

Final Survey - Cimarex Cotton Draw 9L Federal #5H MWD 0ft - 15396ft (Surcon Corrected) (Def Survey)



Report Date: July 31, 2018 - 04:51 PM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Cotton Draw 9L Federal #5H / Cimarex Cotton Draw 9L Federal #5H
 Well: Cimarex Cotton Draw 9L Federal #5H
 Borehole: Original Borehole
 UWM / API#: Unknown / Unknown
 Survey Name: Final Survey - Cimarex Cotton Draw 9L Federal #5H MWD 0ft - 15396ft (Surcon Corrected)
 Survey Date: June 29, 2018
 Tort / AHD / DDI / ERD Ratio: 203.743 * / 5616.251 ft / 6.221 / 0.531
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 8' 20.30261", W 103° 40' 49.38476"
 Location Grid N/E Y/X: N 414906.840 ftUS, E 743439.820 ftUS
 CRS Grid Convergence Angle: 0.3474 *
 Grid Scale Factor: 0.99995587
 Version / Patch: 2.10.720.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 359.693 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3470.600 ft above MSL
 Seabed / Ground Elevation: 3444.600 ft above MSL
 Magnetic Declination: 6.762 *
 Total Gravity Field Strength: 998.4270mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47906.739 nT
 Magnetic Dip Angle: 59.806 *
 Declination Date: July 25, 2018
 Magnetic Declination Model: HDGM 2018
 North Reference: Grid North
 Grid Convergence Used: 0.3474 *
 Total Corr Mag North->Grid North: 6.4150 *
 Local Coord Referenced To: Well Head

