

Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

April 11, 2017

Cimarex Energy Co.
600 N Marienfeld Street
Midland, TX, 79701

HOBBS OCD

JUL 18 2017

RECEIVED

Re:

30, 16S, 34E, Lea NM
N 32.88625 W -103.59484

CLIENT: Cimarex Energy Co.
WELL: State LF 30 #4H
FIELD: Cisco Shale

RIG: H&P 396
COUNTY: Lea
API NO: 30-025-43459
JOB NO: 17MLD1108

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements, a division of Schlumberger Technology Corporation (P-5 No. 754900).
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>
Jingwen Wang FE	State LF 30 #4H Original Hole	11173.00 Ft to 16104.00 Ft	March 18, 2017 to April 11, 2017	Third Party Corrected SlimPulse

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

Cody Nelms
Field Service Manager

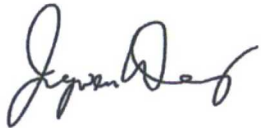
Schlumberger Drilling and Measurements
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Midland, Texas 79706
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Schlumberger

Well Reference:
30, 16S, 34E, Lea NM
N 32.88625 W -103.59484

I, Jingwen Wang certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of March 18, 2017 through April 11, 2017, conduct or supervise the taking of the Third Party Corrected & SlimPulse surveys from a depth of 11173.00 feet to a depth of 16104.00 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 State LF 30 #4H Well (Original Hole) API No. 30-025-43459 in New Mexico; 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.

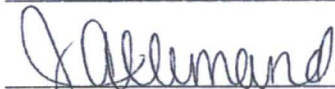
By
Jingwen Wang
FE



Subscribed and Sworn to before me this 20th day of April (month) 2017 (yr)

My Commission expires:

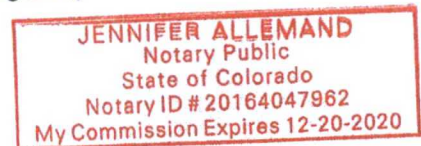
12-20-20



Notary Public

Adams Co, Colorado
(County State)

(signature)



Cimarex State LF 30 #4H MWD Final Survey Geodetic Report

(Def Survey)

