



Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)
Survey Geodetic Report
(Def Survey)



Report Date:	December 08, 2017 - 09:44 AM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	90.000 ° (Grid North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Southern California 29 Fed 19H / Cimarex Southern California 29 Fed 19H	TVD Reference Datum:	RKB
Well:	Cimarex Southern California 29 Fed 19H	TVD Reference Elevation:	3570.400 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3548.400 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	7.217 °
Survey Name:	Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)	Total Gravity Field Strength:	998.5041mgn (9.80665 Based)
Survey Date:	November 11, 2017	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	162.299 ° / 4910.275 ft / 6.074 / 0.534	Total Magnetic Field Strength:	48359.023 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	60.562 °
Location Lat / Long:	N 32° 37' 40.85884", W 103° 47' 45.45957"	Declination Date:	December 05, 2017
Location Grid N/E Y/X:	N 592621.490 rUS, E 706772.120 rUS	Magnetic Declination Model:	HDGM 2017
CRS Grid Convergence Angle:	0.2897 °	North Reference:	Grid North
Grid Scale Factor:	0.99994043	Grid Convergence Used:	0.2897 °
Version / Patch:	2.10.674.0	Total Corr Mag North->Grid North:	6.9275 °
		Local Coord Referenced To:	Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (rUS)	Easting (rUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
SHL [1390' FSL, 308' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	592621.49	706772.12	N 32 37 40.86	W 103 47 45.46
	159.00	0.11	344.53	159.00	-0.04	0.15	-0.04	0.07	592621.64	706772.08	N 32 37 40.86	W 103 47 45.46
	219.00	0.49	218.47	219.00	-0.22	0.00	-0.22	0.94	592621.49	706771.90	N 32 37 40.86	W 103 47 45.46
	310.00	0.55	198.31	310.00	-0.58	-0.72	-0.58	0.23	592620.77	706771.54	N 32 37 40.85	W 103 47 45.47
	401.00	0.24	72.54	400.99	-0.52	-1.08	-0.52	0.78	592620.41	706771.60	N 32 37 40.85	W 103 47 45.47
	491.00	0.70	22.54	490.99	-0.13	-0.52	-0.13	0.64	592620.97	706771.99	N 32 37 40.85	W 103 47 45.46
	582.00	0.73	36.60	581.98	0.43	0.46	0.43	0.20	592621.95	706772.55	N 32 37 40.86	W 103 47 45.45
	672.00	0.28	146.66	671.98	0.89	0.74	0.89	0.98	592622.23	706773.01	N 32 37 40.87	W 103 47 45.45
	762.00	0.76	238.32	761.98	0.50	0.24	0.50	0.91	592621.73	706772.62	N 32 37 40.86	W 103 47 45.45
	854.00	0.76	290.31	853.97	-0.59	0.13	-0.59	0.72	592621.62	706771.53	N 32 37 40.86	W 103 47 45.47
	945.00	1.25	326.76	944.96	-1.70	1.17	-1.70	0.88	592622.66	706770.42	N 32 37 40.87	W 103 47 45.48
	1040.00	0.84	336.08	1039.94	-2.55	2.87	-2.55	0.47	592624.16	706769.57	N 32 37 40.89	W 103 47 45.49
	1133.00	1.02	352.65	1132.93	-2.93	4.12	-2.93	0.35	592625.61	706769.19	N 32 37 40.90	W 103 47 45.49

