

Results of Directional Survey

API number:	30-005-29209		
OGRID:		Operator:	CIMAREX ENERGY CO
		Property:	SAN JACINTO 4 FEDERAL COM # 4H

surface	ULSTR:	M	04	T 15S	R 31E
				330 FSL	330 FWL

BH Loc	ULSTR:	P	04	T 15S	R 31E
13038	MD	8734.2	TVD	387 FSL	385 FEL
					4895 FWL

Top Perf/OH	ULSTR:	M	04	T 15S	R 31E
9183	MD	8294.3	TVD	369 FSL	1044 FWL

Bot Perf/OH	ULSTR:	P	04	T 15S	R 31E
12978	MD	8734.2	TVD	388 FSL	444 FEL
					4836 FWL

	MD	N/S	E/W	VD
	9178	39.74	708.52	8270.58
TOP PERFS/OH	9183	39.44	713.51	8294.27
	9273	33.98	803.34	8720.74
	12883	58.58	4410.50	8734.22
BOT PERFS/OH	12978	57.92	4505.87	8734.21
	12978	57.92	4505.87	8734.21

NEXT TO LAST	12998	57.68	4525.50	8734.20
LAST READING	13038	57.06	4565.49	8734.18
TD	13038	57.06	4565.49	8734.18

Surface Location	330	FS	330	FW
Projected BHL	387	FS	4895	FW
Location of				
Top Perfs/OH	369	FS	1044	FW
Bottom Perfs/OH	388	FS	4836	FW

SUMMARY of Subsurface Locations

Surface Location	M-04-15S-31E	330	FS	330	FW	Vert. Depth
Top Perfs/OH	M-04-15S-31E	369	FS	1044	FW	8294.27
Bottom Perfs/OH	P-04-15S-31E	388	FS	4836	FW	8734.21
Projected TD	P-04-15S-31E	387	FS	4895	FW	8734.18

SEP 25 2014

Reservoir Development

PathFinder, a Schlumberger Company
9200 West Reno Avenue
Oklahoma City, Oklahoma 73127 USA
Phone: (405) 789-1515
Fax: (405) 789-1519



May 10, 2014

HOBBS OCD

Cimarex
600 N MARIENFELD STREET SUITE 600
MIDLAND ,TX 79701

SEP 11 2014

RECEIVED

Re:

Sec 4, T15S, R31E Chaves NM
N 33.03855 W 103.83434

CLIENT: Cimarex Energy Co.
WELL: San Jacinto 4 Federal Com 4H-ST01
FIELD: Abo Wildcat
RIG: Cactus 104
COUNTY: Chaves
API NO: 30-005-29209-01
JOB NO: 14MLD0370

Enclosed, please find the original copy of the survey performed on the referenced well by PathFinder, a division of Schlumberger Technology Corporation .
Other information required by your office is as follows.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Jesse White MWD	San Jacinto 4 Federal Com 4H-ST01 Side Track	8153.00 Ft to 12998.00 Ft	April 29, 2014 to May 10, 2014	SlimPulse

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Joseph Hogan
Field Service Manager

Reservoir Development

PathFinder, a Schlumberger Company
9200 West Reno Avenue
Oklahoma City, Oklahoma 73127 USA
Phone: (405) 789-1515
Fax: (405) 789-1519

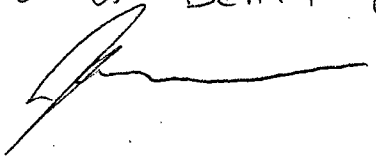
Well Reference:

Sec 4, T15S, R31E Chaves NM
N 33.03855 W 103.83434

I, Jesse White certify that; I am employed by PathFinder, a division of Schlumberger Technology Corporation; that I did on the day(s) of April 29, 2014 through May 10, 2014, conduct or supervise the taking of the SlimPulse surveys from a depth of 8153.00 feet to a depth of 12998.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Cimarex Energy Co. for the San Jacinto 4 Federal Com 4H-ST01 Well (Side Track) API No. 30-005-29209-01 and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

SIGNED ON BEHALF OF JESSE WHITE BY JOE HOGAN

By
Jesse White
MWD



Subscribed and Sworn to before me this 9th day of Aug~~o~~September (month) 2014 (yr)

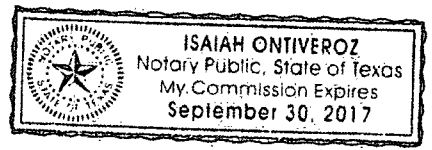
My Commission expires:

9/30/17

Isaiah Ontiveroz
Notary Public

(signature)

Ector, Texas
(County State)