Report Date: April 12, 2017 - 09:38 AM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex State LF 30 #4H / Cimarex State LF 30 4H
 Well: Cimarex State LF 30 #4H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex State LF 30 #4H MWD Final
 Survey Date: March 03, 2017
 Tort / AHD / DDI / ERD Ratio: 185.412' / 5403.303 ft / 6.144 / 0.466
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 53' 10.49363", W 103° 35' 41.44045"
 Location Grid N/E Y/X: N 686944.280 ftUS, E 768033.510 ftUS
 CRS Grid Convergence Angle: 0.4010°
 Grid Scale Factor: 0.99996794
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 6.876° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 4155.100 ft above MSL
 Seabed / Ground Elevation: 4129.100 ft above MSL
 Magnetic Declination: 6.740°
 Total Gravity Field Strength: 998.5120mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48377.555 nT
 Magnetic Dip Angle: 60.887°
 Declination Date: April 10, 2017
 Magnetic Declination Model: HDGM 2016
 North Reference: Grid North
 Grid Convergence Used: 0.4010°
 Total Corr Mag North->Grid: 6.3387°
 North:
 Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [210° FSL, 990° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	686944.28	768033.51	N 32 53 10.49	W 103 35 41.44
	155.00	0.62	5.34	155.00	0.84	0.83	0.08	0.40	686945.11	768033.59	N 32 53 10.50	W 103 35 41.44
	184.00	0.80	185.25	184.00	0.79	0.79	0.07	4.90	686945.07	768033.58	N 32 53 10.50	W 103 35 41.44
	296.00	0.71	148.15	295.99	-0.53	-0.58	0.37	0.44	686943.70	768033.88	N 32 53 10.49	W 103 35 41.44
	392.00	0.40	184.95	391.98	-1.33	-1.42	0.65	0.48	686942.86	768034.16	N 32 53 10.48	W 103 35 41.43
	484.00	0.31	176.40	483.98	-1.89	-1.99	0.64	0.11	686942.29	768034.15	N 32 53 10.47	W 103 35 41.43
	573.00	0.71	183.14	572.98	-2.68	-2.78	0.63	0.45	686941.50	768034.14	N 32 53 10.47	W 103 35 41.43
	663.00	0.49	174.19	662.97	-3.61	-3.72	0.63	0.26	686940.56	768034.14	N 32 53 10.46	W 103 35 41.43
	755.00	0.49	196.58	754.97	-4.39	-4.48	0.56	0.21	686939.80	768034.07	N 32 53 10.45	W 103 35 41.43
	844.00	0.62	187.85	843.96	-5.24	-5.33	0.39	0.17	686938.95	768033.90	N 32 53 10.44	W 103 35 41.44
	935.00	0.49	178.82	934.96	-6.12	-6.20	0.33	0.17	686938.08	768033.84	N 32 53 10.43	W 103 35 41.44
	1030.00	0.49	191.47	1029.96	-6.93	-7.01	0.26	0.11	686937.27	768033.77	N 32 53 10.42	W 103 35 41.44
	1126.00	0.31	241.48	1125.96	-7.49	-7.53	-0.05	0.39	686936.75	768033.46	N 32 53 10.42	W 103 35 41.44
	1219.00	0.22	206.80	1218.95	-7.80	-7.81	-0.35	0.19	686936.47	768033.16	N 32 53 10.42	W 103 35 41.45
	1314.00	0.31	180.32	1313.95	-8.23	-8.23	-0.44	0.16	686936.05	768033.07	N 32 53 10.41	W 103 35 41.45
	1408.00	0.49	193.45	1407.95	-8.88	-8.88	-0.53	0.21	686935.40	768032.98	N 32 53 10.41	W 103 35 41.45
	1503.00	0.40	199.97	1502.95	-9.60	-9.59	-0.74	0.11	686934.70	768032.77	N 32 53 10.40	W 103 35 41.45
	1596.00	0.31	265.15	1595.95	-9.97	-9.91	-1.10	0.42	686934.37	768032.41	N 32 53 10.40	W 103 35 41.45
	1691.00	0.62	239.10	1690.94	-10.34	-10.20	-1.80	0.39	686934.08	768031.71	N 32 53 10.39	W 103 35 41.46
	1786.00	0.31	208.79	1785.94	-10.89	-10.69	-2.36	0.41	686933.59	768031.15	N 32 53 10.39	W 103 35 41.47
	1880.00	0.71	209.31	1879.94	-11.67	-11.42	-2.77	0.43	686932.86	768030.74	N 32 53 10.38	W 103 35 41.47
	1975.00	0.62	239.59	1974.93	-12.52	-12.19	-3.50	0.38	686932.09	768030.01	N 32 53 10.37	W 103 35 41.48
	2074.00	0.49	245.19	2073.93	-13.07	-12.64	-4.35	0.14	686931.64	768029.16	N 32 53 10.37	W 103 35 41.49
	2169.00	0.71	217.73	2168.92	-13.79	-13.28	-5.08	0.37	686931.01	768028.43	N 32 53 10.36	W 103 35 41.50
	2263.00	0.80	251.71	2262.91	-14.57	-13.94	-6.06	0.48	686930.34	768027.45	N 32 53 10.36	W 103 35 41.51
	2358.00	0.80	246.29	2357.90	-15.19	-14.42	-7.30	0.08	686929.86	768026.22	N 32 53 10.35	W 103 35 41.53
	2452.00	0.71	212.00	2451.90	-16.05	-15.17	-8.20	0.48	686929.11	768025.31	N 32 53 10.34	W 103 35 41.54
	2546.00	0.62	209.18	2545.89	-17.05	-16.11	-8.76	0.10	686928.17	768024.75	N 32 53 10.33	W 103 35 41.54
	2640.00	1.02	233.46	2639.88	-18.09	-17.05	-9.68	0.55	686927.23	768023.83	N 32 53 10.33	W 103 35 41.56
	2735.00	0.62	226.85	2734.87	-19.07	-17.91	-10.74	0.43	686926.37	768022.77	N 32 53 10.32	W 103 35 41.57
	2830.00	0.71	206.10	2829.86	-20.02	-18.79	-11.37	0.27	686925.49	768022.14	N 32 53 10.31	W 103 35 41.58
