

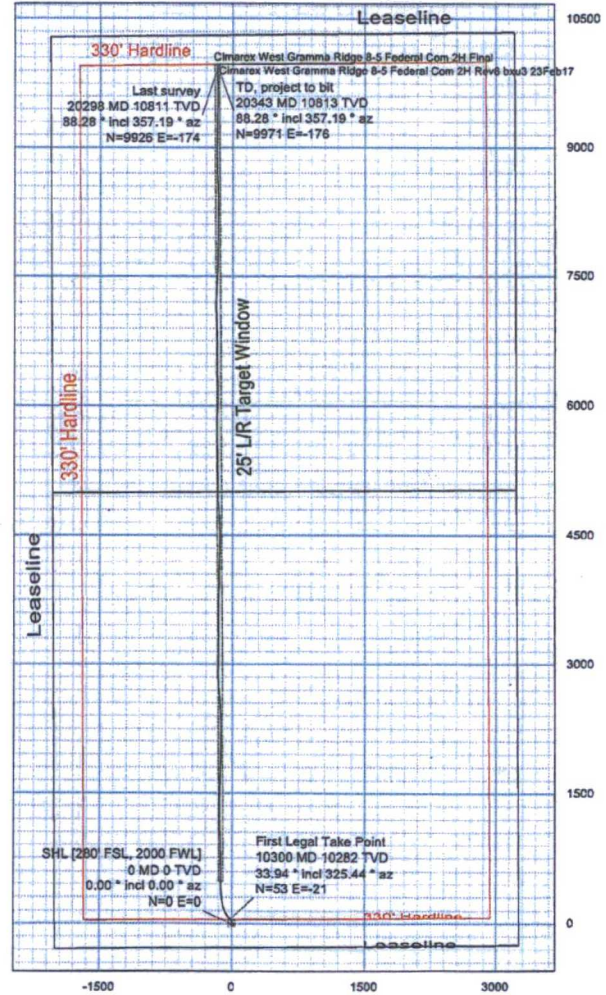
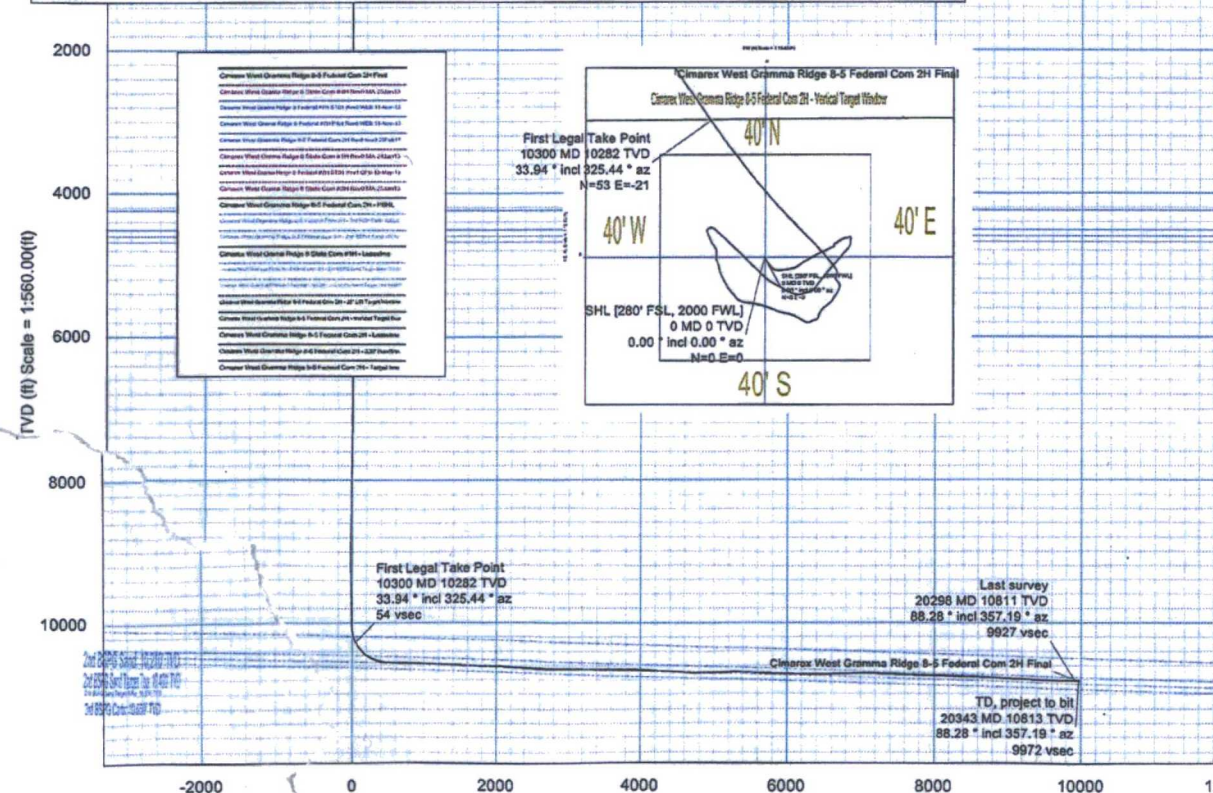
Borehole:		Well:		Field:		Structure:	
Original Borehole		Cimarex West Gramma Ridge 8-5 Federal Com 2H		NM Lea County (NAD 83)		Cimarex West Gramma Ridge 8-5 Federal Com 2H	
Gravity & Magnetic Parameters		Surface Location		NAD83 New Mexico State Plane, Eastern Zone, US Feet		Wellbore/Casings	
Model: MCOM 5016	Dip: 68.315°	Lat: N 32 23 55.06	Long: W 103 28 35.81	Northings: 510172.7815	Grid Conv: 8.4497	Slot: Cimarex West Gramma Ridge 8-5 Federal Com 2H	TVD Ref: RKB(2558) above MSL
MagDec: 6.862°	FS: 45391.732mT	Date: 16-Feb-2017	Gravity FS: 986.475mg (9.80665 Based)	Eastings: 800254.62015	Scale Fact: 0.99999593	Plan: Cimarex West Gramma Ridge 8-5 Federal Com 2H Final	

