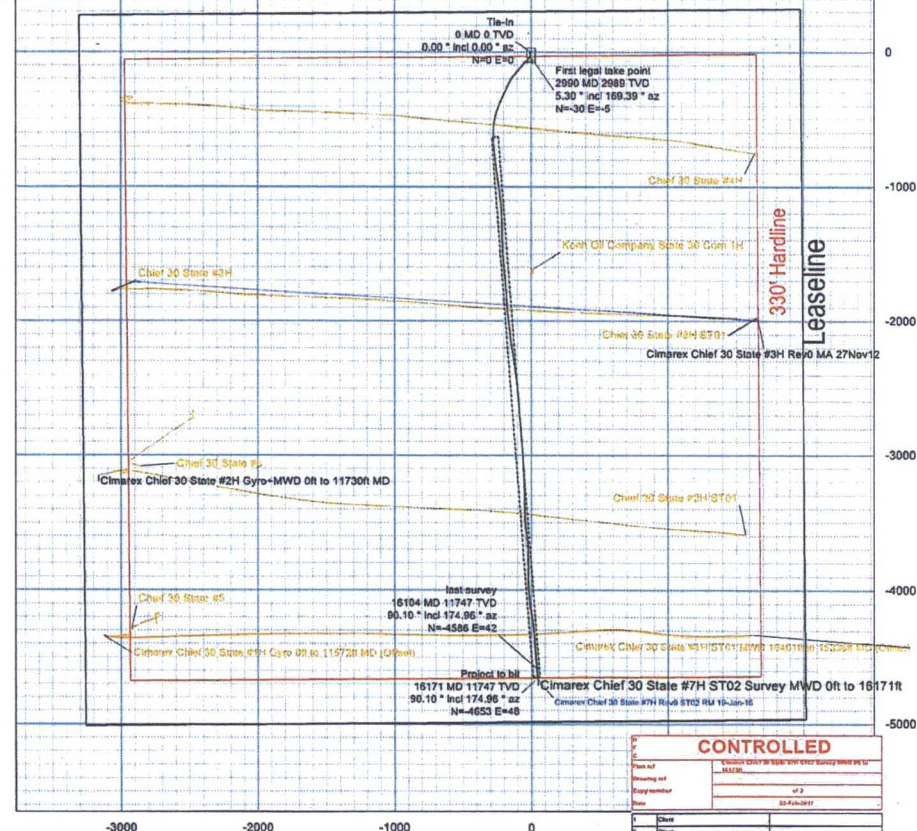




EW (ft) Scale = 1:300.00(ft)

Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to 16171ft Survey

Geodetic Report

(Def Survey)



