00	0.00	0.00	0.00		0.00			
1	205	1.00	309.12	204.99	1.13	-1.39	-1.14	1.79	309.12	0.49	0.49
2	393	1.30	314.60	392.95	3.66	-4.18	-3.69	5.56	311.22	0.17	0.16
3	582	1.10	301.03	581.91	6.10	-7.26	-6.15	9.48	310.04	0.18	-0.11
4	771	1.10	292.67	770.88	7.74	-10.49	-7.81	13.03	306.41	0.08	0.00
5	872	1.30	286.43	871.85	8.43	-12.48	-8.52	15.06	304.05	0.24	0.20
6	976	1.40	294.16	975.82	9.29	-14.77	-9.39	17.45	302.16	0.20	0.10
7	1,067	1.10	284.76	1066.80	9.97	-16.63	-10.08	19.39	300.93	0.40	-0.33
8	1,161	1.20	294.03	1160.78	10.60	-18.40	-10.72	21.24	299.93	0.22	0.11
9	1,255	1.60	174.38	1254.77	9.69	-19.17	-9.82	21.48	296.81	2.58	0.43
10	1,350	1.80	172.49	1349.73	6.89	-18.85	-7.02	20.07	290.08	0.22	0.21
11	1,445	1.60	182.59	1444.69	4.09	-18.71	-4.22	19.16	282.32	0.38	-0.21
12	1,539	1.70	183.20	1538.65	1.38	-18.85	-1.52	18.90	274.20	0.11	0.11
13	1,633	0.60	128.76	1632.63	-0.32	-18.55	0.19	18.55	269.02	1.53	-1.17
14	1,728	0.40	101.06	1727.63	-0.69	-17.83	0.57	17.85	267.78	0.32	-0.21
15	1,822	0.50	100.23	1821.62	-0.83	-17.11	0.71	17.13	267.23	0.11	0.11
16	1,917	0.40	65.95	1916.62	-0.77	-16.40	0.65	16.41	267.33	0.30	-0.11
17	2,011	0.40	61.99	2010.62	-0.48	-15.81	0.37	15.81	268.27	0.03	0.00
18	2,105	0.20	132.58	2104.62	-0.43	-15.40	0.33	15.40	268.38	0.41	-0.21
19	2,200	0.10	265.71	2199.62	-0.55	-15.36	0.45	15.37	267.94	0.29	-0.11
20	2,294	0.30	197.40	2293.62	-0.79	-15.51	0.69	15.53	267.07	0.30	0.21
21	2,388	0.10	324.63	2387.62	-0.96	-15.63	0.85	15.66	266.48	0.39	-0.21
22	2,482	0.10	257.78	2481.62	-0.91	-15.76	0.80	15.79	266.69	0.12	0.00
23	2,577	0.10	189.14	2576.61	-1.01	-15.85	0.90	15.89	266.35	0.12	0.00
24	2,671	0.20	68.81	2670.61	-1.03	-15.71	0.92	15.75	266.24	0.28	0.11
25	2,766	0.80	87.44	2765.61	-0.94	-14.90	0.84	14.93	266.37	0.65	0.63
26	2,860	1.20	95.83	2859.60	-1.01	-13.26	0.92	13.30	265.63	0.45	0.43
27	2,955	1.30	92.02	2954.57	-1.15	-11.20	1.08	11.26	264.12	0.14	0.11
28	3,049	1.30	90.93	3048.55	-1.21	-9.06	1.15	9.14	262.41	0.03	0.00
29	3,144	1.40	91.53	3143.52	-1.26	-6.83	1.21	6.94	259.57	0.11	0.11
30	3,239	2.00	90.71	3238.48	-1.31	-4.01	1.28	4.22	251.92	0.63	0.63
31	3,333	0.90	122.54	3332.45	-1.73	-1.75	1.71	2.46	225.34	1.41	-1.17
32	3,428	0.40	111.77	3427.44	-2.25	-0.81	2.24	2.39	199.78	0.54	-0.53
33	3,523	0.40	70.27	3522.44	-2.26	-0.19	2.26	2.27	184.79	0.30	0.00



SURVEY CALCULATION PROGRAM

9/7/18 12:03

V09 04.02

Company:

Well Name:

Location:

Rig:

Job Number:

API #:

ConocoPhillips Company

Zia Hills 25E FED COM 403H

Lea County, NM

Nabors #891

DDMO-180602

30-025-43377

Magnetic Declination:

6.54

REFERENCED TO GRID NORTH

Vertical Section Azimuth:

179.60

Proposed Direction:

179.60

Survey Calculation Method:

Minimum Curvature

PTB:	MD	INC	AZM	TVD	N/S	E/W	VS
	4,825	1	190.9	4824.24	-11.98	8.84	12.04

#	Depth Feet	Inc Degrees	Azm Degrees	TVD Feet	N/S Feet	E/W Feet	Surface Vert Sec	Closure Distance	Azm	DLS/ 100	BUR/ 100'
34	3,616	0.50	37.87	3615.44	-1.83	0.37	1.83	1.87	168.72	0.29	0.11
35	3,711	0.30	30.21	3710.44	-1.29	0.74	1.29	1.49	149.98	0.22	-0.21
36	3,805	0.40	316.22	3804.44	-0.84	0.64	0.84	1.06	142.61	0.46	0.11
37	3,900	0.10	280.58	3899.43	-0.59	0.33	0.59	0.67	150.52	0.34	-0.32
38	3,994	0.50	113.09	3993.43	-0.73	0.63	0.74	0.96	139.36	0.64	0.43
39	4,089	0.70	110.35	4088.43	-1.10	1.55	1.11	1.90	125.20	0.21	0.21
40	4,184	1.00	109.50	4183.42	-1.57	2.88	1.59	3.28	118.67	0.32	0.32
41	4,278	1.70	112.81	4277.39	-2.39	4.94	2.42	5.48	115.81	0.75	0.74
42	4,373	2.40	123.06	4372.33	-4.02	7.90	4.07	8.87	116.96	0.83	0.74
43	4,467	1.00	166.31	4466.29	-5.89	9.75	5.96	11.39	121.15	1.92	-1.49
44	4,562	1.00	198.69	4561.28	-7.48	9.68	7.55	12.23	127.71	0.59	0.00
45	4,657	1.00	186.37	4656.26	-9.09	9.32	9.16	13.02	134.29	0.23	0.00
46	4,766	1.00	190.96	4765.24	-10.97	9.03	11.03	14.21	140.53	0.07	0.00
PTB:	4,825	1.00	190.90	4824.24	-11.98	8.84	12.04	14.89	143.58	0.00	0.00

V
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A
L

Please find the attached data set for Zia Hills 25E Federal Com 403H - Nabors 891

	MD(ft)	Inc (°)	AZM (°)	TVD (ft)	VS (ft)	DLS (°/100)
Survey	17773	88.54	175.91	10640.26	7160.50	0.00
PTB	17826	88.54°	175.91°	10641.61	7213.37	0.00

Ahead/Behind:	0.00 ft Ahead
Right/Left:	50.00 ft Left
Bottom Hole Temp:	185.0° F
Separation:	na

DD1: Nathan Adams 661-865-6186
 DD2: Scott Fischer 936-234-9283
 MWD1: Lindsey Cantrell 979-676-1511
 MWD2: Anthony Thigpen 903-721-7877



Subject Vertical: Zia Hills 25E Federal Com 403H - Nabors 891 - Survey MD 17773 Inc 88.54 A:

C
U
R
V
E

Please find the attached data set for Zia Hills 25E Federal Com 403H - Nabors 891

	MD(ft)	Inc (°)	AZM (°)	TVD (ft)	VS (ft)	DLS (°/100)
Survey	17773	88.54	175.91	10640.26	7160.50	0.00
PTB	17826	88.54°	175.91°	10641.61	7213.37	0.00

Target TVD:	10664.0° F
Ahead/Behind:	0.00 ft Ahead
Left/Right:	50.00 ft Left
Bottom Hole Temp:	185.0° F
Slide Seen / Unseen:	-13.7 ft / 0 ft
Motor Yield/ Need to Land:	0 / 0

DD1: Nathan Adams 661-865-6186
 DD2: Scott Fischer 936-234-9283
 MWD1: Lindsey Cantrell 979-676-1511
 MWD2: Anthony Thigpen 903-721-7877



Subject Curve: Zia Hills 25E Federal Com 403H - Nabors 891 - Survey MD 17773 Inc 88.54 A:

L
A
T
E

Please find the attached data set for Zia Hills 25E Federal Com 403H - Nabors 891