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [280' FSL, 2000 FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Legal Take Point	10300.00	33.94	325.44	10282.14	53.72	53.36	-20.56	14.64
Last survey	20298.00	88.28	357.19	10811.30	9927.28	9925.77	-173.51	1.66
TD, project to bit	20343.00	88.28	357.19	10812.65	9972.24	9970.69	-175.71	0.00



Grid
True
Mag
Grid North
Tot Corr (M=0 6.413°)
Mag Dec (6.862°)
Grid Conv (0.450°)

CONTROLLED	
Well Name	Cimarex West Gramma Ridge 8-5 Federal Com 2H Final
Well ID	001
Well Type	Oil
Well Status	Active
Well Depth	10811.30
Well Date	16-Feb-2017
Well User	SL



Cimarex West Gramma Ridge 8-5 Federal Com 2H Final Survey Geodetic Report

(Def Survey)



Report Date: February 27, 2017 - 08:58 AM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex West Gramma Ridge 8-5 Federal Com 2H / Cimarex West Gramma Ridge 8-5 Federal Com 2H
 Well: Cimarex West Gramma Ridge 8-5 Federal Com 2H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex West Gramma Ridge 8-5 Federal Com 2H Final
 Survey Date: February 10, 2017
 Tort / AHD / DDI / ERD Ratio: 251.071 ° / 10219.554 ft / 6.684 / 0.945
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 23' 59.05866", W 103° 29' 38.80848"
 Location Grid N/E Y/X: N 510172.700 ftUS, E 800354.630 ftUS
 CRS Grid Convergence Angle: 0.4497 °
 Grid Scale Factor: 0.99998593
 Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 358.976 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3556.000 ft above MSL
 Seabed / Ground Elevation: 3531.000 ft above MSL
 Magnetic Declination: 6.862 °
 Total Gravity Field Strength: 998.4751mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48291.752 nT
 Magnetic Dip Angle: 60.315 °
 Declination Date: February 16, 2017
 Magnetic Declination Model: HDGM 2016
 North Reference: Grid North
 Grid Convergence Used: 0.4497 °
 Total Corr Mag North->Grid North: 6.4127 °
 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 [280' FSL, 2000 FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	510172.70	800354.63	N 32 23 59.06	W 103 29 38.81
	159.00	0.62	155.94	159.00	-0.79	-0.79	0.35	0.39	510171.91	800354.98	N 32 23 59.05	W 103 29 38.80
	183.00	0.62	147.92	183.00	-1.02	-1.01	0.47	0.36	510171.69	800355.10	N 32 23 59.05	W 103 29 38.80
	256.00	0.49	145.58	255.99	-1.62	-1.61	0.86	0.18	510171.09	800355.49	N 32 23 59.04	W 103 29 38.80
	316.00	0.62	144.39	315.99	-2.10	-2.08	1.19	0.22	510170.62	800355.82	N 32 23 59.04	W 103 29 38.79
	409.00	0.71	143.51	408.98	-2.99	-2.95	1.83	0.10	510169.75	800356.46	N 32 23 59.03	W 103 29 38.79
	435.00	0.71	144.79	434.98	-3.25	-3.22	2.02	0.06	510169.48	800356.65	N 32 23 59.03	W 103 29 38.79
	498.00	0.49	132.98	497.98	-3.76	-3.72	2.44	0.40	510168.98	800357.07	N 32 23 59.02	W 103 29 38.78
	589.00	0.49	126.24	588.97	-4.27	-4.21	3.04	0.06	510168.49	800357.67	N 32 23 59.02	W 103 29 38.77
	682.00	0.40	128.18	681.97	-4.71	-4.65	3.61	0.10	510168.05	800358.24	N 32 23 59.01	W 103 29 38.77
	768.00	0.49	108.61	767.97	-5.03	-4.95	4.20	0.20	510167.75	800358.83	N 32 23 59.01	W 103 29 38.76
	950.00	0.40	86.53	949.96	-5.26	-5.16	5.57	0.11	510167.54	800360.20	N 32 23 59.01	W 103 29 38.74
	1144.00	0.49	74.42	1143.96	-5.02	-4.90	7.04	0.07	510167.80	800361.67	N 32 23 59.01	W 103 29 38.73
	1235.00	0.62	84.02	1234.95	-4.88	-4.74	7.91	0.18	510167.96	800362.54	N 32 23 59.01	W 103 29 38.72
	1328.00	0.40	80.32	1327.95	-4.79	-4.64	8.73	0.24	510168.06	800363.36	N 32 23 59.01	W 103 29 38.71
	1425.00	0.40	72.39	1424.95	-4.64	-4.48	9.39	0.06	510168.22	800364.02	N 32 23 59.01	W 103 29 38.70
	1520.00	0.31	76.80	1519.95	-4.49	-4.32	9.95	0.10	510168.38	800364.58	N 32 23 59.02	W 103 29 38.69
	1648.00	0.31	81.73	1647.94	-4.38	-4.19	10.63	0.02	510168.51	800365.26	N 32 23 59.02	W 103 29 38.68
	1790.00	0.49	63.97	1789.94	-4.07	-3.87	11.56	0.15	510168.83	800366.19	N 32 23 59.02	W 103 29 38.67
	1885.00	0.71	55.95	1884.93	-3.58	-3.36	12.41	0.25	510169.34	800367.04	N 32 23 59.02	W 103 29 38.66
	1979.00	0.88	54.40	1978.93	-2.85	-2.61	13.48	0.18	510170.09	800368.11	N 32 23 59.03	W 103 29 38.65
	2073.00	0.88	59.60	2072.91	-2.09	-1.83	14.69	0.08	510170.87	800369.32	N 32 23 59.04	W 103 29 38.64
	2167.00	1.02	59.08	2166.90	-1.32	-1.03	16.03	0.15	510171.67	800370.66	N 32 23 59.05	W 103 29 38.62
	2262.00	1.10	59.96	2261.89	-0.45	-0.14	17.55	0.09	510172.56	800372.17	N 32 23 59.06	W 103 29 38.60
	2356.00	1.10	58.68	2355.87	0.44	0.78	19.10	0.03	510173.48	800373.73	N 32 23 59.06	W 103 29 38.59
	2449.00	1.19	68.29	2448.85	1.23	1.60	20.76	0.23	510174.30	800375.39	N 32 23 59.07	W 103 29 38.57