Report Date: February 22, 2017 - 04:37 PM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Chief 30 State #7H / Cimarex Chief 30 State #7H
 Well: Chief 30 State #7H
 Borehole: ST02
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to 16171ft
 Survey Date: January 16, 2017
 Tort / AHD / DDI / ERD Ratio: 237.630 ° / 4933.037 ft / 6.208 / 0.420
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 33' 1.99477", W 103° 29' 40.06434"
 Location Grid N/E Y/X: N 565040.390 ftUS, E 799815.590 ftUS
 CRS Grid Convergence Angle: 0.4514 °
 Grid Scale Factor: 0.9999856
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 179.541 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3724.700 ft above MSL
 Seabed / Ground Elevation: 3700.700 ft above MSL
 Magnetic Declination: 6.782 °
 Total Gravity Field Strength: 998.4982mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48339.866 nT
 Magnetic Dip Angle: 60.553 °
 Declination Date: January 16, 2017
 Magnetic Declination Model: HDGM 2016
 North Reference: Grid North
 Grid Convergence Used: 0.4514 °
 Total Corr Mag North->Grid: 6.3310 °
 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 ° ' ")
Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	565040.39	799815.59	N 32 33 1.99	W 103 29 40.06
	77.90	0.32	219.20	77.90	0.17	-0.17	-0.14	0.41	565040.22	799815.45	N 32 33 1.99	W 103 29 40.07
	173.20	0.35	212.06	173.20	0.62	-0.62	-0.46	0.05	565039.77	799815.13	N 32 33 1.99	W 103 29 40.07
	268.80	0.36	215.70	268.80	1.11	-1.11	-0.79	0.03	565039.28	799814.80	N 32 33 1.98	W 103 29 40.07
	363.00	0.39	216.44	362.99	1.60	-1.61	-1.15	0.03	565038.78	799814.44	N 32 33 1.98	W 103 29 40.08
	457.20	0.43	216.38	457.19	2.14	-2.15	-1.55	0.04	565038.24	799814.04	N 32 33 1.97	W 103 29 40.08
	551.20	0.39	216.57	551.19	2.68	-2.69	-1.95	0.04	565037.70	799813.64	N 32 33 1.97	W 103 29 40.09
	645.80	0.18	236.10	645.79	3.02	-3.04	-2.27	0.24	565037.35	799813.32	N 32 33 1.96	W 103 29 40.09
	740.40	0.09	283.97	740.39	3.08	-3.10	-2.46	0.14	565037.29	799813.13	N 32 33 1.96	W 103 29 40.09
	834.80	0.15	292.24	834.79	3.01	-3.04	-2.65	0.07	565037.35	799812.94	N 32 33 1.96	W 103 29 40.10
	928.70	0.19	279.89	928.69	2.94	-2.96	-2.92	0.06	565037.43	799812.67	N 32 33 1.97	W 103 29 40.10
	1019.60	0.33	256.81	1019.59	2.97	-3.00	-3.32	0.19	565037.39	799812.27	N 32 33 1.97	W 103 29 40.10
	1110.00	0.30	285.55	1109.98	2.96	-2.99	-3.80	0.18	565037.40	799811.79	N 32 33 1.97	W 103 29 40.11
	1199.50	0.25	342.74	1199.48	2.71	-2.74	-4.09	0.30	565037.65	799811.50	N 32 33 1.97	W 103 29 40.11
	1289.70	0.25	345.42	1289.68	2.33	-2.37	-4.19	0.01	565038.02	799811.40	N 32 33 1.97	W 103 29 40.11
	1379.40	0.18	291.33	1379.38	2.09	-2.12	-4.37	0.23	565038.27	799811.22	N 32 33 1.97	W 103 29 40.12
	1468.10	0.36	270.39	1468.08	2.03	-2.07	-4.78	0.23	565038.32	799810.81	N 32 33 1.97	W 103 29 40.12
	1558.00	0.53	266.51	1557.98	2.05	-2.10	-5.48	0.19	565038.29	799810.11	N 32 33 1.97	W 103 29 40.13
	1647.00	0.63	263.39	1646.97	2.13	-2.18	-6.38	0.12	565038.21	799809.21	N 32 33 1.97	W 103 29 40.14
	1741.00	0.52	273.90	1740.97	2.15	-2.21	-7.32	0.16	565038.18	799808.27	N 32 33 1.97	W 103 29 40.15
	1834.90	0.39	298.13	1834.87	1.96	-2.03	-8.02	0.24	565038.36	799807.57	N 32 33 1.98	W 103 29 40.16
	1930.20	0.61	291.07	1930.16	1.62	-1.69	-8.78	0.24	565038.70	799806.81	N 32 33 1.98	W 103 29 40.17
	2025.00	0.45	314.64	2024.96	1.17	-1.25	-9.52	0.28	565039.14	799806.07	N 32 33 1.98	W 103 29 40.18
	2119.60	0.45	332.86	2119.56	0.58	-0.66	-9.95	0.15	565039.73	799805.64	N 32 33 1.99	W 103 29 40.18
	2214.00	0.41	12.75	2213.95	-0.08	0.00	-10.05	0.31	565040.39	799805.54	N 32 33 2.00	W 103 29 40.18
	2309.00	0.56	308.91	2308.95	-0.71	0.62	-10.33	0.56	565041.01	799805.26	N 32 33 2.00	W 103 29 40.18
	2403.20	0.44	330.02	2403.15	-1.31	1.23	-10.87	0.23	565041.62	799804.72	N 32 33 2.01	W 103 29 40.19
	2497.70	0.42	152.97	2497.65	-1.32	1.23	-10.90	0.91	565041.62	799804.69	N 32 33 2.01	W 103 29 40.19