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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 ° ' ")
	1228.00	1.08	345.55	1227.91	-3.26	5.82	-3.26	0.15	592627.31	706768.86	N 32 37 40.92	W 103 47 45.50
	1322.00	1.22	328.42	1321.90	-4.01	7.53	-4.01	0.39	592629.02	706768.11	N 32 37 40.93	W 103 47 45.51
	1417.00	1.08	343.58	1416.88	-4.79	9.25	-4.79	0.35	592630.74	706767.33	N 32 37 40.95	W 103 47 45.52
	1511.00	1.42	339.23	1510.85	-5.45	11.19	-5.45	0.38	592632.68	706766.67	N 32 37 40.97	W 103 47 45.52
	1605.00	1.41	325.24	1604.83	-6.53	13.23	-6.53	0.37	592634.72	706765.59	N 32 37 40.99	W 103 47 45.54
	1699.00	0.76	339.32	1698.81	-7.41	14.76	-7.41	0.74	592636.25	706764.72	N 32 37 41.01	W 103 47 45.55
	1793.00	0.40	149.48	1792.81	-7.46	15.06	-7.46	1.23	592636.55	706764.66	N 32 37 41.01	W 103 47 45.55
	1888.00	0.47	114.27	1887.80	-6.94	14.62	-6.94	0.29	592636.11	706765.19	N 32 37 41.00	W 103 47 45.54
	1982.00	0.88	78.75	1981.80	-5.88	14.60	-5.88	0.60	592636.09	706766.24	N 32 37 41.00	W 103 47 45.53
	2077.00	1.34	121.10	2076.78	-4.21	14.17	-4.21	0.98	592635.66	706767.91	N 32 37 41.00	W 103 47 45.51
	2171.00	2.06	131.92	2170.74	-2.01	12.47	-2.01	0.84	592633.96	706770.11	N 32 37 40.98	W 103 47 45.48
	2266.00	2.11	121.92	2265.68	0.74	10.41	0.74	0.39	592631.90	706772.86	N 32 37 40.96	W 103 47 45.45
	2360.00	2.35	117.18	2359.61	3.93	8.61	3.93	0.32	592630.10	706776.05	N 32 37 40.94	W 103 47 45.41
	2454.00	2.00	126.26	2453.54	6.96	6.76	6.96	0.52	592628.25	706779.08	N 32 37 40.93	W 103 47 45.38
	2548.00	1.92	147.65	2547.48	9.13	4.46	9.13	0.78	592625.95	706781.25	N 32 37 40.90	W 103 47 45.35
	2609.00	2.00	145.49	2608.45	10.28	2.72	10.28	0.18	592624.21	706782.40	N 32 37 40.89	W 103 47 45.34
	2735.00	1.84	131.37	2734.38	13.04	-0.43	13.04	0.40	592621.06	706785.16	N 32 37 40.85	W 103 47 45.31
	2830.00	1.92	132.36	2829.33	15.36	-2.51	15.36	0.09	592618.98	706787.48	N 32 37 40.83	W 103 47 45.28
	2924.00	1.95	129.93	2923.27	17.75	-4.59	17.75	0.09	592616.90	706789.87	N 32 37 40.81	W 103 47 45.25
	3019.00	1.82	140.33	3018.22	19.96	-6.79	19.96	0.38	592614.70	706792.07	N 32 37 40.79	W 103 47 45.23
	3113.00	1.77	140.44	3112.18	21.83	-9.06	21.83	0.05	592612.43	706793.95	N 32 37 40.77	W 103 47 45.20
	3207.00	1.63	139.04	3206.14	23.63	-11.19	23.63	0.16	592610.30	706795.75	N 32 37 40.75	W 103 47 45.18
	3396.00	2.02	136.45	3395.04	27.69	-15.63	27.69	0.21	592605.86	706799.81	N 32 37 40.70	W 103 47 45.14
	3490.00	2.09	140.25	3488.98	29.93	-18.15	29.93	0.18	592603.34	706802.05	N 32 37 40.68	W 103 47 45.11
	3585.00	2.14	141.45	3583.91	32.14	-20.87	32.14	0.07	592600.62	706804.26	N 32 37 40.65	W 103 47 45.08
	3774.00	2.00	138.61	3772.79	36.52	-26.11	36.52	0.09	592595.39	706808.64	N 32 37 40.60	W 103 47 45.03
	3962.00	2.13	140.73	3960.67	40.90	-31.27	40.90	0.08	592590.22	706813.02	N 32 37 40.55	W 103 47 44.98
	4056.00	2.17	137.05	4054.60	43.22	-33.93	43.22	0.15	592587.57	706815.34	N 32 37 40.52	W 103 47 44.96
	4122.00	2.04	133.68	4120.56	44.92	-35.65	44.92	0.27	592585.84	706817.04	N 32 37 40.50	W 103 47 44.94