Client: Cimarex Energy Co.
Field: Abo Wildcat
Well: San Jacinto 4 Federal Com
API number: 30-005-29209-01
Engineer: J White
Total accepted surveys: 70
MD of first survey: 8153.00 ft
MD of last survey: 12998.00 ft
Latitude: 33° 2' 18.778" N
Longitude: 103° 50' 3.64" W

Survey calculation methods: Minimum curvature
Method for positions: Lubinski
Method for DLS: Lubinski

Depth reference: MSL
Permanent datum: MSL
Depth reference: Driller's Depth
4433.00
GL above permanent: 4433.00
KB above permanent: 4453.00
DF above permanent: 4453.00

Vertical section origin: Latitude (+N/S): 0.00 ft
Departure (+E/W): 0.00 ft

Grid Coordinates: MAD27 Texas State Plane, Central Zone, US Feet
X: 694250.00 ft
Y: 741924.80 ft

Azimuth from Vsect Origin to target: 89.22 degrees

-----MWD Survey Reference Criteria-----

Run1-----
Calculation Date: 27-Apr-2014
Location G.: 998.94325 mgn
Tolerance G.: 2.50 mgn
Location B.: 48758.29 NT
Tolerance B.: 300.00 NT
Magnetic Dip: 60.8117 degrees
Tolerance Dip: 0.45 degrees

Run2-----
Calculation Date: 2-May-2014
Location G.: 998.94325 mgn
Tolerance G.: 2.50 mgn
Location B.: 48756.69 NT
Tolerance B.: 300.00 NT
Magnetic Dip: 60.8113 degrees
Tolerance Dip: 0.45 degrees

Run3-----
Calculation Date: 4-May-2014
Location G.: 998.94325 mgn
Tolerance G.: 2.50 mgn
Location B.: 48756.05 NT
Tolerance B.: 300.00 NT
Magnetic Dip: 60.8112 degrees
Tolerance Dip: 0.45 degrees

Run4-----
Calculation Date: 7-May-2014
Location G.: 998.94325 mgn
Tolerance G.: 2.50 mgn
Location B.: 48755.08 NT
Tolerance B.: 300.00 NT
Magnetic Dip: 60.8109 degrees
Tolerance Dip: 0.45 degrees

BGM Model: 2013

Run1-----
Magnetic dec (+E/W): 7.5402 degrees
Grid Conv (+E/W): 0.2702 degrees
Total Azim Corr (+E/W): 7.27 degrees

Run2-----
Magnetic dec (+E/W): 7.5387 degrees
Grid Conv (+E/W): 0.2687 degrees
Total Azim Corr (+E/W): 7.27 degrees

Run3-----
Magnetic dec (+E/W): 7.5381 degrees
Grid Conv (+E/W): 0.2681 degrees
Total Azim Corr (+E/W): 7.27 degrees

Run4-----
Magnetic dec (+E/W): 7.5372 degrees
Grid Conv (+E/W): 0.2672 degrees
Total Azim Corr (+E/W): 7.27 degrees