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 ° ' ")
	2544.00	1.50	62.08	2543.82	2.14	2.55	22.77	0.36	510175.25	800377.40	N 32 23 59.08	W 103 29 38.54
	2636.00	1.72	66.79	2635.79	3.21	3.66	25.10	0.28	510176.36	800379.73	N 32 23 59.09	W 103 29 38.52
	2733.00	0.31	317.89	2732.77	3.95	4.43	26.27	1.90	510177.13	800380.90	N 32 23 59.10	W 103 29 38.50
	2827.00	0.22	1.60	2826.77	4.33	4.79	26.10	0.23	510177.49	800380.73	N 32 23 59.10	W 103 29 38.50
	2921.00	0.62	57.58	2920.77	4.77	5.25	26.54	0.56	510177.95	800381.17	N 32 23 59.11	W 103 29 38.50
	3015.00	1.10	54.54	3014.76	5.55	6.04	27.70	0.51	510178.74	800382.33	N 32 23 59.12	W 103 29 38.48
	3116.00	1.41	66.97	3115.73	6.56	7.09	29.63	0.41	510179.79	800384.26	N 32 23 59.13	W 103 29 38.46
	3209.00	0.62	81.42	3208.72	7.06	7.61	31.18	0.89	510180.31	800385.81	N 32 23 59.13	W 103 29 38.44
	3296.00	0.70	67.50	3295.71	7.31	7.89	32.14	0.21	510180.59	800386.77	N 32 23 59.13	W 103 29 38.43
	3399.00	0.62	198.47	3398.71	7.02	7.60	32.55	1.17	510180.30	800387.17	N 32 23 59.13	W 103 29 38.43
	3494.00	0.80	180.09	3493.70	5.87	6.45	32.38	0.30	510179.15	800387.01	N 32 23 59.12	W 103 29 38.43
	3588.00	0.88	180.09	3587.69	4.49	5.07	32.38	0.09	510177.77	800387.01	N 32 23 59.11	W 103 29 38.43
	3671.00	2.12	221.51	3670.67	2.72	3.28	31.36	1.89	510175.98	800385.99	N 32 23 59.09	W 103 29 38.44
	3773.00	2.30	222.61	3772.59	-0.15	0.37	28.72	0.18	510173.07	800383.35	N 32 23 59.06	W 103 29 38.47
	3871.00	2.30	219.22	3870.51	-3.07	-2.61	26.15	0.14	510170.09	800380.78	N 32 23 59.03	W 103 29 38.50
	3965.00	2.30	219.22	3964.43	-5.95	-5.53	23.76	0.00	510167.17	800378.39	N 32 23 59.00	W 103 29 38.53
	4060.00	2.30	216.00	4059.36	-8.93	-8.55	21.44	0.14	510164.15	800376.07	N 32 23 58.97	W 103 29 38.56
	4154.00	2.21	216.49	4153.29	-11.87	-11.53	19.25	0.10	510161.17	800373.88	N 32 23 58.94	W 103 29 38.59
	4247.00	1.90	251.92	4246.23	-13.75	-13.45	16.72	1.38	510159.25	800371.35	N 32 23 58.92	W 103 29 38.61
	4344.00	1.81	252.71	4343.18	-14.85	-14.40	13.73	0.10	510158.30	800368.36	N 32 23 58.92	W 103 29 38.65
	4438.00	2.43	294.53	4437.12	-14.20	-14.02	10.50	1.72	510158.68	800365.13	N 32 23 58.92	W 103 29 38.69
	4532.00	2.61	299.34	4531.03	-12.26	-12.14	6.82	0.30	510160.56	800361.45	N 32 23 58.94	W 103 29 38.73
	4626.00	2.52	300.92	4624.93	-10.09	-10.03	3.18	0.12	510162.67	800357.81	N 32 23 58.96	W 103 29 38.77
	4721.00	1.72	311.98	4719.87	-8.01	-8.00	0.33	0.94	510164.70	800354.96	N 32 23 58.98	W 103 29 38.81
	4815.00	1.72	315.16	4813.83	-6.03	-6.06	-1.71	0.10	510166.64	800352.92	N 32 23 59.00	W 103 29 38.83
	4912.00	1.81	314.36	4910.78	-3.89	-3.96	-3.84	0.10	510168.74	800350.79	N 32 23 59.02	W 103 29 38.85
	5005.00	1.72	316.57	5003.74	-1.81	-1.92	-5.85	0.12	510170.78	800348.78	N 32 23 59.04	W 103 29 38.88
	5098.00	1.59	314.89	5096.70	0.14	0.01	-7.72	0.15	510172.71	800346.91	N 32 23 59.06	W 103 29 38.90
	5266.00	1.90	312.47	5264.62	3.74	3.53	-11.42	0.19	510176.23	800343.21	N 32 23 59.09	W 103 29 38.94
	5358.00	2.03	318.06	5356.56	6.02	5.77	-13.64	0.25	510178.47	800340.99	N 32 23 59.12	W 103 29 38.97
	5453.00	2.21	311.76	5451.50	8.53	8.25	-16.13	0.31	510180.95	800338.50	N 32 23 59.14	W 103 29 39.00
	5548.00	2.21	313.26	5546.43	11.06	10.72	-18.83	0.06	510183.42	800335.80	N 32 23 59.17	W 103 29 39.03
	5642.00	0.80	244.30	5640.40	12.05	11.68	-20.74	2.19	510184.38	800333.89	N 32 23 59.18	W 103 29 39.05
	5738.00	0.71	239.27	5736.39	11.47	11.08	-21.86	0.12	510183.78	800332.77	N 32 23 59.17	W 103 29 39.06
	5833.00	0.88	160.66	5831.38	10.49	10.09	-22.12	1.07	510182.79	800332.51	N 32 23 59.16	W 103 29 39.07
	5928.00	0.88	156.95	5926.37	9.12	8.74	-21.59	0.06	510181.43	800333.04	N 32 23 59.15	W 103 29 39.06
	6021.00	0.88	159.55	6019.36	7.78	7.41	-21.06	0.04	510180.11	800333.57	N 32 23 59.13	W 103 29 39.05
	6117.00	0.88	153.91	6115.35	6.42	6.06	-20.48	0.09	510178.76	800334.15	N 32 23 59.12	W 103 29 39.05
	6212.00	0.62	142.10	6210.34	5.35	5.00	-19.85	0.32	510177.70	800334.78	N 32 23 59.11	W 103 29 39.04
	6306.00	0.49	153.91	6304.34	4.58	4.23	-19.36	0.18	510176.93	800335.27	N 32 23 59.10	W 103 29 39.03
	6401.00	0.40	133.16	6399.34	3.98	3.64	-18.94	0.19	510176.34	800335.69	N 32 23 59.10	W 103 29 39.03
	6500.00	0.31	174.49	6498.33	3.47	3.14	-18.66	0.27	510175.84	800335.97	N 32 23 59.09	W 103 29 39.03
	6590.00	0.40	172.69	6588.33	2.92	2.58	-18.59	0.10	510175.28	800336.04	N 32 23 59.09	W 103 29 39.03
	6685.00	0.40	174.58	6683.33	2.26	1.93	-18.52	0.01	510174.63	800336.11	N 32 23 59.08	W 103 29 39.02
	6779.00	0.31	192.52	6777.33	1.88	1.35	-18.55	0.15	510174.05	800336.08	N 32 23 59.07	W 103 29 39.02
	6873.00	0.49	177.71	6871.33	1.03	0.70	-18.58	0.22	510173.40	800336.05	N 32 23 59.07	W 103 29 39.03
	6967.00	0.49	183.39	6965.32	0.23	-0.10	-18.59	0.05	510172.60	800336.04	N 32 23 59.06	W 103 29 39.03
	7062.00	0.40	150.61	7060.32	-0.47	-0.80	-18.45	0.28	510171.90	800336.18	N 32 23 59.05	W 103 29 39.02
	7157.00	0.40	169.87	7155.32	-1.09	-1.41	-18.23	0.14	510171.29	800336.40	N 32 23 59.05	W 103 29 39.02
	7251.00	0.49	162.95	7249.31	-1.80	-2.12	-18.06	0.11	510170.58	800336.57	N 32 23 59.04	W 103 29 39.02
	7346.00	0.40	153.34	7344.31	-2.49	-2.80	-17.79	0.12	510169.90	800336.84	N 32 23 59.03	W 103 29 39.02
	7439.00	0.71	170.17	7437.31	-3.35	-3.66	-17.55	0.37	510169.04	800337.09	N 32 23 59.02	W 103 29 39.01
	7538.00	0.88	165.86	7536.30	-4.69	-5.00	-17.25	0.18	510167.70	800337.38	N 32 23 59.01	W 103 29 39.01
	7631.00	1.04	152.64	7629.28	-6.15	-6.45	-16.69	0.29	510166.25	800337.94	N 32 23 59.00	W 103 29 39.00
	7726.00	1.19	157.66	7724.27	-7.84	-8.12	-15.92	0.19	510164.58	800338.71	N 32 23 58.98	W 103 29 38.99
	7821.00	1.33	149.82	7819.24	-9.72	-9.99	-14.99	0.23	510162.71	800339.64	N 32 23 58.96	W 103 29 38.98
	7914.00	1.41	149.82	7912.22	-11.66	-11.91	-13.87	0.09	510160.79	800340.76	N 32 23 58.94	W 103 29 38.97
	8008.00	1.41	138.89	8006.19	-13.56	-13.78	-12.53	0.29	510158.92	800342.10	N 32 23 58.92	W 103 29 38.96