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 ° ' ")
	2592.00	2.26	161.16	2591.92	0.75	-0.83	-10.14	1.96	565039.56	799805.45	N 32 33 1.99	W 103 29 40.18
	2685.60	2.98	164.81	2685.42	4.86	-4.93	-8.90	0.79	565035.46	799806.69	N 32 33 1.95	W 103 29 40.17
	2780.20	4.63	171.00	2779.81	11.01	-11.07	-7.66	1.79	565029.32	799807.93	N 32 33 1.89	W 103 29 40.15
	2874.80	5.28	172.06	2874.05	19.10	-19.16	-6.46	0.89	565021.23	799809.13	N 32 33 1.81	W 103 29 40.14
	2969.60	5.27	169.91	2968.45	27.72	-27.76	-5.10	0.21	565012.63	799810.49	N 32 33 1.72	W 103 29 40.13
First legal take point	2990.00	5.30	169.39	2988.76	29.57	-29.61	-4.76	0.27	565010.78	799810.83	N 32 33 1.70	W 103 29 40.12
	3064.20	5.41	167.56	3062.64	36.37	-36.39	-3.38	0.27	565004.00	799812.21	N 32 33 1.63	W 103 29 40.11
	3159.10	5.35	162.76	3157.12	44.98	-44.99	-1.10	0.48	564995.40	799814.49	N 32 33 1.55	W 103 29 40.08
	3253.30	5.42	159.96	3250.91	53.37	-53.36	1.72	0.29	564987.03	799817.31	N 32 33 1.47	W 103 29 40.05
	3347.90	5.12	158.92	3345.11	61.53	-61.50	4.77	0.33	564978.89	799820.36	N 32 33 1.39	W 103 29 40.01
	3442.10	4.16	158.88	3439.00	68.67	-68.61	7.52	1.02	564971.78	799823.11	N 32 33 1.32	W 103 29 39.98
	3536.40	2.60	157.13	3533.13	73.84	-73.77	9.58	1.66	564966.62	799825.17	N 32 33 1.26	W 103 29 39.96
	3631.00	0.98	169.12	3627.68	76.62	-76.54	10.57	1.75	564963.85	799826.16	N 32 33 1.24	W 103 29 39.95
	3725.20	0.61	201.21	3721.87	77.88	-77.80	10.54	0.80	564962.59	799826.13	N 32 33 1.22	W 103 29 39.95
	3819.60	0.59	239.65	3816.27	78.59	-78.51	9.94	0.42	564961.88	799825.53	N 32 33 1.22	W 103 29 39.96
	3914.10	0.74	266.86	3910.76	78.86	-78.79	8.91	0.37	564961.60	799824.50	N 32 33 1.21	W 103 29 39.97
	4009.20	0.88	296.12	4005.85	78.56	-78.51	7.64	0.45	564961.89	799823.23	N 32 33 1.22	W 103 29 39.98
	4104.30	1.07	313.17	4100.94	77.62	-77.58	6.33	0.36	564962.82	799821.92	N 32 33 1.23	W 103 29 40.00
	4198.60	1.13	312.11	4195.22	76.39	-76.35	5.00	0.07	564964.04	799820.59	N 32 33 1.24	W 103 29 40.01
	4292.80	1.18	307.89	4289.40	75.16	-75.13	3.55	0.10	564965.26	799819.14	N 32 33 1.25	W 103 29 40.03
	4387.00	1.05	308.68	4383.59	74.01	-74.00	2.11	0.14	564966.39	799817.70	N 32 33 1.26	W 103 29 40.05
	4481.50	0.99	311.59	4478.07	72.92	-72.91	0.82	0.08	564967.48	799816.41	N 32 33 1.27	W 103 29 40.06
	4575.80	1.10	311.67	4572.35	71.77	-71.77	-0.46	0.12	564968.62	799815.13	N 32 33 1.28	W 103 29 40.08
	4669.60	1.12	323.57	4666.14	70.42	-70.43	-1.68	0.25	564969.96	799813.91	N 32 33 1.30	W 103 29 40.09
	4764.00	2.95	263.09	4760.48	69.95	-69.98	-4.64	2.74	564970.41	799810.95	N 32 33 1.30	W 103 29 40.12
	4858.40	3.60	256.45	4854.73	70.89	-70.97	-9.93	0.80	564969.42	799805.66	N 32 33 1.29	W 103 29 40.19
	4952.50	3.04	256.77	4948.67	72.11	-72.23	-15.23	0.60	564968.16	799800.36	N 32 33 1.28	W 103 29 40.25
	5047.20	2.62	265.47	5043.25	72.82	-72.98	-19.84	0.63	564967.41	799795.75	N 32 33 1.27	W 103 29 40.30