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 [470' FSL, 2545' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	414906.64	743439.82	N 32 8 20.30	W 103 40 49.38
	212.00	0.47	162.72	212.00	-0.83	-0.83	0.26	0.22	414905.81	743440.08	N 32 8 20.29	W 103 40 49.38
	303.00	0.25	131.32	303.00	-1.32	-1.32	0.52	0.32	414905.32	743440.34	N 32 8 20.29	W 103 40 49.38
	393.00	0.30	156.89	392.99	-1.67	-1.66	0.76	0.15	414904.98	743440.58	N 32 8 20.29	W 103 40 49.38
	485.00	0.37	228.48	484.99	-2.09	-2.08	0.63	0.43	414904.56	743440.45	N 32 8 20.28	W 103 40 49.38
	575.00	0.40	232.51	574.99	-2.47	-2.47	0.16	0.04	414904.17	743439.98	N 32 8 20.28	W 103 40 49.38
	665.00	0.50	260.77	664.99	-2.72	-2.72	-0.47	0.27	414903.92	743439.35	N 32 8 20.28	W 103 40 49.39
	710.00	0.56	262.77	709.99	-2.77	-2.78	-0.89	0.14	414903.66	743438.93	N 32 8 20.28	W 103 40 49.40
	850.00	0.64	252.34	849.98	-3.09	-3.10	-2.31	0.10	414903.54	743437.51	N 32 8 20.27	W 103 40 49.41
	944.00	0.49	265.43	943.98	-3.27	-3.29	-3.10	0.33	414903.35	743436.72	N 32 8 20.27	W 103 40 49.42
	1038.00	0.52	310.83	1037.97	-3.32	-3.34	-3.78	0.15	414903.30	743436.04	N 32 8 20.27	W 103 40 49.43
	1132.00	0.68	285.00	1129.96	-2.58	-2.60	-4.51	0.42	414903.54	743435.32	N 32 8 20.27	W 103 40 49.44
	1226.00	0.65	287.53	1225.96	-2.34	-2.37	-5.37	0.33	414903.96	743434.45	N 32 8 20.28	W 103 40 49.45
	1320.00	0.65	287.53	1319.96	-2.34	-2.37	-6.41	0.04	414904.27	743433.41	N 32 8 20.28	W 103 40 49.46
	1414.00	0.56	312.02	1413.95	-1.87	-1.91	-7.26	0.29	414904.73	743432.56	N 32 8 20.28	W 103 40 49.47
	1509.00	1.00	306.28	1508.94	-1.06	-1.11	-8.28	0.47	414905.53	743431.54	N 32 8 20.29	W 103 40 49.48
	1603.00	0.19	297.66	1602.94	-0.50	-0.55	-9.08	0.86	414906.09	743430.74	N 32 8 20.30	W 103 40 49.49
	1697.00	0.05	165.76	1696.94	-0.47	-0.52	-9.20	0.24	414906.12	743430.62	N 32 8 20.30	W 103 40 49.49
	1791.00	0.38	348.24	1790.94	-0.20	-0.25	-9.26	0.46	414906.39	743430.56	N 32 8 20.30	W 103 40 49.49
	1885.00	0.17	300.97	1884.94	0.18	0.13	-9.44	0.31	414906.77	743430.38	N 32 8 20.30	W 103 40 49.49
	1979.00	0.40	337.74	1978.94	0.55	0.50	-9.68	0.30	414907.14	743430.14	N 32 8 20.31	W 103 40 49.50
	2073.00	0.69	35.32	2072.93	1.32	1.27	-9.48	0.62	414907.91	743430.34	N 32 8 20.32	W 103 40 49.49
	2167.00	0.74	57.35	2166.92	2.10	2.06	-8.64	0.30	414908.70	743431.18	N 32 8 20.32	W 103 40 49.49
	2260.00	0.72	75.74	2259.92	2.57	2.53	-7.57	0.25	414909.17	743432.25	N 32 8 20.33	W 103 40 49.47
	2355.00	0.77	65.53	2354.91	2.97	2.94	-6.41	0.15	414909.58	743433.41	N 32 8 20.33	W 103 40 49.46