	2924.00	1.10	231.48	2923.85	-21.21	-19.87	-12.33	0.59	686924.41	768021.18	N 32 53 10.30	W 103 35 41.59
	3018.00	0.88	210.59	3017.84	-22.51	-21.06	-13.41	0.45	686923.22	768020.11	N 32 53 10.29	W 103 35 41.60
	3113.00	0.80	212.30	3112.83	-23.78	-22.25	-14.13	0.09	686922.03	768019.38	N 32 53 10.27	W 103 35 41.61
	3208.00	0.40	236.46	3207.82	-24.59	-22.99	-14.76	0.49	686921.29	768018.75	N 32 53 10.27	W 103 35 41.62
	3301.00	0.40	188.96	3300.82	-25.13	-23.49	-15.08	0.35	686920.79	768018.43	N 32 53 10.26	W 103 35 41.62
	3396.00	0.62	188.25	3395.82	-25.97	-24.33	-15.21	0.23	686919.95	768018.30	N 32 53 10.25	W 103 35 41.62
	3489.00	0.49	235.98	3488.81	-26.74	-25.05	-15.61	0.50	686919.23	768017.90	N 32 53 10.25	W 103 35 41.63
	3585.00	0.62	181.90	3584.81	-27.52	-25.80	-15.97	0.54	686918.49	768017.54	N 32 53 10.24	W 103 35 41.63
	3679.00	0.22	256.11	3678.81	-28.09	-26.35	-16.16	0.64	686917.93	768017.35	N 32 53 10.23	W 103 35 41.63
	3774.00	0.40	234.17	3773.81	-28.38	-26.59	-16.61	0.22	686917.70	768016.91	N 32 53 10.23	W 103 35 41.64
	3870.00	0.40	231.17	3869.80	-28.85	-26.99	-17.14	0.02	686917.29	768016.37	N 32 53 10.23	W 103 35 41.64
	3964.00	0.00	351.70	3963.80	-29.08	-27.20	-17.39	0.43	686917.08	768016.12	N 32 53 10.23	W 103 35 41.65
	4059.00	0.22	291.94	4058.80	-29.04	-27.13	-17.56	0.23	686917.15	768015.95	N 32 53 10.23	W 103 35 41.65
	4153.00	0.40	274.00	4152.80	-29.01	-27.04	-18.06	0.22	686917.24	768015.45	N 32 53 10.23	W 103 35 41.65
	4247.00	0.40	210.90	4246.80	-29.32	-27.30	-18.55	0.45	686916.98	768014.96	N 32 53 10.22	W 103 35 41.66
	4341.00	0.22	6.24	4340.80	-29.44	-27.40	-18.70	0.65	686916.88	768014.81	N 32 53 10.22	W 103 35 41.66
	4414.00	0.40	250.43	4413.80	-29.41	-27.35	-18.93	0.73	686916.94	768014.58	N 32 53 10.22	W 103 35 41.66
	4518.00	0.09	168.60	4517.80	-29.65	-27.55	-19.25	0.38	686916.73	768014.26	N 32 53 10.22	W 103 35 41.67
	4612.00	0.09	129.86	4611.80	-29.76	-27.67	-19.18	0.06	686916.61	768014.33	N 32 53 10.22	W 103 35 41.67
	4707.00	0.62	342.09	4706.80	-29.34	-27.23	-19.28	0.73	686917.06	768014.23	N 32 53 10.23	W 103 35 41.67
	4801.00	0.80	348.17	4800.79	-28.26	-26.10	-19.57	0.21	686918.18	768013.94	N 32 53 10.24	W 103 35 41.67
	4895.00	0.71	343.90	4894.78	-27.10	-24.90	-19.87	0.11	686919.38	768013.64	N 32 53 10.25	W 103 35 41.68
	4989.00	0.71	344.47	4988.77	-26.02	-23.78	-20.19	0.01	686920.50	768013.32	N 32 53 10.26	W 103 35 41.68
	5083.00	0.71	350.11	5082.77	-24.93	-22.64	-20.44	0.07	686921.64	768013.07	N 32 53 10.27	W 103 35 41.68
	5179.00	1.72	46.04	5178.75	-23.24	-21.06	-19.51	1.51	686923.22	768014.00	N 32 53 10.29	W 103 35 41.67
	5272.00	1.90	46.27	5271.70	-20.97	-19.02	-17.39	0.19	686925.26	768016.12	N 32 53 10.31	W 103 35 41.65
	5368.00	1.90	48.07	5367.65	-18.54	-16.86	-15.06	0.06	686927.42	768018.46	N 32 53 10.33	W 103 35 41.62
	5461.00	2.83	66.10	5460.57	-16.20	-14.90	-11.81	1.27	686929.38	768021.70	N 32 53 10.35	W 103 35 41.58
	5559.00	2.92	69.22	5558.44	-13.81	-13.03	-7.26	0.18	686931.25	768026.25	N 32 53 10.37	W 103 35 41.53
	5653.00	3.93	76.85	5652.27	-11.59	-11.45	-1.89	1.18	686932.83	768031.62	N 32 53 10.38	W 103 35 41.46
	5747.00	5.04	79.36	5745.99	-9.25	-9.95	5.31	1.20	686934.33	768038.82	N 32 53 10.39	W 103 35 41.38
	5842.00	6.54	86.54	5840.50	-7.02	-8.86	14.81	1.75	686935.42	768048.32	N 32 53 10.40	W 103 35 41.27
	5936.00	6.94	86.76	5933.85	-5.06	-8.21	25.82	0.43	686936.07	768059.33	N 32 53 10.41	W 103 35 41.14
	6030.00	7.34	88.79	6027.12	-3.22	-7.77	37.50	0.50	686936.51	768071.00	N 32 53 10.41	W 103 35 41.00
	6125.00	7.16	88.48	6121.36	-1.50	-7.48	49.48	0.19	686936.80	768082.99	N 32 53 10.42	W 103 35 40.86
	6220.00	7.16	88.17	6215.62	0.26	-7.13	61.32	0.04	686937.15	768094.82	N 32 53 10.42	W 103 35 40.72
	6314.00	7.03	87.38	6308.90	2.09	-6.68	72.92	0.17	686937.60	768106.43	N 32 53 10.42	W 103 35 40.59
	6408.00	6.63	87.56	6402.23	3.92	-6.19	84.09	0.43	686938.09	768117.59	N 32 53 10.43	W 103 35 40.45
	6505.00	6.14	86.67	6498.63	5.75	-5.65	94.86	0.52	686938.63	768128.37	N 32 53 10.43	W 103 35 40.33
	6598.00	5.83	86.45	6591.12	7.48	-5.07	104.54	0.33	686939.21	768138.05	N 32 53 10.44	W 103 35 40.22
	6693.00	5.61	86.85	6685.65	9.16	-4.51	113.99	0.24	686939.77	768147.50	N 32 53 10.44	W 103 35 40.