0 = Uncorrected 1 = Sag Corrected
 2 = DMAG Corrected 3 = Sag + DMAG Corrected

Survey Correction Index Description

Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V-Sec (ft)	N/S (ft)	E/W (ft)	Closure (ft)	at Azi (deg)	DIS (deg/100ft)	Tool	Correction
1	0.00	0.00	0.00	-999.25	0.00	0.00	0.00	0.00	0	90.00	0.00	Tip	0
2	92.00	0.79	286.51	92.00	92.00	-0.61	0.18	-0.61	0.63	286.51	0.86	Other	0
3	183.00	0.31	308.40	91.00	182.99	-1.40	0.51	-1.40	1.49	290.03	0.57	Other	0
4	271.00	0.31	218.49	88.00	270.99	-1.73	0.47	-1.74	1.8	285.23	0.50	Other	0
5	340.00	0.09	153.49	69.00	339.99	-1.83	0.28	-1.83	1.85	278.65	0.41	Other	0
6	377.00	0.22	298.82	37.00	376.99	-1.87	0.29	-1.88	1.9	278.68	0.81	Other	0
7	467.00	0.40	274.91	90.00	466.99	-2.34	0.40	-2.34	2.38	279.61	0.24	Other	0
8	583.00	0.31	231.89	116.00	582.99	-2.99	0.24	-2.99	3	274.54	0.24	Other	0
9	708.00	0.31	245.38	135.00	707.99	-3.57	-0.11	-3.57	3.57	268.20	0.06	Other	0
10	833.00	0.31	231.80	135.00	832.98	-4.15	-0.46	-4.14	4.17	263.64	0.06	Other	0
11	928.00	0.31	240.68	95.00	927.98	-4.58	-0.75	-4.57	4.63	260.71	0.05	Other	0
12	1023.00	0.31	239.80	95.00	1022.98	-5.03	-1.00	-5.01	5.11	258.70	0.01	Other	0
13	1118.00	0.40	279.48	95.00	1117.98	-5.58	-1.08	-5.56	5.66	259.05	0.27	Other	0
14	1214.00	0.09	246.79	96.00	1213.98	-5.97	-1.05	-5.96	6.05	260.00	0.34	Other	0
15	1308.00	0.09	251.31	94.00	1307.98	-6.11	-1.10	-6.10	6.2	259.74	0.01	Other	0
16	1403.00	0.22	257.90	95.00	1402.98	-6.36	-1.17	-6.35	6.45	259.59	0.14	Other	0
17	1498.00	0.31	242.30	95.00	1497.98	-6.77	-1.32	-6.75	6.88	258.91	0.12	Other	0
18	1593.00	0.31	247.80	95.00	1592.98	-7.24	-1.54	-7.22	7.38	257.96	0.03	Other	0
19	1687.00	0.40	252.02	94.00	1686.97	-7.79	-1.74	-7.77	7.96	257.39	0.10	Other	0
20	1783.00	0.40	273.90	96.00	1782.97	-8.44	-1.82	-8.42	8.61	257.82	0.16	Other	0
21	1878.00	0.22	228.59	95.00	1877.97	-8.91	-1.92	-8.89	9.09	257.83	0.31	Other	0
22	1974.00	0.09	113.19	96.00	1973.97	-8.98	-2.07	-8.96	9.19	257.00	0.28	Other	0
23	2068.00	0.22	21.30	94.00	2067.97	-8.85	-1.93	-8.82	9.03	257.67	0.26	Other	0
24	2153.00	0.31	19.02	95.00	2152.97	-8.69	-1.52	-8.67	8.8	260.09	0.10	Other	0
25	2258.00	0.31	60.02	95.00	2257.97	-8.38	-1.14	-8.37	8.44	262.21	0.23	Other	0
26	2353.00	0.40	6.90	95.00	2352.97	-8.11	-0.69	-8.10	8.13	265.16	0.34	Other	0
27	2448.00	0.31	352.39	95.00	2447.96	-8.10	-0.10	-8.10	8.1	269.27	0.13	Other	0
28	2543.00	0.31	52.42	95.00	2542.96	-7.92	0.31	-7.93	7.93	272.23	0.33	Other	0
29	2630.00	0.31	98.60	87.00	2629.96	-7.50	0.42	-7.51	7.52	273.18	0.28	Other	0
30	2733.00	0.31	61.69	103.00	2732.96	-6.98	0.51	-6.99	7.01	274.15	0.19	Other	0
31	2828.00	0.09	84.32	95.00	2827.96	-6.68	0.64	-6.69	6.72	275.44	0.24	Other	0
32	2923.00	0.22	283.39	95.00	2922.96	-6.78	0.69	-6.79	6.83	275.77	0.32	Other	0
33	3017.00	0.31	88.01	94.00	3016.96	-6.40	0.74	-6.41	6.75	276.27	0.46	Other	0
34	3112.00	0.40	6.71	95.00	3111.96	-6.40	1.08	-6.42	6.51	279.51	0.59	Other	0
35	3206.00	0.22	358.32	94.00	3205.96	-6.36	1.58	-6.38	6.58	283.91	0.20	Other	0
36	3302.00	0.48	30.40	96.00	3301.96	-6.13	2.10	-6.16	6.31	288.80	0.34	Other	0
37	3397.00	0.40	34.31	95.00	3396.95	-5.73	2.71	-5.77	6.38	295.17	0.09	Other	0