	5140.80	2.33	275.32	5136.77	72.78	-72.97	-23.86	0.55	564967.42	799791.73	N 32 33 1.27	W 103 29 40.35
	5234.50	1.81	283.57	5230.41	72.23	-72.45	-27.20	0.64	564967.94	799788.39	N 32 33 1.28	W 103 29 40.39
	5329.20	1.86	279.31	5325.06	71.61	-71.85	-30.17	0.15	564968.54	799785.42	N 32 33 1.29	W 103 29 40.42
	5423.80	1.85	284.22	5419.61	70.96	-71.23	-33.16	0.17	564969.17	799782.43	N 32 33 1.29	W 103 29 40.46
	5519.60	1.28	297.79	5515.37	70.06	-70.35	-35.61	0.71	564970.04	799779.98	N 32 33 1.30	W 103 29 40.49
	5614.60	1.16	303.48	5610.35	69.02	-69.32	-37.35	0.18	564971.07	799778.24	N 32 33 1.31	W 103 29 40.51
	5709.40	1.12	283.28	5705.13	68.26	-68.58	-39.05	0.42	564971.81	799776.54	N 32 33 1.32	W 103 29 40.53
	5803.70	0.63	337.50	5799.42	67.57	-67.89	-40.15	0.96	564972.50	799775.44	N 32 33 1.33	W 103 29 40.54
	5897.60	1.95	52.84	5893.30	66.13	-66.45	-39.07	2.01	564973.94	799776.52	N 32 33 1.34	W 103 29 40.53
	5992.70	1.71	69.04	5988.35	64.67	-64.96	-36.46	0.60	564975.43	799779.13	N 32 33 1.35	W 103 29 40.50
	6087.80	1.92	116.74	6083.41	64.90	-65.17	-33.71	1.56	564975.22	799781.88	N 32 33 1.35	W 103 29 40.46
	6181.70	1.95	118.15	6177.26	66.38	-66.63	-30.90	0.06	564973.76	799784.69	N 32 33 1.34	W 103 29 40.43
	6276.20	2.01	119.81	6271.70	67.99	-68.22	-28.04	0.09	564972.18	799787.55	N 32 33 1.32	W 103 29 40.40
	6370.40	1.07	114.11	6365.86	69.19	-69.40	-25.80	1.01	564971.00	799789.79	N 32 33 1.31	W 103 29 40.37
	6464.70	0.56	20.14	6460.16	69.12	-69.32	-24.84	1.32	564971.07	799790.75	N 32 33 1.31	W 103 29 40.36
	6559.00	0.64	2.00	6554.45	68.16	-68.36	-24.66	0.22	564972.03	799790.93	N 32 33 1.32	W 103 29 40.36
	6653.30	0.70	356.79	6648.75	67.06	-67.26	-24.68	0.09	564973.13	799790.91	N 32 33 1.33	W 103 29 40.36
	6747.70	0.80	338.02	6743.14	65.87	-66.08	-24.96	0.28	564974.32	799790.63	N 32 33 1.34	W 103 29 40.36
	6841.10	0.93	327.48	6836.53	64.62	-64.83	-25.61	0.22	564975.56	799789.98	N 32 33 1.36	W 103 29 40.37
	6936.30	1.07	2.18	6931.71	63.08	-63.29	-25.99	0.64	564977.10	799789.60	N 32 33 1.37	W 103 29 40.37
	7031.00	1.42	29.98	7026.39	61.19	-61.39	-25.37	0.73	564979.00	799790.22	N 32 33 1.39	W 103 29 40.37
	7125.70	1.39	34.55	7121.06	59.23	-59.43	-24.13	0.12	564980.96	799791.46	N 32 33 1.41	W 103 29 40.35
	7220.50	1.31	33.31	7215.84	57.39	-57.58	-22.89	0.09	564982.81	799792.70	N 32 33 1.43	W 103 29 40.34
	7315.50	1.16	29.34	7310.82	55.65	-55.83	-21.82	0.18	564984.56	799793.77	N 32 33 1.44	W 103 29 40.32
	7410.50	1.09	32.96	7405.80	54.07	-54.23	-20.86	0.10	564986.16	799794.73	N 32 33 1.46	W 103 29 40.31
	7504.40	1.15	35.28	7499.68	52.56	-52.72	-19.83	0.08	564987.67	799795.76	N 32 33 1.47	W 103 29 40.30
	7599.50	1.12	34.62	7594.76	51.02	-51.17	-18.75	0.03	564989.22	799796.84	N 32 33 1.49	W 103 29 40.29
	7692.80	1.04	33.39	7688.04	49.57	-49.72	-17.76	0.09	564990.68	799797.83	N 32 33 1.50	W 103 29 40.28
	7786.60	0.94	23.99	7781.83	48.16	-48.30	-16.98	0.20	564992.09	799798.61	N 32 33 1.52	W 103 29 40.27