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 ° ' ")
	8102.00	1.72	141.09	8100.15	-15.55	-15.75	-10.89	0.34	510156.95	800343.74	N 32 23 58.90	W 103 29 38.94
	8197.00	1.90	102.27	8195.11	-17.04	-17.20	-8.45	1.28	510155.50	800346.18	N 32 23 58.89	W 103 29 38.91
	8292.00	1.90	98.26	8290.06	-17.66	-17.76	-5.35	0.14	510154.94	800349.28	N 32 23 58.88	W 103 29 38.87
	8385.00	2.03	101.47	8383.00	-18.26	-18.31	-2.21	0.18	510154.39	800352.42	N 32 23 58.88	W 103 29 38.84
	8483.00	2.03	109.71	8480.94	-19.25	-19.24	1.12	0.30	510153.46	800355.75	N 32 23 58.87	W 103 29 38.80
	8578.00	2.12	115.53	8575.88	-20.63	-20.56	4.29	0.24	510152.14	800358.92	N 32 23 58.85	W 103 29 38.76
	8671.00	1.19	97.29	8668.84	-21.54	-21.43	6.80	1.14	510151.28	800361.43	N 32 23 58.85	W 103 29 38.73
	8777.00	1.50	102.97	8774.81	-22.04	-21.88	9.24	0.32	510150.82	800363.87	N 32 23 58.84	W 103 29 38.70
	8873.00	1.90	119.01	8870.77	-23.14	-22.93	11.86	0.64	510149.77	800366.49	N 32 23 58.83	W 103 29 38.67
	8966.00	2.43	120.73	8963.70	-24.95	-24.69	14.90	0.57	510148.02	800369.53	N 32 23 58.81	W 103 29 38.64
	9061.00	1.02	48.24	9058.67	-25.46	-25.15	17.27	2.46	510147.55	800371.90	N 32 23 58.81	W 103 29 38.61
	9155.00	1.41	78.43	9152.65	-24.70	-24.36	19.02	0.78	510146.34	800373.65	N 32 23 58.82	W 103 29 38.59
	9250.00	1.41	10.83	9247.62	-23.34	-22.98	20.39	1.65	510149.72	800375.02	N 32 23 58.83	W 103 29 38.57
	9345.00	1.59	31.27	9342.59	-21.08	-20.70	21.29	0.59	510152.00	800375.92	N 32 23 58.85	W 103 29 38.56
	9437.00	2.12	57.45	9434.54	-19.11	-18.70	23.39	1.07	510154.00	800378.02	N 32 23 58.87	W 103 29 38.54
	9533.00	1.72	29.60	9530.49	-16.95	-16.49	25.60	1.04	510156.21	800380.23	N 32 23 58.89	W 103 29 38.51
	9626.00	1.90	37.40	9623.45	-14.54	-14.05	27.22	0.33	510158.65	800381.85	N 32 23 58.92	W 103 29 38.49
	9724.00	1.59	4.03	9721.40	-11.91	-11.40	28.31	1.07	510161.30	800382.93	N 32 23 58.94	W 103 29 38.48
	9818.00	1.33	310.04	9815.38	-9.89	-9.40	27.56	1.43	510163.30	800382.19	N 32 23 58.96	W 103 29 38.49
	9912.00	0.71	349.88	9909.36	-8.60	-8.13	26.62	0.96	510164.57	800381.25	N 32 23 58.98	W 103 29 38.50
	9984.00	0.88	47.14	9981.36	-7.79	-7.31	26.95	1.08	510165.39	800381.58	N 32 23 58.98	W 103 29 38.49
	10039.00	1.58	10.12	10036.34	-6.77	-6.28	27.39	1.86	510166.42	800382.02	N 32 23 58.99	W 103 29 38.49
	10071.00	5.03	332.97	10068.29	-5.07	-4.59	26.83	12.15	510168.11	800381.46	N 32 23 59.01	W 103 29 38.50
	10102.00	8.65	321.18	10099.06	-2.01	-1.57	24.75	12.47	510171.13	800379.38	N 32 23 59.04	W 103 29 38.52
	10134.00	12.82	318.27	10130.50	2.59	2.96	20.88	13.14	510175.66	800375.51	N 32 23 59.09	W 103 29 38.56
	10166.00	17.01	316.03	10161.41	8.71	8.98	15.27	13.21	510181.68	800369.90	N 32 23 59.15	W 103 29 38.63
	10197.00	21.48	317.15	10190.67	16.26	16.41	8.25	14.47	510189.11	800362.88	N 32 23 59.22	W 103 29 38.71
	10229.00	24.39	320.28	10220.14	25.78	25.79	0.05	9.86	510198.49	800354.68	N 32 23 59.31	W 103 29 38.81
	10260.00	28.34	322.89	10247.91	36.73	36.59	-8.49	13.28	510209.28	800346.14	N 32 23 59.42	W 103 29 38.90
	10292.00	32.80	324.96	10275.46	50.06	49.75	-18.05	14.32	510222.45	800336.58	N 32 23 59.55	W 103 29 39.01
First Legal Take Point	10300.00	33.94	325.44	10282.14	53.72	53.36	-20.56	14.64	510226.06	800334.07	N 32 23 59.59	W 103 29 39.04
1st perf	10323.00	37.23	326.67	10300.84	64.95	64.46	-28.03	14.64	510237.16	800326.60	N 32 23 59.70	W 103 29 39.13
2) 10,310'	10355.00	40.51	325.75	10325.75	81.84	81.15	-39.20	10.41	510253.85	800315.43	N 32 23 59.86	W 103 29 39.26
	10386.00	42.45	326.33	10348.98	99.07	98.18	-50.67	6.38	510270.88	800303.96	N 32 24 0.03	W 103 29 39.39
	10417.00	43.28	328.75	10371.70	117.06	115.97	-61.98	5.95	510288.67	800292.65	N 32 24 0.21	W 103 29 39.52
	10449.00	45.06	332.94	10394.66	136.72	135.44	-72.83	10.68	510308.14	800281.80	N 32 24 0.40	W 103 29 39.65
	10481.00	48.34	338.08	10416.61	158.08	156.63	-82.45	15.54	510329.33	800272.18	N 32 24 0.61	W 103 29 39.76
	10512.00	52.00	342.87	10436.47	180.65	179.06	-90.38	16.73	510351.76	800264.25	N 32 24 0.84	W 103 29 39.85
	10543.00	55.47	346.06	10454.80	204.84	203.14	-97.05	13.93	510375.83	800257.58	N 32 24 1.08	W 103 29 39.92
	10575.00	58.01	347.06	10472.35	230.97	229.16	-103.27	8.36	510401.86	800251.36	N 32 24 1.33	W 103 29 39.99
	10606.00	61.43	348.76	10487.98	257.24	255.33	-108.87	12.01	510428.03	800245.76	N 32 24 1.59	W 103 29 40.05
	10638.00	66.09	351.62	10502.13	285.59	283.61	-113.74	16.62	510456.30	800240.89	N 32 24 1.87	W 103 29 40.11
	10669.00	69.98	353.30	10513.72	314.15	312.10	-117.51	13.52	510484.80	800237.12	N 32 24 2.16	W 103 29 40.15
	10701.00	72.77	354.56	10523.94	344.35	342.25	-120.71	9.48	510514.95	800233.92	N 32 24 2.45	W 103 29 40.19
	10733.00	75.61	356.00	10532.66	375.08	372.93	-123.24	9.87	510545.63	800231.39	N 32 24 2.76	W 103 29 40.21
	10764.00	79.94	358.03	10539.22	405.35	403.18	-124.81	15.36	510575.87	800229.82	N 32 24 3.06	W 103 29 40.23
	10796.00	83.97	359.63	10543.70	437.02	434.85	-125.46	13.53	510607.54	800229.17	N 32 24 3.37	W 103 29 40.23
	10864.00	86.66	0.01	10549.25	504.78	502.62	-125.67	3.99	510675.31	800228.96	N 32 24 4.04	W 103 29 40.23
	10924.00	87.52	0.04	10552.30	564.70	562.54	-125.65	1.43	510735.23	800228.99	N 32 24 4.63	W 103 29 40.22
	11019.00	88.21	359.22	10555.84	659.62	657.47	-126.26	1.13	510830.16	800228.37	N 32 24 5.57	W 103 29 40.22
	11114.00	88.69	358.82	10558.41	754.59	752.42	-127.88	0.66	510925.11	800226.75	N 32 24 6.51	W 103 29 40.23
	11208.00	88.42	358.38	10560.78	848.55	846.36	-130.18	0.55	511019.05	800224.45	N 32 24 7.44	W 103 29 40.25
	11303.00	88.73	358.29	10563.14	943.52	941.29	-132.94	0.34	511113.98	800221.69	N 32 24 8.38	W 103 29 40.27
	11397.00	88.25	358.71	10565.62	1037.48	1035.23	-135.40	0.68	511207.91	800219.23	N 32 24 9.31	W 103 29 40.29
	11492.00	88.04	357.98	10568.69	1132.43	1130.14	-138.14	0.80	511302.82	800216.49	N 32 24 10.25	W 103 29 40.32
	11584.00	88.01	357.64	10571.86	1224.35	1222.02	-141.65	0.37	511394.70	800212.98	N 32 24 11.16	W 103 29 40.35
	11679.00	86.04	359.76	10576.80	1319.21	1316.85	-143.81	3.04	511489.53	800210.82	N 32 24 12.10	W 103 29 40.37