	MD(ft)	Inc (°)	AZM (°)	TVD (ft)	VS (ft)	DLS (°/100)
Survey	17773	88.54	175.91	10640.26	7160.50	0.00
PTB	17826	88.54	175.91	10641.61	7213.37	0.00

Target TVD:	10664
Bottom Hole Temp:	185.0° F

L R A L	Above/Below at the Bit:	22.00 ft Above
	Left/Right at the Bit:	50.00 ft Left
	Above/Below Geo Target:	13.70 ft Behind

DD1: Nathan Adams 661-865-6186
DD2: Scott Fischer 936-234-9283
MWD1: Lindsey Cantrell 979-676-1511
MWD2: Anthony Thigpen 903-721-7877



Subject Lateral: Zia Hills 25E Federal Com 403H - Nabors 891 - Survey MD 17773 Inc 88.54 A:

Well:	Zia Hills 25E Federal Com 403H
Rig:	Nabors 891
DD1:	Nathan Adams 661-865-6186
DD2:	Scott Fischer 936-234-9283
MWD1:	Lindsey Cantrell 979-676-1511
MWD2:	Anthony Thigpen 903-721-7877
Target TVD:	10664.0° F

REF TO PLAN # 3

Temp:	185.0° F
Ahead/Behind (+/-):	0.00 ft Ahead
Above/Below (+/-):	22.00 ft Ahead
Right/Left (+/-):	50.00 ft Behind
Slide Seen:	13.70 ft Behind
Slide Unseen:	0.00 ft Ahead
MY:	0.00 ft Ahead
DLN:	0.00 ft Ahead

PTB Inc:	88.54°
PTB Azm:	175.91°

Separation:	na
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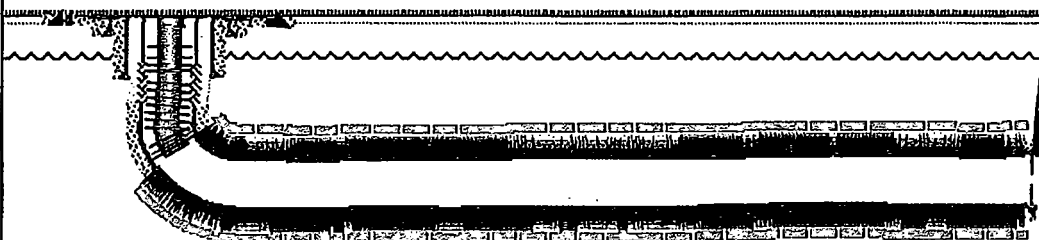


Schematic - Current

ZIA HILLS 25E 403H

District PERMIAN UNCONVENTIONAL	Field Name RED HILLS WEST	API / UWI 3002543377	County LEA	State/Province NEW MEXICO
Original Spud Date 6/29/2018	Surface Legal Location 025-026S-032E	East/West Distance (ft) 2,310.00	East/West Reference FEL	North/South Distance (ft) 316.00
				North/South Reference FNL

HORIZONTAL, Original Hole, 10/28/2019 10:15:47 AM

MD (ftKB)	TVD (ftKB)	Directional schematic (actual)		
4,538.4	4,537.7			
10,284.1	10,256.2			
10,601.0	10,506.4			
10,842.8	10,828.7			
11,103.0	10,669.3			
11,345.1	10,871.0			
11,605.0	10,876.2			
11,847.1	10,874.0			
12,107.0	10,861.8			
12,349.1	10,661.3			
12,608.9	10,662.7			
12,851.0	10,665.2			
13,110.9	10,661.9			
13,353.0	10,855.6			
13,612.9	10,853.6			
13,855.0	10,853.6			
14,115.2	10,852.8			
14,357.0	10,852.5			
14,617.1	10,852.4			
14,858.9	10,848.9			
15,119.1	10,843.8			
15,360.9	10,636.2			
15,621.1	10,629.4			
15,862.9	10,626.8			
16,123.0	10,626.6			
16,385.2	10,831.6			
16,626.0	10,838.1			
16,867.1	10,837.0			
17,127.0	10,842.7			
17,369.1	10,839.2			
17,709.3	10,835.4			

Float Collar; 17,708.4-17,709.5; 1.10; 5.500;...

Casing joint; 17,709.5-17,751.9; 42.43; 5.500;...

Float shoe; 17,751.9-17,753.7; 1.79; 5.500;...

Note: Directional schematic does not correlate to other tracks.