	2449.00	1.03	43.33	2448.90	3.84	3.81	-5.26	0.46	414910.45	743434.56	N 32 8 20.34	W 103 40 49.45
	2543.00	1.13	43.67	2542.88	5.12	5.10	-4.04	0.11	414911.74	743435.78	N 32 8 20.35	W 103 40 49.43
	2637.00	1.90	40.65	2636.85	6.96	6.95	-2.38	0.82	414913.59	743437.44	N 32 8 20.37	W 103 40 49.41
	2731.00	1.84	47.27	2730.80	9.16	9.16	-0.26	0.24	414915.80	743439.56	N 32 8 20.39	W 103 40 49.39
	2826.00	0.47	103.51	2825.78	10.09	10.10	1.24	1.71	414916.74	743441.06	N 32 8 20.40	W 103 40 49.37
	2920.00	0.58	61.77	2919.77	10.22	10.24	2.03	0.41	414916.88	743441.85	N 32 8 20.40	W 103 40 49.36
	3014.00	0.78	30.73	3013.77	11.00	11.01	2.78	0.44	414917.65	743442.60	N 32 8 20.41	W 103 40 49.35
	3108.00	0.87	24.84	3107.76	12.19	12.21	3.41	0.13	414918.85	743443.23	N 32 8 20.42	W 103 40 49.34
	3202.00	0.43	57.06	3201.75	13.03	13.05	4.00	0.59	414919.69	743443.82	N 32 8 20.43	W 103 40 49.34
	3296.00	0.46	65.04	3295.75	13.37	13.40	4.64	0.07	414920.04	743444.46	N 32 8 20.43	W 103 40 49.33
	3390.00	1.38	19.74	3389.74	14.59	14.62	5.37	1.18	414921.26	743445.19	N 32 8 20.45	W 103 40 49.32
	3485.00	1.88	34.54	3484.70	16.95	16.98	6.64	0.68	414923.62	743446.46	N 32 8 20.47	W 103 40 49.31
	3579.00	1.41	18.30	3578.66	19.31	19.35	7.87	0.70	414925.99	743447.69	N 32 8 20.49	W 103 40 49.29
	3673.00	0.85	357.64	3672.64	21.10	21.15	8.21	0.73	414927.79	743448.03	N 32 8 20.51	W 103 40 49.29
	3767.00	0.34	263.85	3766.64	21.77	21.81	7.90	1.00	414928.45	743447.72	N 32 8 20.52	W 103 40 49.29
	3861.00	0.44	216.23	3860.64	21.45	21.49	7.41	0.35	414928.13	743447.23	N 32 8 20.51	W 103 40 49.30
	3955.00	0.91	167.85	3954.63	20.43	20.47	7.36	0.74	414927.11	743447.17	N 32 8 20.50	W 103 40 49.30
	4050.00	0.75	148.85	4049.62	19.16	19.20	7.84	0.33	414925.84	743447.66	N 32 8 20.49	W 103 40 49.29
	4144.00	0.98	151.11	4143.61	17.93	17.97	8.54	0.25	414924.61	743448.36	N 32 8 20.48	W 103 40 49.28
	4238.00	2.11	158.41	4237.57	15.61	15.66	9.57	1.22	414922.30	743449.39	N 32 8 20.46	W 103 40 49.27
	4332.00	2.63	159.34	4331.49	11.97	12.03	10.96	0.55	414918.67	743450.78	N 32 8 20.42	W 103 40 49.26
	4426.00	2.33	163.93	4425.41	8.11	8.18	12.25	0.38	414914.82	743452.07	N 32 8 20.38	W 103 40 49.24
	4473.00	1.50	190.85	4472.38	6.59	6.66	12.40	2.56	414913.30	743452.22	N 32 8 20.37	W 103 40 49.24
	4598.00	1.55	195.89	4597.34	3.36	3.42	11.63	0.11	414910.06	743451.45	N 32 8 20.34	W 103 40 49.25
	4692.00	2.41	203.97	4691.28	0.34	0.39	10.48	0.96	414907.03	743450.30	N 32 8 20.31	W 103 40 49.26