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 ° ' ")
	7882.00	0.92	16.89	7877.22	46.72	-46.85	-16.44	0.12	564993.54	799799.15	N 32 33 1.53	W 103 29 40.26
	7975.90	0.84	25.35	7971.11	45.38	-45.51	-15.93	0.16	564994.88	799799.66	N 32 33 1.55	W 103 29 40.25
	8070.40	0.72	21.06	8065.60	44.21	-44.33	-15.42	0.14	564996.06	799800.17	N 32 33 1.56	W 103 29 40.25
	8164.20	0.73	19.74	8159.39	43.10	-43.22	-15.00	0.02	564997.17	799800.59	N 32 33 1.57	W 103 29 40.24
	8257.10	0.70	20.23	8252.28	42.01	-42.13	-14.61	0.03	564998.26	799800.98	N 32 33 1.58	W 103 29 40.24
	8351.80	0.73	19.88	8346.98	40.90	-41.02	-14.20	0.03	564999.37	799801.39	N 32 33 1.59	W 103 29 40.23
	8445.90	0.76	25.06	8441.07	39.78	-39.89	-13.73	0.08	565000.50	799801.86	N 32 33 1.60	W 103 29 40.23
	8540.40	0.69	26.90	8535.56	38.71	-38.81	-13.21	0.08	565001.58	799802.38	N 32 33 1.61	W 103 29 40.22
	8634.70	0.52	40.61	8629.86	37.88	-37.98	-12.68	0.24	565002.41	799802.92	N 32 33 1.62	W 103 29 40.22
	8729.50	0.41	50.03	8724.65	37.34	-37.44	-12.14	0.14	565002.95	799803.45	N 32 33 1.63	W 103 29 40.21
	8823.90	0.57	98.58	8819.05	37.20	-37.29	-11.41	0.45	565003.10	799804.18	N 32 33 1.63	W 103 29 40.20
	8918.90	0.57	102.41	8914.04	37.38	-37.46	-10.48	0.04	565002.93	799805.11	N 32 33 1.62	W 103 29 40.19
	9013.90	0.44	111.29	9009.04	37.82	-37.70	-9.68	0.16	565002.69	799805.61	N 32 33 1.62	W 103 29 40.18
	9108.70	0.33	211.01	9103.84	37.99	-38.06	-9.48	0.63	565002.33	799806.11	N 32 33 1.62	W 103 29 40.18
	9203.70	0.40	228.09	9198.84	38.44	-38.52	-9.87	0.14	565001.87	799805.72	N 32 33 1.61	W 103 29 40.18
	9298.20	0.57	282.88	9293.33	38.55	-38.64	-10.57	0.50	565001.76	799805.02	N 32 33 1.61	W 103 29 40.19
	9393.00	0.62	256.67	9388.13	38.55	-38.65	-11.53	0.29	565001.74	799804.06	N 32 33 1.61	W 103 29 40.20
	9488.00	0.77	254.17	9483.12	38.84	-38.94	-12.65	0.16	565001.45	799802.94	N 32 33 1.61	W 103 29 40.22
	9581.90	0.97	256.83	9577.01	39.18	-39.29	-14.03	0.22	565001.10	799801.56	N 32 33 1.61	W 103 29 40.23
	9677.10	1.33	242.05	9672.19	39.87	-40.00	-15.79	0.49	565000.40	799799.80	N 32 33 1.60	W 103 29 40.25
	9771.60	1.60	255.20	9766.66	40.70	-40.85	-18.03	0.45	564999.54	799797.56	N 32 33 1.59	W 103 29 40.28
	9866.20	1.66	279.81	9861.22	40.78	-40.95	-20.66	0.74	564999.44	799794.93	N 32 33 1.59	W 103 29 40.31
	9960.30	0.60	267.26	9955.31	40.56	-40.74	-22.50	1.15	564999.65	799793.09	N 32 33 1.59	W 103 29 40.33
	10054.80	0.56	105.15	10049.80	40.70	-40.89	-22.54	1.21	564999.50	799793.05	N 32 33 1.59	W 103 29 40.33
	10148.80	0.53	139.63	10143.80	41.16	-41.34	-21.82	0.35	564999.05	799793.77	N 32 33 1.59	W 103 29 40.32
	10243.40	0.53	224.15	10238.40	41.81	-41.98	-21.84	0.75	564998.41	799793.75	N 32 33 1.58	W 103 29 40.32
	10337.80	1.20	247.21	10332.79	42.49	-42.68	-23.06	0.79	564997.71	799792.53	N 32 33 1.57	W 103 29 40.34
	10432.60	1.13	253.20	10427.57	43.13	-43.34	-24.87	0.15	564997.06	799790.72	N 32 33 1.57	W 103 29 40.36
	10526.80	0.36	283.78	10521.76	43.32	-43.53	-26.04	0.89	564996.86	799789.55	N 32 33 1.57	W 103 29 40.37