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 ° ' '')
	11774.00	86.28	0.88	10583.16	1413.97	1411.64	-143.28	1.20	511584.31	800211.35	N 32 24 13.04	W 103 29 40.35
	11868.00	86.25	1.79	10589.28	1507.69	1505.41	-141.09	0.97	511678.09	800213.54	N 32 24 13.96	W 103 29 40.32
	11963.00	87.45	1.97	10594.50	1602.43	1600.21	-137.98	1.28	511772.89	800216.65	N 32 24 14.90	W 103 29 40.27
	12057.00	88.21	1.83	10598.06	1696.23	1694.09	-134.87	0.82	511866.77	800219.77	N 32 24 15.83	W 103 29 40.23
	12152.00	88.87	2.07	10600.48	1791.08	1789.01	-131.64	0.74	511961.68	800223.00	N 32 24 16.77	W 103 29 40.18
	12246.00	88.14	2.16	10602.93	1884.90	1882.91	-128.17	0.78	512055.58	800226.46	N 32 24 17.70	W 103 29 40.13
	12341.00	88.14	1.57	10606.02	1979.73	1977.81	-125.08	0.62	512150.48	800229.55	N 32 24 18.64	W 103 29 40.09
	12435.00	87.11	0.20	10609.91	2073.59	2071.72	-123.63	1.82	512244.38	800231.01	N 32 24 19.57	W 103 29 40.06
	12530.00	85.97	359.05	10615.65	2168.41	2166.54	-124.25	1.70	512339.20	800230.39	N 32 24 20.51	W 103 29 40.06
	12624.00	86.35	359.61	10621.94	2262.20	2260.32	-125.34	0.72	512432.98	800229.29	N 32 24 21.43	W 103 29 40.06
	12719.00	87.08	358.38	10627.39	2357.04	2355.15	-127.01	1.50	512527.81	800227.63	N 32 24 22.37	W 103 29 40.07
	12813.00	87.28	356.83	10632.01	2450.90	2448.95	-130.93	1.66	512621.61	800223.70	N 32 24 23.30	W 103 29 40.11
	12908.00	87.49	356.20	10636.34	2545.71	2543.67	-136.70	0.70	512716.33	800217.93	N 32 24 24.24	W 103 29 40.17
	13003.00	88.49	354.77	10639.68	2640.47	2638.32	-144.17	1.84	512810.97	800210.46	N 32 24 25.17	W 103 29 40.25
	13098.00	88.66	354.88	10642.04	2735.19	2732.90	-152.74	0.21	512905.55	800201.89	N 32 24 26.11	W 103 29 40.34
	13192.00	90.48	357.77	10642.75	2829.08	2826.69	-158.76	3.63	512999.34	800195.87	N 32 24 27.04	W 103 29 40.40
	13287.00	89.35	1.47	10642.89	2924.05	2921.67	-159.39	4.07	513094.32	800195.24	N 32 24 27.98	W 103 29 40.40
	13382.00	89.35	1.90	10643.96	3018.94	3016.62	-156.60	0.45	513189.27	800198.03	N 32 24 28.92	W 103 29 40.36
	13476.00	89.76	0.19	10644.69	3112.87	3110.60	-154.89	1.87	513283.25	800199.75	N 32 24 29.85	W 103 29 40.33
	13571.00	89.17	0.28	10645.58	3207.84	3205.59	-154.50	0.63	513378.24	800200.14	N 32 24 30.79	W 103 29 40.32
	13666.00	89.04	0.14	10647.06	3302.81	3300.58	-154.15	0.20	513473.23	800200.49	N 32 24 31.73	W 103 29 40.30
	13760.00	89.38	0.11	10648.36	3396.78	3394.57	-153.94	0.36	513567.22	800200.69	N 32 24 32.66	W 103 29 40.29
	13855.00	89.28	0.28	10649.47	3491.75	3489.56	-153.62	0.21	513662.21	800201.01	N 32 24 33.60	W 103 29 40.28
	13950.00	89.66	359.97	10650.35	3586.73	3584.56	-153.41	0.52	513757.20	800201.22	N 32 24 34.54	W 103 29 40.27
	14044.00	89.11	0.52	10651.36	3680.70	3678.55	-153.01	0.83	513851.19	800201.62	N 32 24 35.47	W 103 29 40.26
	14139.00	89.76	0.74	10652.30	3775.66	3773.54	-151.97	0.72	513946.18	800202.67	N 32 24 36.41	W 103 29 40.24
	14234.00	90.21	0.83	10652.32	3870.61	3868.53	-150.66	0.48	514041.17	800203.97	N 32 24 37.35	W 103 29 40.21
	14328.00	88.80	0.55	10653.13	3964.56	3962.52	-149.53	1.53	514135.16	800205.10	N 32 24 38.28	W 103 29 40.19
	14423.00	86.28	0.12	10657.21	4059.44	4057.42	-148.98	2.69	514230.06	800205.66	N 32 24 39.22	W 103 29 40.17