	4786.00	4.00	219.66	4785.13	-3.98	-3.94	7.59	1.92	414902.70	743447.41	N 32 8 20.26	W 103 40 49.30
	4881.00	5.73	225.73	4879.78	-8.81	-8.60	2.07	1.90	414896.84	743441.89	N 32 8 20.21	W 103 40 49.36
	4975.00	6.54	234.44	4973.25	-16.16	-16.19	-5.64	1.31	414890.45	743434.18	N 32 8 20.14	W 103 40 49.45
	5069.00	7.73	238.70	5066.52	-22.50	-22.58	-15.40	1.38	414884.06	743424.42	N 32 8 20.08	W 103 40 49.57
	5164.00	8.88	241.15	5160.52	-29.30	-29.44	-27.28	1.27	414877.20	743412.54	N 32 8 20.01	W 103 40 49.70
	5258.00	9.37	241.51	5253.33	-36.38	-36.59	-40.36	0.52	414870.05	743399.46	N 32 8 19.94	W 103 40 49.86
	5352.00	9.38	241.77	5346.08	-43.58	-43.87	-53.83	0.05	414862.78	743385.99	N 32 8 19.87	W 103 40 50.01
	5446.00	8.79	240.54	5438.90	-50.66	-51.02	-66.84	0.66	414855.62	743372.99	N 32 8 19.80	W 103 40 50.17
	5540.00	8.51	239.46	5531.83	-57.66	-58.09	-79.08	0.34	414848.55	743360.74	N 32 8 19.73	W 103 40 50.31
	5634.00	8.63	238.64	5624.78	-64.80	-65.29	-91.09	0.18	414841.35	743348.73	N 32 8 19.66	W 103 40 50.45
	5728.00	8.64	238.27	5717.71	-72.12	-72.68	-103.12	0.06	414833.97	743336.70	N 32 8 19.59	W 103 40 50.59
	5823.00	8.31	236.37	5811.67	-79.61	-80.23	-114.91	0.46	414826.41	743324.92	N 32 8 19.52	W 103 40 50.73
	5917.00	8.60	234.96	5904.65	-87.35	-88.03	-126.32	0.38	414818.62	743313.51	N 32 8 19.44	W 103 40 50.86
	6011.00	8.67	239.06	5997.59	-94.97	-95.71	-138.15	0.66	414810.94	743301.68	N 32 8 19.36	W 103 40 51.00
	6105.00	8.63	239.04	6090.52	-102.17	-102.98	-150.27	0.04	414803.67	743289.56	N 32 8 19.29	W 103 40 51.14
	6199.00	8.48	237.74	6183.47	-109.43	-110.30	-162.18	0.26	414796.34	743277.65	N 32 8 19.22	W 103 40 51.28
	6294.00	8.35	237.39	6277.45	-116.83	-117.76	-173.91	0.15	414788.88	743265.91	N 32 8 19.15	W 103 40 51.42
	6388.00	8.02	236.43	6370.49	-124.07	-125.07	-185.13	0.38	414781.58	743254.70	N 32 8 19.08	W 103 40 51.55
	6482.00	8.67	243.05	6463.50	-130.85	-131.90	-196.91	1.23	414774.74	743242.92	N 32 8 19.01	W 103 40 51.68
	6577.00	8.82	245.67	6557.40	-137.02	-138.15	-209.93	0.45	414768.50	743229.90	N 32 8 18.95	W 103 40 51.84
First Legal Take Point	6667.00	8.86	243.54	6646.33	-142.88	-144.08	-222.42	0.37	414762.57	743217.41	N 32 8 18.89	W 103 40 51.98
	6671.00	8.86	243.45	6650.28	-143.16	-144.35	-222.97	0.37	414762.29	743216.86	N 32 8 18.89	W 103 40 51.99
	6765.00	8.80	243.01	6743.17	-149.59	-150.85	-235.85	0.10	414755.80	743203.98	N 32 8 18.82	W 103 40 52.14
	6860.00	8.88	242.00	6837.04	-156.26	-157.59	-248.80	0.18	414749.06	743191.03	N 32 8 18.76	W 103 40 52.29