Comments	MD	Incl	Azim Grid	VSEC	NS	EW	DLS	North	East	Lat	Long	(E/W...)
	15540.00											
	15445.00											
	15351.00											
	15256.00											
	15161.00											
	15066.00											
	14971.00											
	14877.00											
	14782.00											
	14687.00											
	14592.00											
	14498.00											
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	14308.00											
	14213.00											
	14118.00											
	14023.00											
	13928.00											
	13833.00											
	13738.00											
	13643.00											
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	7458.00											
	7427.00											
	7396.00											
	7365.00											
	7334.00				</							

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Last part 16016.00	15635.00	90.72	358.38	11500.58	4270.26	4232.79	567.21	0.77	691176.93	768600.70	N 32 53 52.33	W 103 35 34.44
	15730.00	90.48	359.93	11499.58	4364.39	4327.78	565.81	1.65	691271.91	768599.30	N 32 53 53.27	W 103 35 34.45
	15825.00	91.13	0.73	11498.25	4458.76	4422.76	566.36	1.08	691366.89	768599.85	N 32 53 54.21	W 103 35 34.44
	15920.00	91.07	0.53	11496.43	4553.18	4517.74	567.40	0.22	691461.87	768600.89	N 32 53 55.15	W 103 35 34.42
	16016.00	91.31	0.41	11494.43	4648.56	4613.72	568.19	0.28	691557.84	768601.68	N 32 53 56.10	W 103 35 34.40
	16104.00	91.48	0.52	11492.29	4735.98	4701.69	568.90	0.23	691645.81	768602.39	N 32 53 56.97	W 103 35 34.38
TD, project to bit	16149.00	91.48	0.52	11491.13	4780.69	4746.67	569.31	0.00	691690.79	768602.80	N 32 53 57.42	W 103 35 34.37

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/98.425	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex State LF 30 #4H MWD Final
	1	26.000	26.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex State LF 30 #4H MWD Final
	1	26.000	16149.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex State LF 30 #4H MWD Final