	10620.70	0.80	78.16	10615.66	43.12	-43.33	-25.69	1.21	564997.06	799789.90	N 32 33 1.57	W 103 29 40.37
	10714.40	0.68	82.02	10709.35	42.92	-43.12	-24.50	0.14	564997.27	799791.09	N 32 33 1.57	W 103 29 40.35
	10808.50	0.76	113.63	10803.44	43.10	-43.29	-23.37	0.42	564997.10	799792.22	N 32 33 1.57	W 103 29 40.34
	10902.60	1.20	118.96	10897.53	43.84	-44.02	-21.94	0.48	564996.37	799793.65	N 32 33 1.56	W 103 29 40.32
	10996.70	1.57	141.24	10991.60	45.34	-45.50	-20.27	0.69	564994.89	799795.32	N 32 33 1.55	W 103 29 40.31
	11055.00	1.60	146.53	11049.88	46.64	-46.80	-19.32	0.26	564993.59	799796.27	N 32 33 1.53	W 103 29 40.29
	11117.00	1.42	162.19	11111.86	48.10	-48.25	-18.61	0.72	564992.14	799796.98	N 32 33 1.52	W 103 29 40.29
	11198.00	1.26	205.82	11192.84	49.86	-50.01	-18.69	1.24	564990.36	799796.90	N 32 33 1.50	W 103 29 40.29
	11291.00	12.31	223.51	11285.04	57.94	-58.15	-25.98	11.95	564982.24	799789.61	N 32 33 1.42	W 103 29 40.37
	11338.00	17.11	225.44	11330.49	66.36	-66.64	-34.36	10.26	564973.75	799781.23	N 32 33 1.34	W 103 29 40.47
	11385.00	22.34	226.75	11374.72	77.25	-77.62	-45.80	11.17	564962.77	799769.79	N 32 33 1.23	W 103 29 40.61
	11432.00	27.34	221.97	11417.36	91.29	-91.77	-59.54	11.46	564948.62	799756.05	N 32 33 1.09	W 103 29 40.77
	11479.00	33.87	215.90	11457.80	109.83	-110.43	-74.45	15.36	564929.96	799741.14	N 32 33 0.91	W 103 29 40.94
	11526.00	38.98	218.32	11495.61	131.92	-132.65	-91.31	11.29	564907.74	799724.28	N 32 33 0.69	W 103 29 41.14
	11573.00	44.22	219.16	11530.74	156.08	-156.98	-110.84	11.21	564883.42	799704.75	N 32 33 0.45	W 103 29 41.37
	11621.00	50.77	217.33	11563.16	183.70	-184.77	-132.71	13.93	564855.62	799682.88	N 32 33 0.18	W 103 29 41.63
	11668.00	54.33	209.87	11591.76	214.60	-215.84	-153.28	14.69	564824.56	799662.31	N 32 32 59.87	W 103 29 41.87
	11715.00	60.45	205.35	11617.08	249.53	-250.91	-171.57	15.33	564789.48	799644.03	N 32 32 59.53	W 103 29 42.09
	11762.00	66.04	204.74	11638.23	287.39	-288.92	-189.32	11.95	564751.47	799626.27	N 32 32 59.15	W 103 29 42.30
	11810.00	70.63	203.90	11655.95	327.89	-329.56	-207.68	9.70	564710.83	799607.91	N 32 32 58.75	W 103 29 42.52
	11857.00	72.42	203.73	11670.84	368.52	-370.34	-225.68	3.82	564670.05	799589.91	N 32 32 58.35	W 103 29 42.73
	11904.00	72.65	200.28	11684.95	409.95	-411.90	-242.48	7.02	564628.49	799573.12	N 32 32 57.94	W 103 29 42.93
	11952.00	73.48	195.33	11698.94	453.54	-455.61	-256.51	10.02	564584.79	799559.09	N 32 32 57.51	W 103 29 43.10
	11999.00	76.35	190.58	11711.18	497.66	-499.82	-266.66	11.51	564540.58	799548.93	N 32 32 57.07	W 103 29 43.23
	12046.00	80.95	186.37	11720.43	543.16	-545.37	-273.44	13.15	564495.03	799542.16	N 32 32 56.62	W 103 29 43.31
	12093.00	84.80	182.66	11726.26	589.61	-591.85	-277.10	11.33	564448.55	799538.49	N 32 32 56.16	W 103 29 43.36
	12155.00	87.87	176.16	11730.23	651.44	-653.68	-276.46	11.57	564386.72	799539.14	N 32 32 55.55	W 103 29 43.35
	12187.00	88.52	175.86	11731.24	683.36	-685.58	-274.23	2.24	564354.82	799541.36	N 32 32 55.23	W 103 29 43.33
	12227.00	90.41	174.70	11731.61	723.25	-725.44	-270.94	5.54	564314.96	799544.65	N 32 32 54.84	W 103 29 43.30