	4222.00	2.06	136.63	4220.49	47.44	-38.19	47.44	0.11	592583.30	706819.56	N 32 37 40.48	W 103 47 44.91
	4316.00	0.64	163.29	4314.47	48.75	-39.92	48.75	1.61	592581.57	706820.87	N 32 37 40.46	W 103 47 44.89
	4410.00	1.02	310.38	4408.46	48.27	-39.88	48.27	1.70	592581.61	706820.38	N 32 37 40.46	W 103 47 44.90
	4505.00	0.99	315.81	4503.45	47.05	-38.74	47.05	0.11	592582.75	706819.17	N 32 37 40.47	W 103 47 44.91
	4599.00	0.87	302.32	4597.43	45.88	-37.78	45.88	0.26	592583.71	706818.00	N 32 37 40.48	W 103 47 44.93
	4788.00	0.91	308.48	4786.41	43.49	-36.08	43.49	0.05	592585.41	706815.61	N 32 37 40.50	W 103 47 44.95
	4882.00	0.82	310.35	4880.40	42.40	-35.18	42.40	0.10	592586.31	706814.52	N 32 37 40.51	W 103 47 44.97
	4977.00	0.83	303.72	4975.39	41.31	-34.36	41.31	0.10	592587.13	706813.42	N 32 37 40.52	W 103 47 44.98
	5071.00	1.01	297.22	5069.38	40.00	-33.60	40.00	0.22	592587.89	706812.12	N 32 37 40.52	W 103 47 44.99
	5165.00	0.92	303.71	5163.37	38.64	-32.80	38.64	0.15	592588.69	706810.76	N 32 37 40.53	W 103 47 45.01
	5354.00	1.11	311.17	5352.34	36.00	-30.76	36.00	0.12	592590.74	706808.12	N 32 37 40.55	W 103 47 45.04
	5448.00	1.16	301.54	5446.32	34.50	-29.66	34.50	0.21	592591.83	706806.62	N 32 37 40.56	W 103 47 45.06
	5543.00	1.21	295.04	5541.30	32.78	-28.73	32.78	0.15	592592.76	706804.89	N 32 37 40.57	W 103 47 45.08
	5731.00	1.20	284.00	5729.26	29.07	-27.41	29.07	0.12	592594.08	706801.18	N 32 37 40.59	W 103 47 45.12
	5825.00	1.30	286.75	5823.23	27.09	-26.87	27.09	0.12	592594.62	706799.21	N 32 37 40.59	W 103 47 45.14
	6014.00	1.30	289.81	6012.19	23.02	-25.52	23.02	0.04	592595.97	706795.14	N 32 37 40.61	W 103 47 45.19
	6203.00	1.25	290.67	6201.14	19.07	-24.07	19.07	0.03	592597.42	706791.19	N 32 37 40.62	W 103 47 45.24
	6392.00	1.27	301.35	6390.09	15.36	-22.25	15.36	0.12	592599.24	706787.48	N 32 37 40.64	W 103 47 45.28
	6581.00	1.18	296.21	6579.05	11.82	-20.30	11.82	0.08	592601.19	706783.94	N 32 37 40.66	W 103 47 45.32
	6675.00	1.36	300.26	6673.03	9.99	-19.31	9.99	0.21	592602.18	706782.11	N 32 37 40.67	W 103 47 45.34
	6769.00	1.28	292.84	6767.00	8.06	-18.34	8.06	0.20	592603.15	706780.18	N 32 37 40.68	W 103 47 45.37
	6958.00	1.32	291.77	6955.95	4.09	-16.72	4.09	0.02	592604.77	706776.21	N 32 37 40.69	W 103 47 45.41
	7147.00	1.06	279.25	7144.91	0.35	-15.63	0.35	0.19	592605.86	706772.46	N 32 37 40.70	W 103 47 45.46
	7335.00	1.70	258.75	7332.86	-4.11	-15.89	-4.11	0.42	592605.60	706768.01	N 32 37 40.70	W 103 47 45.51
	7430.00	1.78	255.49	7427.81	-6.92	-16.54	-6.92	0.13	592604.95	706765.20	N 32 37 40.70	W 103 47 45.54
	7524.00	1.88	242.54	7521.77	-9.70	-17.62	-9.70	0.45	592603.88	706762.42	N 32 37 40.69	W 103 47 45.57
	7619.00	1.59	223.62	7616.72	-11.99	-19.29	-11.99	0.67	592602.20	706760.13	N 32 37 40.67	W 103 47 45.60
	7713.00	0.92	234.64	7710.70	-13.51	-20.67	-13.51	0.75	592600.82	706758.62	N 32 37 40.66	W 103 47 45.62
	7807.00	0.99	232.23	7804.69	-14.76	-21.60	-14.76	0.09	592599.89	706757.36	N 32 37 40.65	W 103 47 45.63