38	3491.00	0.31	30.09	94.00	3490.95	-5.43	3.22	-5.48	6.35	300.42	0.10	Other	0
39	3586.00	0.48	12.29	95.00	3585.95	-5.21	3.83	-5.26	6.51	306.02	0.22	Other	0
40	3681.00	0.48	13.48	95.00	3680.94	-5.02	4.60	-5.09	6.86	312.14	0.01	Other	0
41	3776.00	0.40	350.41	95.00	3775.94	-4.98	5.32	-5.05	7.33	316.48	0.20	Other	0
42	3868.00	0.31	6.10	92.00	3867.94	-5.00	5.88	-5.08	7.77	319.20	0.14	Other	0
43	3963.00	0.48	10.01	95.00	3962.94	-4.89	6.53	-4.98	8.21	322.67	0.18	Other	0
44	4058.00	0.48	5.09	95.00	4057.93	-4.77	7.32	-4.87	8.79	326.32	0.04	Other	0
45	4152.00	0.48	12.51	94.00	4151.93	-4.64	8.09	-4.75	9.39	329.57	0.07	Other	0
46	4247.00	0.48	4.30	95.00	4246.93	-4.52	8.88	-4.64	10.02	332.41	0.07	Other	0
47	4343.00	0.62	6.19	96.00	4342.92	-4.42	9.80	-4.55	10.8	335.07	0.15	Other	0
48	4438.00	0.62	351.20	95.00	4437.92	-4.43	10.81	-4.58	11.74	337.07	0.15	Other	0
49	4533.00	0.48	350.19	95.00	4532.91	-4.56	11.71	-4.72	12.63	338.05	0.15	Other	0
50	4628.00	0.62	10.80	95.00	4627.91	-4.52	12.61	-4.69	13.46	339.59	0.25	Other	0
51	4723.00	0.62	12.90	95.00	4722.90	-4.30	13.62	-4.48	14.34	341.78	0.02	Other	0
52	4818.00	0.70	3.29	95.00	4817.90	-4.13	14.70	-4.33	15.32	343.57	0.14	Other	0
53	4913.00	0.62	1.79	95.00	4912.88	-4.07	15.79	-4.28	16.36	344.82	0.09	Other	0
54	5008.00	1.41	42.48	95.00	5007.88	-3.25	17.17	-3.48	17.52	348.54	1.08	Other	0
55	5103.00	1.01	8.30	95.00	5102.86	-2.31	18.86	-2.57	19.03	352.24	0.85	Other	0
56	5198.00	0.88	2.58	95.00	5197.84	-2.14	20.41	-2.42	20.56	353.25	0.03	Other	0
57	5292.00	0.88	4.21	94.00	5291.83	-2.03	21.86	-2.33	21.98	353.91	0.03	Other	0
58	5387.00	0.88	3.51	95.00	5386.82	-1.91	23.31	-2.23	23.42	354.53	0.01	Other	0
59	5482.00	1.01	352.69	95.00	5481.81	-1.95	24.87	-2.29	24.98	354.73	0.23	Other	0
60	5577.00	0.88	353.18	95.00	5576.80	-2.13	26.42	-2.49	26.54	354.62	0.14	Other	0
61	5673.00	1.01	348.08	96.00	5672.78	-2.37	27.98	-2.75	28.12	354.39	0.16	Other	0
62	5768.00	0.79	338.81	95.00	5767.77	-2.76	29.41	-3.16	29.58	353.87	0.28	Other	0
63	5863.00	0.88	342.02	95.00	5862.76	-3.61	30.72	-3.62	30.93	353.28	0.11	Other	0
64	5958.00	0.79	342.10	95.00	5957.75	-3.61	32.04	-4.05	32.29	352.80	0.09	Other	0
65	6053.00	0.88	331.51	95.00	6052.74	-4.14	33.30	-4.60	33.62	352.14	0.19	Other	0
66	6148.00	0.70	342.10	95.00	6147.73	-4.65	34.49	-5.12	34.87	351.55	0.24	Other	0
67	6243.00	0.70	335.12	95.00	6242.72	-5.06	35.57	-5.55	36	351.14	0.09	Other	0
68	6338.00	0.79	340.92	95.00	6337.72	-5.50	36.72	-6.00	37.21	350.71	0.12	Other	0
69	6434.00	0.79	335.82	96.00	6433.71	-5.97	37.95	-6.49	38.5	350.29	0.07	Other	0
70	6529.00	1.32	341.49	95.00	6528.69	-6.57	39.58	-7.11	40.21	349.82	0.57	Other	0
71	6624.00	0.88	336.30	95.00	6623.67	-7.18	41.29	-7.75	42.01	349.37	0.47	Other	0
72	6719.00	0.79	326.11	95.00	6718.66	-7.83	42.50	-8.41	43.32	348.81	0.38	Other	0
73	6815.00	0.70	332.61	96.00	6814.65	-8.45	44.57	-9.04	44.5	348.27	0.13	Other	0
74	6910.00	0.79	329.58	95.00	6909.65	-9.03	44.65	-9.64	45.68	347.81	0.10	Other	0
75	7005.00	0.70	319.38	95.00	7004.64	-9.73	45.65	-10.35	46.81	347.22	0.17	Other	0
76	7100.00	0.70	317.32	95.00	7099.63	-10.49	46.52	-11.12	47.83	346.55	0.03	Other	0
77	7195.00	0.70	314.59	95.00	7194.62	-11.28	47.36	-11.93	48.84	345.86	0.04	Other	0