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 ° ' ")
	12320.00	91.10	173.10	11730.39	815.79	-817.91	-261.06	1.87	564222.50	799554.53	N 32 32 53.92	W 103 29 43.19
	12415.00	90.89	172.23	11728.74	910.09	-912.11	-248.93	0.94	564128.29	799566.66	N 32 32 52.99	W 103 29 43.06
	12510.00	90.07	172.19	11727.94	1004.31	-1006.23	-236.06	0.86	564034.17	799579.54	N 32 32 52.06	W 103 29 42.91
	12605.00	89.90	172.83	11727.96	1098.59	-1100.42	-223.67	0.70	563939.99	799591.92	N 32 32 51.12	W 103 29 42.78
	12699.00	89.69	177.30	11728.30	1192.28	-1194.05	-215.59	4.76	563846.36	799600.00	N 32 32 50.20	W 103 29 42.69
	12794.00	89.90	178.35	11728.64	1287.24	-1288.98	-211.99	1.13	563751.43	799603.61	N 32 32 49.26	W 103 29 42.66
	12887.00	89.83	179.29	11728.86	1380.23	-1381.96	-210.07	1.01	563658.46	799605.52	N 32 32 48.34	W 103 29 42.65
	12980.00	90.10	178.24	11728.92	1473.22	-1474.93	-208.07	1.17	563565.48	799607.53	N 32 32 47.42	W 103 29 42.63
	13075.00	90.07	173.73	11728.78	1568.01	-1569.68	-201.42	4.75	563470.74	799614.18	N 32 32 46.48	W 103 29 42.56
	13169.00	89.76	174.65	11728.92	1661.60	-1663.19	-191.90	1.03	563377.23	799623.69	N 32 32 45.55	W 103 29 42.46
	13264.00	89.83	176.16	11729.26	1756.35	-1757.88	-184.29	1.59	563282.54	799631.30	N 32 32 44.62	W 103 29 42.38
	13358.00	89.97	176.10	11729.42	1850.18	-1851.67	-177.95	0.16	563188.75	799637.65	N 32 32 43.69	W 103 29 42.31
	13451.00	89.93	174.28	11729.50	1942.91	-1944.34	-170.15	1.96	563096.08	799645.45	N 32 32 42.77	W 103 29 42.23
	13546.00	89.69	174.23	11729.82	2037.51	-2038.86	-160.64	0.26	563001.56	799654.95	N 32 32 41.83	W 103 29 42.13
	13640.00	90.00	172.82	11730.07	2130.99	-2132.26	-150.04	1.54	562908.17	799665.55	N 32 32 40.91	W 103 29 42.01
	13735.00	90.07	170.80	11730.01	2225.12	-2226.28	-136.51	2.13	562814.14	799679.09	N 32 32 39.98	W 103 29 41.86
	13830.00	90.03	171.30	11729.93	2319.08	-2320.13	-121.73	0.53	562720.30	799693.87	N 32 32 39.05	W 103 29 41.70
	13924.00	89.59	172.79	11730.24	2412.27	-2413.22	-108.72	1.65	562627.21	799706.87	N 32 32 38.13	W 103 29 41.56
	14019.00	89.24	175.15	11731.21	2506.81	-2507.68	-98.74	2.51	562532.75	799716.85	N 32 32 37.19	W 103 29 41.45
	14113.00	89.90	175.73	11731.92	2600.57	-2601.38	-91.27	0.93	562439.05	799724.33	N 32 32 36.26	W 103 29 41.37
	14207.00	89.21	175.75	11732.65	2694.36	-2695.12	-84.28	0.73	562345.32	799731.31	N 32 32 35.33	W 103 29 41.30
	14302.00	87.83	175.14	11735.10	2789.08	-2789.78	-76.74	1.59	562250.65	799738.85	N 32 32 34.40	W 103 29 41.22
	14397.00	88.42	175.53	11738.21	2883.77	-2884.42	-69.02	0.74	562156.02	799746.57	N 32 32 33.46	W 103 29 41.14
	14490.00	88.11	176.38	11741.02	2976.55	-2977.14	-62.46	0.97	562063.30	799753.13	N 32 32 32.54	W 103 29 41.07
	14585.00	88.28	176.72	11744.02	3071.37	-3071.92	-56.75	0.40	561968.52	799758.84	N 32 32 31.60	W 103 29 41.01
	14680.00	89.45	178.72	11745.90	3166.30	-3166.82	-52.97	2.44	561873.62	799762.62	N 32 32 30.67	W 103 29 40.97
	14775.00	88.52	177.57	11747.58	3261.25	-3261.75	-49.90	1.56	561778.69	799765.69	N 32 32 29.73	W 103 29 40.95
	14871.00	91.55	179.75	11747.52	3357.22	-3357.71	-47.65	3.89	561682.73	799767.94	N 32 32 28.78	W 103 29 40.93
	14966.00	91.31	177.14	11745.15	3452.17	-3452.64	-45.07	2.76	561587.81	799770.52	N 32 32 27.84	W 103 29 40.91
	15060.00	91.14	173.72	11743.14	3545.89	-3546.30	-37.59	3.64	561494.14	799778.00	N 32 32 26.91	W 103 29 40.83
	15155.00	90.76	173.63	11741.57	3640.38	-3640.71	-27.12	0.41	561399.74	799788.47	N 32 32 25.97	W 103 29 40.72
	15249.00	88.93	179.69	11741.82	3734.21	-3734.50	-21.65	6.73	561305.95	799793.94	N 32 32 25.05	W 103 29 40.66
	15343.00	89.45	180.44	11743.15	3828.20	-3828.49	-21.76	0.97	561211.96	799793.83	N 32 32 24.12	W 103 29 40.67
	15438.00	89.42	179.91	11744.09	3923.19	-3923.49	-22.05	0.56	561116.97	799793.54	N 32 32 23.18	W 103 29 40.68
	15532.00	89.72	176.20	11744.79	4017.14	-4017.42	-18.86	3.96	561023.04	799796.73	N 32 32 22.25	W 103 29 40.65
	15625.00	90.65	172.01	11744.49	4109.70	-4109.90	-9.31	4.61	560930.56	799806.28	N 32 32 21.33	W 103 29 40.55
	15719.00	90.58	170.02	11743.48	4202.65	-4202.74	5.37	2.12	560837.72	799820.96	N 32 32 20.41	W 103 29 40.39
	15813.00	89.28	173.71	11743.60	4295.79	-4295.77	18.67	4.16	560744.69	799834.26	N 32 32 19.49	W 103 29 40.24
	15908.00	88.73	176.76	11745.25	4390.49	-4390.42	26.56	3.26	560650.04	799842.15	N 32 32 18.55	W 103 29 40.16
	16002.00	89.52	175.17	11746.68	4484.29	-4484.17	33.17	1.89	560556.29	799848.76	N 32 32 17.62	W 103 29 40.09
last survey	16104.00	90.10	174.98	11747.02	4585.98	-4585.79	41.95	0.60	560454.67	799857.54	N 32 32 16.62	W 103 29 40.00
Project to bit	16171.00	90.10	174.96	11746.90	4652.77	-4652.53	47.83	0.00	560387.93	799863.42	N 32 32 15.96	W 103 29 39.93