Comments		Survey Type:		Def Survey		TD, Projection to		BH	
MD	Incl	Asc	TD	VSEC	NS	EW	DLS	North	East
(m)	(°)	(°)	(m)	(m)	(m)	(m)	(m)	(m)	(m)
7049.00	8.01	241.23	7023.77	-1705.05	-171.52	-274.44	0.20	414735.25	743165.39
7143.00	8.86	240.65	7166.64	-1775.05	-178.16	-287.16	0.24	414720.87	743120.67
7237.00	8.80	239.62	7209.52	-184.17	-185.78	-299.66	0.18	414720.86	743140.16
7311.00	8.69	240.67	7302.42	-191.24	-192.87	-312.11	0.25	414717.73	743127.02
7425.00	8.41	239.34	7395.38	-198.16	-199.90	-324.22	0.36	414706.52	743115.62
7500.00	8.18	238.69	7489.38	-205.21	-207.01	-335.94	0.29	414692.56	743087.87
7614.00	8.18	235.89	7582.43	-212.43	-214.29	-347.16	0.34	414682.36	743092.67
7708.00	8.42	236.02	7675.44	-219.97	-221.89	-358.41	0.26	414684.97	743081.43
7803.00	8.34	233.40	7769.43	-227.90	-229.89	-369.71	0.41	414676.77	743070.13
7897.00	7.98	234.43	7862.48	-235.70	-237.75	-381.01	0.41	414668.57	743059.05
7992.00	7.68	234.27	7956.59	-243.19	-245.29	-392.00	0.32	414661.36	743048.33
8086.00	6.95	232.13	8049.58	-250.30	-252.45	-403.05	0.83	414654.20	743037.30
8180.00	6.21	233.95	8143.29	-258.26	-260.45	-414.05	1.86	414648.20	743026.57
8275.00	6.25	241.83	8238.01	-266.15	-268.32	-425.00	1.85	414644.24	743025.17
8369.00	2.90	240.64	8331.86	-264.67	-266.87	-435.97	0.71	414641.74	743020.57
8463.00	2.91	239.74	8425.74	-265.01	-267.29	-446.92	0.05	414639.43	743019.43
8557.00	3.05	236.48	8519.61	-267.58	-269.87	-457.85	0.23	414636.78	743012.29
8651.00	2.98	235.73	8613.48	-270.77	-273.09	-468.78	0.49	414633.87	743007.77
8745.00	1.58	242.18	8707.38	-272.72	-275.06	-479.69	1.49	414631.60	743004.35
8839.00	0.67	306.75	8801.37	-272.99	-275.35	-490.60	0.11	414631.32	743002.77
8933.00	0.64	288.19	8895.36	-272.99	-275.35	-501.51	0.52	414631.30	743001.85
9027.00	0.64	288.19	8989.35	-272.99	-275.35	-512.42	0.38	414631.32	743000.87
9121.00	0.64	288.19	9083.34	-272.99	-275.35	-523.33	0.53	414631.35	742998.87
9215.00	1.95	264.04	9177.13	-272.99	-275.35	-534.24	0.81	414631.36	742997.86
9309.00	1.95	264.04	9271.13	-272.99	-275.35	-545.15	1.11	414631.37	742996.84
9403.00	1.95	264.04	9365.13	-272.99	-275.35	-556.06	0.81	414631.38	742995.83
9497.00	1.95	264.04	9459.13	-272.99	-275.35	-566.97	0.81	414631.39	742994.82
9591.00	1.95	264.04	9553.13	-272.99	-275.35	-577.88	0.81	414631.40	742993.81
9685.00	1.95	264.04	9647.13	-272.99	-275.35	-588.79	0.81	414631.41	742992.80
9779.00	1.95	264.04	9741.13	-272.99	-275.35	-599.70	0.81	414631.42	742991.79
9873.00	1.95	264.04	9835.13	-272.99	-275.35	-610.61	0.81	414631.43	742990.78
9967.00	1.95	264.04	9929.13	-272.99	-275.35	-621.52	0.81	414631.44	742989.77
10061.00	1.95	264.04	10023.13	-272.99	-275.35	-632.43	0.81	414631.45	742988.76
10155.00	1.95	264.04	10117.13	-272.99	-275.35	-643.34	0.81	414631.46	742987.75
10249.00	1.95	264.04	10211.13	-272.99	-275.35	-654.25	0.81	414631.47	742986.74
10343.00	1.95	264.04	10305.13	-272.99	-275.35	-665.16	0.81	414631.48	742985.73
10437.00	1.95	264.04	10399.13	-272.99	-275.35	-676.07	0.81	414631.49	742984.72
10531.00	1.95	264.04	10493.13	-272.99	-275.35	-686.98	0.81	414631.50	742983.71
10625.00	1.95	264.04	10587.13	-272.99	-275.35	-697.89	0.81	414631.51	742982.70
10719.00	1.95	264.04	10681.13	-272.99	-275.35	-708.80	0.81	414631.52	742981.69
10813.00	1.95	264.04	10775.13	-272.99	-275.35	-719.71	0.81	414631.53	742980.68
10907.00	1.95	264.04	10869.13	-272.99	-275.35	-730.62	0.81	414631.54	742979.67
11001.00	1.95	264.04	10963.13	-272.99	-275.35	-741.53	0.81	414631.55	742978.66
11095.00	1.95	264.04	11057.13	-272.99	-275.35	-752.44	0.81	414631.56	742977.65
11189.00	1.95	264.04	11151.13	-272.99	-275.35	-763.35	0.81	414631.57	742976.64
11283.00	1.95	264.04	11245.13	-272.99	-275.35	-774.26	0.81	414631.58	742975.63
11377.00	1.95	264.04	11339.13	-272.99	-275.35	-785.17	0.81	414631.59	742974.62
11471.00	1.95	264.04	11433.13	-272.99	-275.35	-796.08	0.81	414631.60	742973.61
11565.00	1.95	264.04	11527.13	-272.99	-275.35	-806.99	0.81	414631.61	742972.60
11659.00	1.95	264.04	11621.13	-272.99	-275.35	-817.90	0.81	414631.62	742971.59
