

Results of Directional Survey

API number:	30-025-40406		
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO
		Property:	CHIEF 30 STATE # 1H

surface	ULSTR:	M	30	T	20S	R	35E
				660	FSL	330	FWL

BH Loc	ULSTR:	P	30	T	20S	R	35E
15392	MD	10845.4	TVD	682	FSL	340	FEL
						4940	FWL

Top Perf/OH	ULSTR:	M	30	T	20S	R	35E
10800	MD	10744.2	TVD	651	FSL	368	FWL

Bot Perf/OH	ULSTR:	P	30	T	20S	R	35E
15364	MD	10845.6	TVD	681	FSL	368	FEL
						4912	FWL

	MD	N/S	E/W	VD
	10794	-9.09	32.90	10740.83
TOP PERFS/OH	10800	-9.04	37.86	10744.21
	10826	-8.83	59.34	10758.84
	15248	15.42	4466.08	10846.38
BOT PERFS/OH	15364	20.77	4581.95	10845.56
	15336	19.48	4553.98	10845.76

NEXT TO LAST	15248	15.42	4466.08	10846.38
LAST READING	15336	19.48	4553.98	10845.76
TD	15392	22.06	4609.92	10845.37

Surface Location	660	FS	330	FW
Projected BHL	682	FS	4940	FW
Location of				
Top Perfs/OH	651	FS	368	FW
Bottom Perfs/OH	681	FS	4912	FW

SUMMARY of Subsurface Locations

Surface Location	M-30-20S-35E	660	FS	330	FW	Vert. Depth
Top Perfs/OH	M-30-20S-35E	651	FS	368	FW	10744.21
Bottom Perfs/OH	P-30-20S-35E	681	FS	4912	FW	10845.56
Projected TD	P-30-20S-35E	682	FS	4940	FW	10845.37

OCT 25 2012



Company: CIMAREX

Well: Chief State No. 1

Location: Continental US

Rig: Chief State No. 1

HOBBS
OCT 02 2012
RECEIVED

Job Number:

Magnetic Decl.: 7.55

Grid Corr.: -0.45

Total Grid Corr.: 7.10

30-025-40406
Calculation Method Minimum Curvature
Proposed Azimuth 89.52
Depth Reference Kelly Bushing
Tie Into:

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Direction	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
Tie In Coordinates														
Gyro	10401	3.0	276.8	N 83.2 W	0	10397.6	-126.65	-3.39 N	-126.63 W			0	0	0
MWD	10418	2.1	65.4	N 65.4 E	17	10414.29	-126.81	-3.21 S	-126.79 E	126.83	91.45	29.49	-5.45	889.94
MWD	10449	5.3	89.1	N 89.1 E	31	10445.23	-124.86	-2.95 S	-124.84 E	124.87	91.32	11.23	10.32	76.44
MWD	10481	8.8	99.3	S 80.7 E	32	10476.98	-120.97	-3.32 S	-120.94 E	120.99	91.44	11.57	10.94	31.89
MWD	10512	13.3	94.8	S 85.2 E	31	10507.40	-115.08	-4.01 S	-115.05 E	115.12	91.66	14.77	14.52	-14.52
MWD	10544	17.2	94.6	S 85.4 E	32	10538.27	-106.70	-4.69 S	-106.66 E	106.76	91.83	12.19	12.19	-0.62
MWD	10576	21.3	93.5	S 86.5 E	32	10568.47	-96.18	-5.43 S	-96.14 E	96.29	91.98	12.86	12.81	-3.44
MWD	10607	26.1	92.9	S 87.1 E	31	10596.85	-83.75	-6.12 S	-83.70 E	83.92	92.07	15.50	15.48	-1.94
MWD	10639	30.5	92.5	S 87.5 E	32	10625.02	-68.61	-6.83 S	-68.55 E	68.89	92.12	13.76	13.75	-1.25
MWD	10670	34.2	92.1	S 87.9 E	31	10651.20	-52.04	-7.49 S	-51.98 E	52.52	92.13	11.96	11.94	-1.29
MWD	10699	38.7	91.5	S 88.5 E	29	10674.52	-34.83	-8.03 S	-34.76 E	35.68	92.10	15.55	15.50	-2.07
MWD	10731	43.1	91.7	S 88.3 E	32	10698.70	-13.90	-8.61 S	-13.83 E	16.29	92.06	13.77	13.76	0.62
MWD	10762	47.7	90.4	S 89.6 E	31	10720.46	8.16	-9.01 S	8.24 E	12.21	91.97	15.14	14.85	-4.19
MWD	10794	53.2	90.0	N 90.0 E	32	10740.83	32.82	-9.09 S	32.90 E	34.13	91.82	17.21	17.18	-1.25
MWD	10826	58.3	88.9	N 88.9 E	32	10758.84	59.27	-8.83 S	59.34 E	60.00	91.62	16.19	15.94	-3.44
MWD	10857	63.2	88.8	N 88.8 E	31	10773.98	86.30	-8.29 S	86.38 E	86.77	91.40	15.81	15.81	-0.32
MWD	10889	68.9	88.6	N 88.6 E	32	10786.96	115.53	-7.62 S	115.60 E	115.85	91.18	17.82	17.81	-0.62
MWD	10921	74.3	87.6	N 87.6 E	32	10797.06	145.88	-6.61 S	145.94 E	146.09	90.95	17.13	16.87	-3.12
MWD	10952	79.7	87.0	N 87.0 E	31	10804.03	176.05	-5.19 S	176.10 E	176.17	90.69	17.52	17.42	-1.94
MWD	10985	85.3	87.9	N 87.9 E	33	10808.34	208.73	-3.73 S	208.77 E	208.80	90.46	17.18	16.97	2.73
MWD	11017	87.1	88.0	N 88.0 E	32	10810.46	240.65	-2.59 S	240.68 E	240.69	90.30	5.63	5.62	0.31
MWD	11048	86.9	87.8	N 87.8 E	31	10812.08	271.59	-1.46 S	271.61 E	271.62	90.16	0.91	-0.65	-0.65
MWD	11080	88.0	88.1	N 88.1 E	32	10813.50	303.55	-0.31 S	303.56 E	303.56	90.03	3.56	3.44	0.94
MWD	11143	88.3	88.2	N 88.2 E	63	10815.54	366.50	1.72 N	366.50 E	366.50	89.84	0.50	0.48	0.16
MWD	11237	89.0	88.6	N 88.6 E	94	10817.75	460.45	4.34 N	460.43 E	460.45	89.65	0.86	0.74	0.43
MWD	11332	89.4	88.3	N 88.3 E	95	10819.08	555.43	6.91 N	555.39 E	555.43	89.51	0.53	0.42	-0.32
MWD	11426	89.1	87.8	N 87.8 E	94	10820.31	649.39	10.11 N	649.32 E	649.40	89.36	0.62	-0.32	-0.53
MWD	11521	89.4	88.2	N 88.2 E	95	10821.55	744.34	13.42 N	744.26 E	744.38	89.23	0.53	0.32	0.43
MWD	11616	88.9	88.1	N 88.1 E	95	10822.96	839.31	16.49 N	839.20 E	839.36	89.14	0.54	-0.53	-0.11
MWD	11711	88.4	89.4	N 89.4 E	95	10825.20	934.27	18.56 N	934.15 E	934.33	89.10	1.47	0.53	1.37
MWD	11807	90.0	89.4	N 89.4 E	96	10826.54	1030.26	19.56 N	1030.13 E	1030.31	89.13	1.67	1.67	0.00
MWD	11902	90.9	88.9	N 88.9 E	95	10825.80	1125.25	20.97 N	1125.11 E	1125.31	89.13	1.08	0.95	-0.53
MWD	11997	91.3	89.1	N 89.1 E	95	10823.97	1220.23	22.63 N	1220.08 E	1220.29	89.12	0.47	0.42	0.21
MWD	12093	90.9	89.8	N 89.8 E	96	10822.13	1316.21	23.55 N	1316.06 E	1316.27	89.14	0.84	-0.42	0.73