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 ° ° °)
	7901.00	2.64	225.20	7898.64	-16.94	-23.63	-16.94	1.77	592597.87	706755.18	N 32 37 40.63	W 103 47 45.66
	7996.00	1.90	232.88	7993.56	-19.75	-26.12	-19.75	0.84	592595.37	706752.37	N 32 37 40.60	W 103 47 45.69
	8090.00	1.69	317.79	8087.53	-21.92	-26.03	-21.92	2.58	592595.46	706750.20	N 32 37 40.60	W 103 47 45.72
	8184.00	1.51	310.88	8181.49	-23.79	-24.19	-23.79	0.28	592597.30	706748.33	N 32 37 40.62	W 103 47 45.74
	8279.00	1.06	301.29	8276.47	-25.49	-22.92	-25.49	0.52	592598.57	706746.63	N 32 37 40.63	W 103 47 45.76
	8467.00	0.94	274.91	8464.44	-28.51	-21.88	-28.51	0.25	592599.61	706743.61	N 32 37 40.64	W 103 47 45.79
	8562.00	0.82	230.17	8559.43	-29.81	-22.25	-29.81	0.71	592599.24	706742.31	N 32 37 40.64	W 103 47 45.81
	8611.00	1.04	199.00	8608.43	-30.22	-22.90	-30.22	1.11	592598.59	706741.90	N 32 37 40.63	W 103 47 45.81
	8682.00	1.93	156.15	8679.40	-29.95	-24.60	-29.95	1.92	592596.89	706742.17	N 32 37 40.62	W 103 47 45.81
	8720.00	6.27	134.76	8717.30	-28.22	-26.65	-28.22	11.92	592594.84	706743.91	N 32 37 40.60	W 103 47 45.79
	8752.00	10.47	130.11	8748.95	-24.75	-29.75	-24.75	13.28	592591.74	706747.37	N 32 37 40.57	W 103 47 45.75
	8783.00	14.92	128.20	8779.19	-19.46	-34.04	-19.46	14.42	592587.45	706752.66	N 32 37 40.52	W 103 47 45.69
	8815.00	19.95	125.25	8809.71	-11.76	-39.74	-11.76	15.95	592581.75	706760.36	N 32 37 40.47	W 103 47 45.60
	8846.00	23.95	121.55	8838.45	-2.07	-46.09	-2.07	13.65	592575.41	706770.05	N 32 37 40.40	W 103 47 45.49
	8877.00	26.81	117.42	8868.46	9.50	-52.60	9.50	10.85	592568.89	706781.62	N 32 37 40.34	W 103 47 45.35
	8909.00	29.56	113.18	8894.67	23.17	-59.03	23.17	10.63	592562.46	706795.28	N 32 37 40.27	W 103 47 45.19
	8940.00	32.36	109.19	8921.25	38.03	-64.77	38.03	11.20	592556.72	706810.15	N 32 37 40.22	W 103 47 45.02
	8972.00	35.94	107.12	8947.73	55.10	-70.35	55.10	11.76	592551.14	706827.22	N 32 37 40.18	W 103 47 44.82
	9003.00	39.36	105.66	8972.27	73.27	-75.69	73.27	11.40	592545.81	706845.38	N 32 37 40.11	W 103 47 44.61
First taken point	9029.00	41.89	104.49	8992.00	89.61	-80.08	89.61	10.17	592541.41	706861.73	N 32 37 40.06	W 103 47 44.42
	9035.00	42.48	104.24	8996.45	93.52	-81.08	93.52	10.17	592540.41	706865.63	N 32 37 40.05	W 103 47 44.37
	9066.00	44.74	102.80	9018.89	114.31	-86.08	114.31	7.96	592535.42	706886.42	N 32 37 40.00	W 103 47 44.13
	9098.00	47.72	100.29	9041.03	136.94	-90.69	136.94	10.90	592530.81	706909.05	N 32 37 39.95	W 103 47 43.86
	9129.00	51.62	98.41	9081.09	160.26	-94.52	160.26	13.40	592526.98	706932.37	N 32 37 39.92	W 103 47 43.59
	9161.00	55.81	97.63	9080.02	185.79	-98.11	185.79	13.24	592523.39	706957.90	N 32 37 39.88	W 103 47 43.29
	9192.00	58.95	96.81	9096.73	211.69	-101.39	211.69	10.37	592520.11	706983.80	N 32 37 39.85	W 103 47 42.99
	9224.00	62.54	96.63	9112.37	239.42	-104.65	239.42	11.23	592516.84	707011.52	N 32 37 39.81	W 103 47 42.67
	9255.00	66.77	95.99	9125.64	267.26	-107.73	267.26	13.77	592513.77	707039.36	N 32 37 39.78	W 103 47 42.34