	14517.00	88.76	2.17	10661.28	4153.27	4151.30	-147.10	3.42	514323.94	800207.53	N 32 24 40.15	W 103 29 40.14
	14612.00	88.28	2.70	10663.73	4248.07	4246.19	-143.06	0.75	514418.82	800211.57	N 32 24 41.08	W 103 29 40.09
	14707.00	86.39	1.16	10668.15	4342.83	4341.02	-139.87	2.57	514513.65	800214.76	N 32 24 42.02	W 103 29 40.04
	14801.00	85.87	359.73	10674.49	4436.58	4434.80	-139.14	1.62	514607.43	800215.49	N 32 24 42.95	W 103 29 40.03
	14896.00	85.77	358.73	10681.42	4531.33	4529.54	-140.41	1.06	514702.17	800214.22	N 32 24 43.89	W 103 29 40.03
	14990.00	86.90	357.96	10687.43	4625.13	4623.31	-143.12	1.45	514795.93	800211.51	N 32 24 44.82	W 103 29 40.05
	15085.00	86.73	356.09	10692.71	4719.92	4718.03	-148.04	1.97	514890.65	800206.59	N 32 24 45.75	W 103 29 40.10
	15180.00	88.25	354.67	10696.87	4814.64	4812.62	-155.69	2.19	514985.25	800198.94	N 32 24 46.69	W 103 29 40.18
	15274.00	90.58	356.59	10697.83	4908.46	4906.33	-162.85	3.21	515078.95	800191.78	N 32 24 47.62	W 103 29 40.26
	15369.00	91.07	359.74	10698.46	5003.43	5001.26	-165.89	3.36	515173.88	800188.74	N 32 24 48.56	W 103 29 40.29
	15463.00	91.48	0.28	10694.37	5097.39	5095.24	-165.87	0.72	515267.86	800188.76	N 32 24 49.49	W 103 29 40.28
	15558.00	91.44	359.88	10691.95	5192.34	5190.21	-165.74	0.42	515362.82	800188.89	N 32 24 50.43	W 103 29 40.27
	15653.00	91.10	359.65	10689.84	5287.31	5285.18	-166.13	0.43	515457.80	800188.50	N 32 24 51.37	W 103 29 40.26
	15748.00	88.56	359.20	10690.12	5382.30	5380.17	-167.09	2.72	515552.78	800187.55	N 32 24 52.31	W 103 29 40.26
	15842.00	88.14	358.63	10692.83	5476.26	5474.11	-168.86	0.75	515646.73	800185.77	N 32 24 53.24	W 103 29 40.28
	15937.00	87.42	357.96	10696.51	5571.18	5569.00	-171.69	1.03	515741.61	800182.94	N 32 24 54.17	W 103 29 40.30
	16031.00	86.80	358.37	10701.25	5665.05	5662.83	-174.69	0.79	515835.44	800179.94	N 32 24 55.10	W 103 29 40.33
	16126.00	87.46	0.70	10706.01	5759.92	5757.70	-175.46	2.55	515930.31	800179.17	N 32 24 56.04	W 103 29 40.33
	16221.00	88.52	2.29	10709.34	5854.76	5852.61	-172.99	2.01	516025.21	800181.65	N 32 24 56.98	W 103 29 40.29
	16316.00	88.93	1.60	10711.45	5949.61	5947.53	-169.76	0.84	516120.13	800184.87	N 32 24 57.92	W 103 29 40.24
	16410.00	88.66	0.88	10713.43	6043.52	6041.48	-167.73	0.82	516214.09	800186.90	N 32 24 58.85	W 103 29 40.21
	16505.00	88.56	359.56	10715.73	6138.46	6136.45	-167.36	1.39	516309.05	800187.27	N 32 24 59.79	W 103 29 40.20
	16599.00	86.63	357.80	10719.68	6232.37	6230.34	-169.53	2.78	516402.94	800185.11	N 32 25 0.72	W 103 29 40.22
	16694.00	88.62	358.76	10723.61	6327.28	6325.21	-172.38	2.33	516497.81	800182.26	N 32 25 1.66	W 103 29 40.24
	16789.00	90.96	359.55	10723.96	6422.27	6420.19	-173.78	2.60	516592.79	800180.86	N 32 25 2.60	W 103 29 40.25
	16883.00	91.10	359.83	10722.27	6516.25	6514.17	-174.28	0.33	516686.77	800180.35	N 32 25 3.53	W 103 29 40.24
	16978.00	91.86	0.10	10719.82	6611.20	6609.14	-174.34	0.85	516781.73	800180.29	N 32 25 4.47	W 103 29 40.24
	17073.00	91.48	359.75	10717.05	6706.15	6704.10	-174.47	0.54	516876.69	800180.17	N 32 25 5.41	W 103 29 40.23
	17167.00	91.58	358.65	10714.54	6800.11	6798.05	-175.78	1.17	516970.65	800178.85	N 32 25 6.34	W 103 29 40.24