Survey Tool Type	Survey Depth (ft)	Inclination (deg)	Azimuth (deg)	Direction	Course Length (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Coordinates		Closure		Dogleg Severity (d/100')	Build Rate (d/100')	Walk Rate (d/100')
								N/S (ft)	E/W (ft)	Distance (ft)	Angle (deg)			
MWD	12188	91.4	90.5	S 89.5 E	95	10820.22	1411.18	23.30 N	1411.04 E	1411.23	89.20	0.91	0.53	0.74
MWD	12284	92.9	90.0	N 90.0 E	96	10816.62	1507.11	22.88 N	1506.97 E	1507.14	89.25	1.65	1.56	-0.52
MWD	12381	91.6	89.3	N 89.3 E	97	10812.81	1604.03	23.48 N	1603.89 E	1604.06	89.28	1.52	-1.34	-0.72
MWD	12475	92.2	90.1	S 89.9 E	94	10809.69	1697.98	23.97 N	1697.83 E	1698.00	89.30	1.06	0.64	0.85
MWD	12570	90.8	91.0	S 89.0 E	95	10807.21	1792.92	23.05 N	1792.79 E	1792.94	89.35	1.75	-1.47	0.95
MWD	12666	88.6	91.1	S 88.9 E	96	10807.71	1888.88	21.29 N	1888.77 E	1888.89	89.43	2.30	-2.29	0.10
MWD	12762	88.6	90.9	S 89.1 E	96	10810.05	1984.82	19.62 N	1984.73 E	1984.82	89.50	0.21	0.00	-0.21
MWD	12859	88.5	90.5	S 89.5 E	97	10812.51	2081.77	18.43 N	2081.69 E	2081.77	89.55	0.42	-0.10	-0.41
MWD	12954	89.0	91.0	S 89.0 E	95	10814.58	2176.72	17.19 N	2176.66 E	2176.72	89.59	0.74	0.53	0.53
MWD	13049	89.6	91.5	S 88.5 E	95	10815.74	2271.67	15.12 N	2271.63 E	2271.68	89.66	0.82	0.63	0.53
MWD	13145	89.8	91.2	S 88.8 E	96	10816.24	2367.62	12.86 N	2367.60 E	2367.63	89.72	0.38	0.21	-0.31
MWD	13241	89.8	90.3	S 89.7 E	96	10816.58	2463.60	11.60 N	2463.59 E	2463.62	89.76	0.94	0.00	-0.94
MWD	13337	89.2	89.2	N 89.2 E	96	10817.41	2559.59	12.02 N	2559.58 E	2559.61	89.75	1.31	-0.62	-1.15
MWD	13433	88.7	88.8	N 88.8 E	96	10819.17	2655.57	13.69 N	2655.55 E	2655.59	89.73	0.67	-0.52	-0.42
MWD	13529	89.5	89.1	N 89.1 E	96	10820.68	2751.55	15.45 N	2751.52 E	2751.57	89.71	0.89	0.83	0.31
MWD	13623	90.7	89.7	N 88.7 E	94	10820.52	2845.55	17.26 N	2845.50 E	2845.56	89.68	1.35	1.28	-0.43