	9286.00	69.74	95.26	9137.12	295.91	-110.55	295.91	9.83	592510.95	707068.01	N 32 37 39.75	W 103 47 42.01
	9318.00	73.46	94.78	9147.22	326.15	-113.20	326.15	11.71	592508.29	707098.25	N 32 37 39.72	W 103 47 41.65
	9349.00	75.71	93.94	9155.46	355.95	-115.47	355.95	7.71	592506.02	707128.04	N 32 37 39.70	W 103 47 41.30
	9381.00	78.58	92.63	9162.58	387.09	-117.26	387.09	9.82	592504.24	707159.19	N 32 37 39.68	W 103 47 40.94
	9412.00	81.40	91.89	9167.96	417.59	-118.46	417.59	9.40	592503.04	707189.68	N 32 37 39.67	W 103 47 40.58
	9444.00	84.90	90.61	9171.78	449.35	-119.15	449.35	11.64	592502.34	707221.44	N 32 37 39.66	W 103 47 40.21
	9475.00	86.80	89.58	9174.02	480.27	-119.20	480.27	6.97	592502.29	707252.36	N 32 37 39.66	W 103 47 39.85
	9538.00	91.34	88.09	9175.05	543.23	-117.92	543.23	7.58	592503.57	707315.31	N 32 37 39.66	W 103 47 39.11
	9577.00	92.13	87.78	9173.87	582.18	-116.52	582.18	2.18	592504.98	707354.27	N 32 37 39.68	W 103 47 38.66
	9671.00	90.55	88.29	9171.67	676.10	-113.30	676.10	1.77	592508.20	707448.18	N 32 37 39.70	W 103 47 37.56
	9765.00	88.18	91.58	9172.71	770.07	-113.19	770.07	4.31	592508.31	707542.15	N 32 37 39.70	W 103 47 36.46
	9858.00	89.00	93.01	9175.00	862.97	-116.91	862.97	1.77	592504.58	707635.03	N 32 37 39.66	W 103 47 35.38
	9954.00	89.38	91.18	9176.36	958.89	-120.42	958.89	1.95	592501.08	707730.95	N 32 37 39.62	W 103 47 34.25
	10048.00	89.21	90.80	9177.51	1052.87	-122.05	1052.87	0.44	592499.45	707824.92	N 32 37 39.60	W 103 47 33.16
	10143.00	89.90	90.73	9178.25	1147.86	-123.31	1147.86	0.73	592498.18	707919.91	N 32 37 39.58	W 103 47 32.05
	10237.00	89.72	90.79	9178.56	1241.85	-124.56	1241.85	0.20	592496.94	708013.89	N 32 37 39.56	W 103 47 30.95
	10332.00	89.72	90.67	9179.03	1336.84	-125.77	1336.84	0.13	592495.73	708108.88	N 32 37 39.55	W 103 47 29.84
	10426.00	89.83	90.60	9179.39	1430.83	-126.81	1430.83	0.14	592494.68	708202.86	N 32 37 39.53	W 103 47 28.74
	10520.00	89.76	90.62	9179.73	1524.83	-127.81	1524.83	0.08	592493.68	708296.85	N 32 37 39.52	W 103 47 27.64
	10615.00	89.83	90.60	9180.07	1619.82	-128.83	1619.82	0.08	592492.67	708391.84	N 32 37 39.50	W 103 47 26.53
	10709.00	89.79	90.58	9180.38	1713.81	-129.79	1713.81	0.05	592491.70	708485.83	N 32 37 39.49	W 103 47 25.43
	10803.00	89.31	90.94	9181.12	1807.80	-131.04	1807.80	0.64	592490.46	708579.81	N 32 37 39.47	W 103 47 24.33
	10898.00	89.35	90.99	9182.23	1902.78	-132.64	1902.78	0.07	592488.86	708674.79	N 32 37 39.45	W 103 47 23.22
	10992.00	89.38	90.83	9183.27	1996.77	-134.13	1996.77	0.17	592487.37	708768.76	N 32 37 39.43	W 103 47 22.12
	11087.00	89.04	89.68	9184.58	2091.75	-134.56	2091.75	1.26	592486.94	708863.74	N 32 37 39.42	W 103 47 21.01
	11181.00	89.04	89.45	9186.16	2185.74	-133.84	2185.74	0.24	592487.66	708957.72	N 32 37 39.42	W 103 47 19.91
	11276.00	89.21	89.39	9187.61	2280.72	-132.88	2280.72	0.19	592488.62	709052.70	N 32 37 39.43	W 103 47 18.80
	11370.00	90.24	89.63	9188.08	2374.72	-132.08	2374.72	1.13	592489.42	709146.69	N 32 37 39.43	W 103 47 17.70
	11464.00	90.52	88.81	9187.44	2468.70	-130.80	2468.70	0.92	592490.70	709240.67	N 32 37 39.44	W 103 47 16.60