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 ° ' ")
	17262.00	92.48	357.94	10711.18	6895.04	6892.95	-178.60	1.21	517065.54	800176.03	N 32 25 7.28	W 103 29 40.26
	17364.00	91.58	357.13	10707.56	6996.94	6994.79	-182.99	1.19	517167.38	800171.64	N 32 25 8.28	W 103 29 40.30
	17459.00	90.34	358.56	10705.97	7091.91	7089.71	-186.56	1.99	517262.29	800168.07	N 32 25 9.22	W 103 29 40.34
	17554.00	88.83	0.46	10706.66	7186.89	7184.69	-187.37	2.55	517357.28	800167.26	N 32 25 10.16	W 103 29 40.34
	17649.00	87.80	2.43	10709.45	7281.76	7279.62	-184.98	2.34	517452.20	800169.65	N 32 25 11.10	W 103 29 40.30
	17744.00	87.35	3.09	10713.47	7376.47	7374.42	-180.41	0.84	517547.00	800174.23	N 32 25 12.04	W 103 29 40.24
	17838.00	88.14	3.33	10717.17	7470.14	7468.20	-175.15	0.88	517640.78	800179.48	N 32 25 12.97	W 103 29 40.17
	17932.00	88.83	2.38	10719.66	7563.89	7562.05	-170.47	1.25	517734.63	800184.16	N 32 25 13.89	W 103 29 40.10
	18027.00	88.38	0.72	10721.97	7658.76	7656.98	-167.90	1.81	517829.56	800186.73	N 32 25 14.83	W 103 29 40.07
	18121.00	88.21	0.50	10724.77	7752.68	7750.93	-166.90	0.30	517923.51	800187.73	N 32 25 15.76	W 103 29 40.05
	18216.00	88.14	0.32	10727.79	7847.60	7845.88	-166.22	0.20	518018.46	800188.41	N 32 25 16.70	W 103 29 40.03
	18311.00	88.31	0.49	10730.73	7942.53	7940.84	-165.55	0.25	518113.41	800189.08	N 32 25 17.64	W 103 29 40.01
	18405.00	88.18	0.67	10733.61	8036.45	8034.79	-164.80	0.24	518207.36	800190.04	N 32 25 18.57	W 103 29 39.99
	18500.00	88.21	0.90	10736.60	8131.35	8129.73	-163.30	0.24	518302.30	800191.34	N 32 25 19.51	W 103 29 39.97
	18594.00	88.66	0.03	10739.17	8225.28	8223.69	-162.53	1.04	518396.26	800192.10	N 32 25 20.44	W 103 29 39.95
	18689.00	88.25	359.72	10741.73	8320.24	8318.66	-162.74	0.54	518491.22	800191.89	N 32 25 21.38	W 103 29 39.95
	18784.00	88.07	358.74	10744.78	8415.19	8413.60	-164.02	1.05	518586.16	800190.62	N 32 25 22.32	W 103 29 39.95
	18878.00	87.11	358.05	10748.74	8509.10	8507.48	-166.65	1.26	518680.04	800187.99	N 32 25 23.25	W 103 29 39.97
	18973.00	86.94	358.04	10753.67	8603.96	8602.29	-169.88	0.18	518774.85	800184.75	N 32 25 24.19	W 103 29 40.00
	19068.00	86.66	358.62	10758.97	8698.80	8697.10	-172.65	0.68	518869.66	800181.98	N 32 25 25.13	W 103 29 40.03
	19162.00	86.66	358.87	10764.45	8792.64	8790.92	-174.70	0.27	518963.48	800179.93	N 32 25 26.05	W 103 29 40.04
	19257.00	86.70	359.37	10769.95	8887.48	8885.75	-176.16	0.53	519058.31	800178.47	N 32 25 26.99	W 103 29 40.05
	19351.00	86.66	0.15	10775.39	8981.31	8979.59	-176.55	0.83	519152.15	800178.08	N 32 25 27.92	W 103 29 40.05
	19446.00	86.90	0.44	10780.73	9076.14	9074.44	-176.06	0.40	519246.99	800178.57	N 32 25 28.86	W 103 29 40.03
	19541.00	87.70	0.52	10785.20	9171.00	9169.33	-175.27	0.85	519341.88	800179.36	N 32 25 29.80	W 103 29 40.01
	19636.00	87.70	0.56	10789.02	9265.89	9264.25	-174.37	0.04	519436.80	800180.26	N 32 25 30.74	W 103 29 39.99
	19730.00	87.87	0.36	10792.65	9359.78	9358.18	-173.62	0.28	519530.73	800181.01	N 32 25 31.67	W 103 29 39.98
	19825.00	87.90	1.13	10796.15	9454.67	9453.10	-172.39	0.81	519625.65	800182.25	N 32 25 32.61	W 103 29 39.95
	19920.00	88.38	0.85	10799.24	9549.56	9548.04	-170.75	0.58	519720.58	800183.89	N 32 25 33.55	W 103 29 39.93
	20014.00	87.87	0.55	10802.31	9643.47	9641.98	-169.60	0.63	519814.53	800185.03	N 32 25 34.47	W 103 29 39.90
	20109.00	88.11	0.00	10805.65	9738.39	9736.92	-169.14	0.63	519909.46	800185.49	N 32 25 35.41	W 103 29 39.89
	20204.00	88.38	358.75	10808.56	9833.34	9831.87	-170.18	1.35	520004.41	800184.45	N 32 25 36.35	W 103 29 39.89
	20298.00	88.28	357.19	10811.30	9927.28	9925.77	-173.51	1.66	520098.31	800181.13	N 32 25 37.28	W 103 29 39.92
TD, project to bit	20343.00	88.28	357.19	10812.65	9972.24	9970.69	-175.71	0.00	520143.23	800178.92	N 32 25 37.73	W 103 29 39.95