MWD	13718	91.5	87.3	N 87.3 E	95	10818.69	2940.49	20.57 N	2940.42 E	2940.50	89.63	1.70	0.84	-1.47
MWD	13814	92.5	86.3	N 86.3 E	96	10815.34	3036.32	25.93 N	3036.21 E	3036.32	89.55	1.47	1.04	-1.04
MWD	13910	90.1	86.9	N 86.9 E	96	10813.17	3132.17	31.62 N	3132.01 E	3132.17	89.46	2.58	-2.50	0.62
MWD	14003	89.0	86.0	N 86.0 E	93	10813.90	3225.03	37.38 N	3224.83 E	3225.05	89.38	1.53	-1.18	-0.97
MWD	14099	87.8	86.1	N 86.1 E	96	10816.58	3320.81	43.99 N	3320.56 E	3320.85	89.29	1.25	-1.25	0.10
MWD	14195	87.6	85.8	N 85.8 E	96	10820.43	3416.55	50.76 N	3416.24 E	3416.62	89.21	0.38	-0.21	-0.31
MWD	14291	85.9	88.1	N 88.1 E	96	10825.87	3512.29	55.86 N	3511.94 E	3512.39	89.15	2.98	-1.77	2.40
MWD	14386	86.6	92.0	S 88.0 E	95	10832.09	3607.06	55.78 N	3606.72 E	3607.15	89.17	4.16	0.74	4.11
MWD	14482	86.5	93.8	S 86.2 E	96	10837.87	3702.72	50.93 N	3702.42 E	3702.77	89.26	1.87	-0.10	1.87
MWD	14578	88.5	98.3	S 81.7 E	96	10842.05	3797.97	40.82 N	3797.77 E	3797.99	89.42	5.13	2.08	4.69
MWD	14673	89.2	95.5	S 84.5 E	95	10843.96	3892.16	29.41 N	3892.05 E	3892.16	89.59	3.04	0.74	-2.95
MWD	14769	90.4	95.6	S 84.4 E	96	10844.30	3987.63	20.13 N	3987.60 E	3987.65	89.73	1.25	1.25	0.10
MWD	14865	91.0	93.3	S 86.7 E	96	10843.12	4083.26	12.68 N	4083.29 E	4083.31	89.83	2.48	0.62	-2.40
MWD	14961	89.0	91.1	S 88.9 E	96	10843.12	4179.14	9.00 N	4179.21 E	4179.22	89.88	3.10	-2.08	-2.29
MWD	15057	89.3	88.8	N 88.8 E	96	10844.55	4275.12	9.08 N	4275.19 E	4275.20	89.88	2.42	0.31	-2.40
MWD	15152	89.3	88.0	N 88.0 E	95	10845.71	4370.09	11.73 N	4370.15 E	4370.17	89.85	0.84	0.00	-0.84
MWD	15248	89.9	87.6	N 87.6 E	96	10846.38	4466.05	15.42 N	4466.08 E	4466.10	89.81	0.75	0.62	-0.41
MWD	15336	90.9	87.1	N 87.1 E	88	10845.76	4553.98	19.48 N	4553.98 E	4554.02	89.77	1.27	1.14	-0.57
MWD														