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 ° ' ")
	11559.00	90.48	88.53	9186.81	2563.67	-128.59	2563.67	0.30	592492.91	709335.64	N 32 37 39.46	W 103 47 15.49
	11653.00	90.31	88.91	9185.96	2657.65	-126.49	2657.65	0.44	592495.01	709428.60	N 32 37 39.47	W 103 47 14.39
	11748.00	89.72	90.90	9185.94	2752.64	-126.33	2752.64	2.18	592495.16	709524.59	N 32 37 39.47	W 103 47 13.28
	11842.00	89.66	91.26	9186.44	2846.63	-128.11	2846.63	0.39	592493.39	709618.57	N 32 37 39.45	W 103 47 12.18
	11937.00	89.86	90.84	9186.84	2941.61	-129.85	2941.61	0.49	592491.65	709713.55	N 32 37 39.43	W 103 47 11.07
	12031.00	90.28	91.32	9186.73	3035.59	-131.62	3035.59	0.68	592489.88	709807.52	N 32 37 39.40	W 103 47 9.97
	12125.00	90.07	90.99	9186.44	3129.57	-133.51	3129.57	0.42	592487.98	709901.50	N 32 37 39.38	W 103 47 8.88
	12220.00	90.45	89.27	9186.01	3224.57	-133.73	3224.57	1.85	592487.77	709996.49	N 32 37 39.37	W 103 47 7.76
	12314.00	90.21	88.76	9185.47	3318.55	-132.11	3318.55	0.60	592489.38	710090.47	N 32 37 39.38	W 103 47 6.67
	12408.00	90.38	88.57	9184.98	3412.52	-129.92	3412.52	0.27	592491.57	710184.43	N 32 37 39.40	W 103 47 5.57
	12503.00	90.38	88.68	9184.35	3507.49	-127.64	3507.49	0.12	592493.85	710279.40	N 32 37 39.42	W 103 47 4.46
	12597.00	90.31	88.81	9183.79	3601.47	-125.59	3601.47	0.16	592495.91	710373.37	N 32 37 39.43	W 103 47 3.36
	12691.00	90.10	89.98	9183.45	3695.46	-124.59	3695.46	1.26	592496.91	710467.35	N 32 37 39.44	W 103 47 2.26
	12786.00	90.38	91.00	9183.05	3790.46	-125.40	3790.46	1.11	592496.09	710562.34	N 32 37 39.43	W 103 47 1.15
	12880.00	90.28	90.61	9182.51	3884.45	-128.73	3884.45	0.43	592494.77	710656.33	N 32 37 39.41	W 103 47 0.05
	12974.00	90.65	90.98	9181.75	3978.43	-128.03	3978.43	0.66	592493.47	710750.31	N 32 37 39.39	W 103 46 58.95
	13069.00	90.31	90.66	9180.95	4073.42	-129.39	4073.42	0.49	592492.11	710845.29	N 32 37 39.37	W 103 46 57.84
	13163.00	89.14	91.35	9181.40	4167.40	-131.04	4167.40	1.44	592490.46	710939.27	N 32 37 39.35	W 103 46 56.74
	13257.00	89.38	90.80	9182.62	4261.38	-132.80	4261.38	0.64	592488.70	711033.23	N 32 37 39.33	W 103 46 55.64
	13352.00	89.69	89.10	9183.39	4356.37	-132.72	4356.37	1.82	592488.78	711128.22	N 32 37 39.32	W 103 46 54.53
	13446.00	89.24	89.18	9184.27	4450.36	-131.31	4450.36	0.49	592490.19	711222.20	N 32 37 39.33	W 103 46 53.43
	13541.00	90.55	88.96	9184.44	4545.34	-129.77	4545.34	1.40	592491.73	711317.18	N 32 37 39.34	W 103 46 52.32
	13591.00	90.31	89.03	9184.07	4595.33	-128.89	4595.33	0.50	592492.61	711367.17	N 32 37 39.35	W 103 46 51.74
TD, project to bit	13663.00	90.31	89.03	9183.68	4667.32	-127.67	4667.32	0.00	592493.83	711439.15	N 32 37 39.36	W 103 46 50.89