Last perf
@ 20305
Last survey

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	25.000	1/98.425	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex West Gamma Ridge 8-5 Federal Com 2H Final
	1	25.000	25.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex West Gamma Ridge 8-5 Federal Com 2H Final
	1	25.000	20343.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex West Gamma Ridge 8-5 Federal Com



Cimarex Energy Co.

600 N. Marienfeld St. ♦ Suite 600 ♦ Midland, TX 79701 ♦ (432) 620-1938 ♦ Fax (432) 620-1940

A subsidiary of Cimarex Energy Co. • A NYSE Listed Company • "XEC"

June 12, 2017

State of New Mexico
Oil Conservation Division – District I
1625 N. French Drive
Hobbs, NM 88240

Re: Request for exception to Rule 107J
Tubingless Completion
West Grama Ridge 8-5 Federal #2H – 30025-43554
Lea County, NM

Dear Sir:

Cimarex Energy Co. requests an exception to NMOCD Rule 107.J, well tubing requirements. Cimarex requests a tubingless completion for our West Grama Ridge 8-5 Federal #2H well to allow greater flowback after frac stimulation.

Cimarex plans to install producing tubing as soon as flow decreases, which should incur within 6 months.

Thank you for your consideration of this request. Please feel free to contact me if you need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Terri Stathem", is written over a large, circular, light-colored stamp or watermark.

Terri Stathem
Manager, Regulatory Compliance
432-620-1936