A Gyrodata Directional Survey

Field Copy Only, not definitive

for

CIMAREX ENERGY

Lease: CHIEF 30 STATE Well: #1H, 4 1/2" DRILLPIPE
Location: CACTUS #115, LEA COUNTY, NEW MEXICO

HOBBS OCD

OCT 02 2012

RECEIVED

Job Number: MD0512GDM325

Run Date: 19 May 2012

Surveyor: Jason Solomon

Calculation Method: MINIMUM CURVATURE

Survey surface coordinates obtained from: Well Plan/Plot
Survey Latitude: 32.538669 deg. N Longitude: 103.504097 deg. W

Azimuth Correction:

Gyro: -0.45000 deg to Grid North

Depth Reference: Ground

Rotary Table Elevation: 18.00

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

SUR: M-30-20S-35E, 660/S & 330/W
BHL; P-30-20S-35E, 682/S & 4940/W
API # 30-025-40406

A Gyrodata Directional Survey

CIMAREX ENERGY

Lease: CHIEF 30 STATE Well: #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
0.00	0.00	0.00	0.00	0.00	0.0 0.0	0.00 N 0.00 E
0 TO 11571 FT RATE GYROSCOPIC MULTISHOT DROP RUN INSIDE 4 1/2" DRILLPIPE						
ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO CACTUS #115 RKB 18 FT						
100.00	0.18	232.18	0.18	100.00	0.2 232.2	0.10 S 0.12 W
200.00	0.17	215.29	0.05	200.00	0.5 226.8	0.31 S 0.33 W
300.00	0.20	203.67	0.05	300.00	0.8 219.5	0.59 S 0.49 W
400.00	0.08	293.53	0.22	400.00	1.0 220.6	0.73 S 0.62 W
500.00	0.01	252.12	0.07	500.00	1.0 224.8	0.70 S 0.70 W
600.00	0.30	229.64	0.29	600.00	1.3 226.0	0.87 S 0.90 W
700.00	0.19	224.42	0.11	700.00	1.7 226.4	1.16 S 1.22 W
817.40	0.42	240.51	0.21	817.40	2.3 228.8	1.51 S 1.73 W
912.30	0.48	245.96	0.08	912.29	3.0 232.4	1.85 S 2.40 W
1007.20	0.53	245.97	0.05	1007.19	3.8 235.3	2.19 S 3.16 W
1102.10	0.60	248.58	0.08	1102.08	4.8 237.7	2.55 S 4.02 W
1197.00	0.60	249.37	0.01	1196.98	5.7 239.6	2.90 S 4.95 W
1291.90	0.56	243.00	0.08	1291.87	6.7 240.6	3.29 S 5.83 W
1386.80	0.54	240.39	0.03	1386.77	7.6 240.7	3.72 S 6.63 W
1481.70	0.54	241.73	0.01	1481.67	8.5 240.7	4.15 S 7.41 W
1576.60	0.53	248.20	0.06	1576.56	9.4 241.1	4.53 S 8.22 W
1671.40	0.85	250.06	0.34	1671.35	10.5 242.0	4.93 S 9.28 W
1766.30	0.82	259.45	0.15	1766.24	11.9 243.5	5.29 S 10.61 W
1861.20	0.79	258.23	0.04	1861.13	13.2 245.0	5.55 S 11.92 W
1956.10	0.57	265.60	0.25	1956.03	14.2 246.3	5.72 S 13.03 W

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CIMAREX ENERGY

Lease: CHIEF 30 STATE Well: #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
2051.00	0.34	278.01	0.26	2050.93	14.9 247.5	5.72 S 13.78 W
2145.90	0.34	286.15	0.05	2145.82	15.4 248.7	5.60 S 14.33 W
2240.80	0.33	285.08	0.01	2240.72	15.8 249.9	5.45 S 14.86 W
2335.70	0.34	284.52	0.01	2335.62	16.3 251.0	5.31 S 15.40 W
2430.60	0.34	297.25	0.08	2430.52	16.7 252.2	5.11 S 15.92 W
2525.40	0.35	299.25	0.02	2525.32	17.1 253.6	4.84 S 16.43 W
2620.30	0.27	304.12	0.09	2620.22	17.5 254.8	4.57 S 16.86 W
2715.20	0.25	310.44	0.04	2715.11	17.7 255.9	4.31 S 17.21 W
2810.10	0.19	317.19	0.07	2810.01	17.9 256.9	4.06 S 17.47 W
2905.00	0.16	324.66	0.04	2904.91	18.1 257.7	3.84 S 17.66 W
2999.90	0.19	20.79	0.18	2999.81	18.0 258.5	3.59 S 17.68 W
3094.80	0.48	63.02	0.38	3094.71	17.6 259.3	3.26 S 17.27 W
3189.70	0.80	68.67	0.34	3189.61	16.5 260.1	2.84 S 16.30 W
3284.60	1.06	63.47	0.29	3284.49	15.1 261.6	2.20 S 14.89 W
3379.50	1.19	59.26	0.16	3379.37	13.3 264.4	1.31 S 13.26 W
3474.30	1.43	60.12	0.25	3474.15	11.4 268.9	0.22 S 11.39 W
3569.20	1.45	59.10	0.03	3569.02	9.4 276.1	0.99 N 9.33 W
3664.10	1.38	59.22	0.07	3663.89	7.6 286.7	2.19 N 7.32 W
3759.00	1.20	60.72	0.19	3758.77	6.4 300.8	3.26 N 5.47 W
3853.90	1.08	63.91	0.14	3853.65	5.6 317.5	4.14 N 3.80 W
3948.80	1.03	65.58	0.06	3948.53	5.4 335.6	4.89 N 2.22 W
4043.70	1.09	68.66	0.09	4043.42	5.6 353.8	5.57 N 0.60 W
4138.60	1.20	66.12	0.13	4138.30	6.4 10.3	6.30 N 1.15 E
4233.50	0.95	82.50	0.41	4233.18	7.4 22.6	6.81 N 2.83 E
4328.40	0.64	93.04	0.36	4328.07	8.0 31.1	6.88 N 4.14 E