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_MWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)
	1	24.000	24.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG-Depth Only	Original Borehole / Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)
	1	24.000	13663.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)

HOBBS OCD

MAY 02 2018

CIMAREX

Schlumberger

Cimarex

Final PVA

RECEIVED

Cimarex Southern California 29 Fed 19H

Borehole:	Original Borehole	Well:	Cimarex Southern California 29 Fed 19H	Field:	NM Lea County (NAD 83)	Survey:	Cimarex Southern California 29 Fed 19H
Gravity & Magnetic Parameters	Dip:	Date:	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Grid Conv:	Miscellaneous	TVD Ref:
Model: HDGM 2017	60.563°	05-Dec-2017	Lat: N 32 37 40.88	592621.49NUS	0.2897°	California 29 Fed	RKB(3570.4ft above MSL)
MagDec: 7.317°	FS: 45359.023nT	Gravity PS: 998.504mgm (0.00655 Based)	Lon: W 103 47 43.46	706772.12WUS	Scale Feet: 0.89894043	Plan: Cimarex Southern California 29 Fed 19H MWD Final(Surcon Corrected)	

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(°)S(°)	E(°)W(°)	DLS
SHL [1390' FSL, 308' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First taken point	9029.00	41.89	104.49	8992.00	89.61	-80.08	89.61	10.17
TD, project to bit	13663.00	90.31	89.03	9183.68	4667.32	-127.67	4667.32	0.00



Grid
True
Mag

Grid North
Tot Cor (Mag=0.5227°)
Mag Dec (7.317°)
Grid Conv (0.290°)

CONTROLLED	
Drawn by	Cimarex Southern California 29 Fed 19H MWD
Checked by	Survey Number
Date	05-Dec-2017
1. Client	
2. Client	
3. Office	
4. Office	
5. Office	