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	24.000	1/98.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only	ST02 / Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to 16171ft

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 ° ' ")
		1	24.000	24.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only		ST02 / Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to 16171ft		
		1	24.000	10996.700	Act Stns	30.000	30.000	NAL_NSG+MSHOT		ST02 / Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to		
		1	10996.700	16171.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG		ST02 / Cimarex Chief 30 State #7H ST02 Survey MWD 0ft to		

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)

HOBBS OCD

JUL 12 2017

RECEIVED

Schlumberger

January 26, 2017

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

S30-T20S-R35E 300 FNL1980 FEL
N 32.55055 W 103.49446

Re:

CLIENT: Cimarex Energy Co.
WELL: Chief 30 State 007H ST02
FIELD: Berry; Bone Spring, North
RIG: Cactus 148
COUNTY: Lea
API NO: 30-025-43468
JOB NO: 16MLD1909

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>
Kane Junmanee FE	Chief 30 State 007H ST02 Side Track	11055.00 Ft to 16104.00 Ft	January 12, 2017 to January 22, 2017	SlimPulse

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

Azamat Akkuzhin
Field Service Manager

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

I, Kane Junmanee certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of January 12, 2017 through January 22, 2017, conduct or supervise the taking of the SlimPulse surveys from a depth of 11055.00 feet to a depth of 16104.00 feet; 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 Chief 30 State 007H ST02 Well (Side Track) API No. 30-025-43468 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.

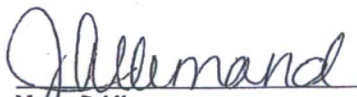


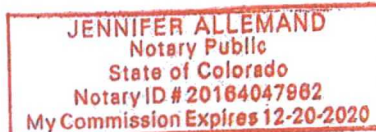
By
Kane Junmanee
FE

Subscribed and Sworn to before me this 31 day of January (month) 2017 (year)

My Commission expires:

12-20-2020


Notary Public



Adams, Colorado
(County, State)