11753.00	1.95	264.04	11715.13	-272.99	-275.35	-828.81	0.81	414631.63	742970.58
11847.00	1.95	264.04	11809.13	-272.99	-275.35	-839.72	0.81	414631.64	742969.57
11941.00	1.95	264.04	11903.13	-272.99	-275.35	-850.63	0.81	414631.65	742968.56
12035.00	1.95	264.04	12007.13	-272.99	-275.35	-861.54	0.81	414631.66	742967.55
12129.00	1.95	264.04	12101.13	-272.99	-275.35	-872.45	0.81	414631.67	742966.54
12223.00	1.95	264.04	12195.13	-272.99	-275.35	-883.36	0.81	414631.68	742965.53
12317.00	1.95	264.04	12289.13	-272.99	-275.35	-894.27	0.81	414631.69	742964.52
12411.00	1.95	264.04	12383.13	-272.99	-275.35	-905.18	0.81	414631.70	742963.51
12505.00	1.95	264.04	12477.13	-272.99	-275.35	-916.09	0.81	414631.71	742962.50
12599.00	1.95	264.04	12571.13	-272.99	-275.35	-926.99	0.81	414631.72	742961.49
12693.00	1.95	264.04	12665.13	-272.99	-275.35	-937.90	0.81	414631.73	742960.48
12787.00	1.95	264.04	12759.13	-272.99	-275.35	-948.81	0.81	414631.74	742959.47
12881.00	1.95	264.04	12853.13	-272.99	-275.35	-959.72	0.81	414631.75	742958.46
12975.00	1.95	264.04	12947.13	-272.99	-275.35	-970.63	0.81	414631.76	742957.45
13069.00	1.95	264.04	13041.13	-272.99	-275.35	-981.54	0.81	414631.77	742956.44
13163.00	1.95	264.04	13135.13	-272.99	-275.35	-992.45	0.81	414631.78	742955.43
13257.00	1.95	264.04	13229.13	-272.99	-275.35	-1003.36	0.81	414631.79	742954.42
13351.00	1.95	264.04	13323.13	-272.99	-275.35	-1014.27	0.81	414631.80	742953.41
13445.00	1.95	264.04	13417.13	-272.99	-275.35	-1025.18	0.81	414631.81	742952.40
13539.00	1.95	264.04	13511.13	-272.99	-275.35	-1036.09	0.81	414631.82	742951.39
13633.00	1.95	264.04	13605.13	-272.99	-275.35	-1047.00	0.81	414631.83	742950.38
13727.00	1.95	264.04	13699.13	-272.99	-275.35	-1057.91	0.81	414631.84	742949.37
13821.00	1.95	264.04	13793.13	-272.99	-275.35	-1068.82	0.81	414631.85	742948.36
13915.00	1.95	264.04	13887.13	-272.99	-275.35	-1079.73	0.81	414631.86	742947.35
14009.00	1.95	264.04	13981.13	-272.99	-275.35	-1090.64	0.81	414631.87	742946.34
14103.00	1.95	264.04	14075.13	-272.99	-275.35	-1101.55	0.81	414631.88	742945.33
14197.00	1.95	264.04	14169.13	-272.99	-275.35	-1112.46	0.81	414631.89	742944.32
14291.00	1.95	264.04	14263.13	-272.99	-275.35	-1123.37	0.81	414631.90	742943.31
14385.00	1.95	264.04	14357.13	-272.99	-275.35	-1134.28	0.81	414631.91	742942.30
14479.00	1.95	264.04	14451.13	-272.99	-275.35	-1145.19	0.81	414631.92	742941.29
14573.00	1.95	264.04	14545.13	-272.99	-275.35	-1156.10	0.81	414631.93	742940.28
14667.00	1.95	264.04	14639.13	-272.99	-275.35	-1167.01	0.81	414631.94	742939.27
14761.00	1.95	264.04	14733.13	-272.99	-275.35	-1177.92	0.81	414631.95	742938.26
14855.00	1.95	264.04	14827.13	-272.99	-275.35	-1188.83	0.81	414631.96	742937.25
14949.00	1.95	264.04	14921.13	-272.99	-275.35	-1199.74	0.81	414631.97	742936.24
15043.00	1.95	264.04	15015.13	-272.99	-275.35	-1210.65	0.81	414631.98	742935.23
15137.00	1.95	264.04	15109.13	-272.99	-275.35	-1221.56	0.81	414631.99	742934.22
15231.00	1.95	264.04	15203.13	-272.99	-275.35	-1232.47	0.81	414632.00	742933.21
15325.00	1.95	264.04	15297.13	-272.99	-275.35	-1243.38	0.81	414632.01	742932.20
15419.00	1.95	264.04	15391.13	-272.99	-275.35	-1254.29	0.81	414632.02	742931.19
15513.00	1.95	264.04	15485.13	-272.99	-275.35	-1265.20	0.81	414632.03	742930.18
15607.00	1.95	264.04	15579.13	-272.99	-275.35	-1276.11	0.81	414632.04	742929.17
15701.00	1.95	264.04	15673.13	-272.99	-275.35	-1287.02	0.81	414632.05	742928.16
15795.00	1.95	264.04	15767.13	-272.99	-275.35	-1297.93	0.81	414632.06	742927.15
15889.00	1.95	264.04	15861.13	-272.99	-275.35	-1308.84	0.81	414632.07	742926.14
15983.00	1.95	264.04	15955.13	-272.99	-275.35	-1319.75	0.81	414632.08	742925.13
16077.00	1.95	264.04	16049.13	-272.99	-275.35	-1330.66	0.81	414632.09	742924.12
16171.00	1.95	264.04	16143.13	-272.99	-275.35	-1341.57	0.81	414632.10	742923.11
16265.00	1.95	264.04	16237.13	-272.99	-275.35	-1352.48	0.81	414632.11	742922.10
16359.00	1.95	264.04	16331.13	-272.99</					

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 ° ' ")
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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	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/98.425	17.500	13.375	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Final Survey - Cimarex Cotton Draw 9L Federal #5H MWD 0ft - 15396ft (Surcon
	1	26.000	26.000	Act Stns	17.500	13.375	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Final Survey - Cimarex Cotton Draw 9L Federal #5H MWD 0ft - 15396ft (Surcon
	1	26.000	798.000	Act Stns	17.500	13.375	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Cotton Draw 9L Federal
	1	798.000	4554.000	Act Stns	12.250	9.625	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Cotton Draw 9L Federal
	1	4554.000	15396.000	Act Stns	8.750	5.500	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Cotton Draw 9L Federal

Oilfield Services, Central U.S. Land
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

September 10, 2018

Cimarex Energy Co
202 S. Cheyenne Ave., Ste 1000
Tulsa, OK 74103

HOBBS OCD
JAN 22 2019
RECEIVED

Re:

CLIENT: Cimarex Energy Co
WELL: Cotton Draw 9L Federal 5H
FIELD: Bone Spring

RIG: HP380
COUNTY: Lea
API NO: 30-025-43837
JOB NO: 18MLD2305

9, 25S, 32E, Lea NM
N 32.13890 W 103.68030

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>
Dom Nolfi FS	Cotton Draw 9L Federal 5H Original Hole	212.00 Ft to 15340.00 Ft	July 7, 2018 to July 29, 2018	Extreme/TelePacer Third Party Corrected

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

Field Service Manager

Schlumberger-Private

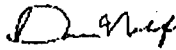
Oilfield Services, Central U.S. Land
Schlumberger Drilling and Measurements
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Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

Well Reference:
9, 25S, 32E, Lea NM
N 32.13890 W 103.68030

I, Dom Nolfi certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of July 07, 2018 through July 29, 2018, conduct or supervise the taking of the Extreme/TelePacer & Third Party Corrected surveys from a depth of 212.00 feet to a depth of 15340.00 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 Cotton Draw 9L Federal 5H Well (Original Hole) API No. 30-025-43837 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
Dom Nolfi
FS



Subscribed and Sworn to before me this 10th day of September (month) 2018 (yr)

My Commission expires:

2-16-2022

Donna Adams
Notary Public

(signature)

Adams County Colorado
(County State)