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CIMAREX ENERGY

Lease: CHIEF 30 STATE Well. #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
4423.30	0.39	89.96	0.26	4422.97	8.5 36.1	6.85 N 5.00 E
4518.10	0.34	98.58	0.08	4517.76	8.8 39.4	6.81 N 5.60 E
4613.00	0.10	91.86	0.25	4612.66	9.0 41.4	6.77 N 5.96 E
4707.90	0.22	334.23	0.30	4707.56	9.1 40.7	6.93 N 5.96 E
4802.80	0.32	15.13	0.22	4802.46	9.5 39.0	7.35 N 5.95 E
4897.70	0.42	29.00	0.14	4897.36	10.0 38.1	7.91 N 6.19 E
4992.60	0.40	24.67	0.04	4992.26	10.7 37.3	8.51 N 6.50 E
5087.50	0.45	32.21	0.08	5087.16	11.4 36.8	9.13 N 6.83 E
5182.40	0.50	32.59	0.05	5182.05	12.2 36.5	9.79 N 7.25 E
5277.30	0.52	49.07	0.16	5276.95	13.0 36.8	10.42 N 7.80 E
5372.10	0.60	36.90	0.15	5371.74	13.9 37.2	11.10 N 8.43 E
5467.00	0.54	37.92	0.06	5466.64	14.9 37.2	11.85 N 9.00 E
5561.90	0.57	26.62	0.12	5561.54	15.8 36.9	12.63 N 9.49 E
5656.80	0.65	20.24	0.11	5656.43	16.8 36.1	13.55 N 9.88 E
5751.70	0.58	28.62	0.12	5751.32	17.8 35.4	14.48 N 10.30 E
5846.60	0.26	357.97	0.40	5846.22	18.4 34.8	15.12 N 10.52 E
5941.50	0.32	330.16	0.16	5941.12	18.7 33.7	15.56 N 10.38 E
6036.40	0.46	333.35	0.15	6036.02	19.0 32.0	16.13 N 10.08 E
6131.30	0.55	337.27	0.10	6130.91	19.5 29.9	16.89 N 9.73 E
6226.20	0.52	345.54	0.09	6225.81	20.1 28.1	17.73 N 9.45 E
6321.10	0.40	356.21	0.15	6320.71	20.7 26.8	18.48 N 9.32 E
6415.90	0.37	352.35	0.04	6415.51	21.2 25.8	19.11 N 9.26 E
6510.80	0.37	342.02	0.07	6510.40	21.7 24.8	19.71 N 9.12 E
6605.70	0.25	304.68	0.24	6605.30	22.0 23.8	20.12 N 8.86 E

A Gyrodata Directional Survey

CIMAREX ENERGY

Lease: CHIEF 30 STATE Well: #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
6700.60	0.31	284.06	0.12	6700.20	22.0 22.6	20.30 N 8.44 E
6795.50	0.56	245.76	0.39	6795.10	21.6 21.1	20.17 N 7.77 E
6890.40	0.44	251.64	0.14	6889.99	21.1 19.4	19.86 N 7.00 E
6985.30	0.86	255.25	0.44	6984.89	20.5 16.9	19.57 N 5.96 E
7080.20	1.30	250.69	0.47	7079.77	19.5 12.6	19.03 N 4.26 E
7175.10	1.26	253.44	0.08	7174.65	18.5 7.0	18.38 N 2.24 E
7269.90	1.39	251.17	0.15	7269.42	17.7 0.5	17.71 N 0.15 E
7364.80	1.45	250.43	0.07	7364.29	17.1 353.0	16.93 N 2.07 W
7459.70	1.42	253.08	0.08	7459.16	16.8 345.1	16.19 N 4.32 W
7554.60	1.30	256.26	0.15	7554.04	16.9 337.4	15.59 N 6.49 W
7649.50	1.43	263.28	0.22	7648.91	17.5 330.2	15.20 N 8.71 W
7744.40	1.25	263.06	0.19	7743.78	18.5 323.8	14.93 N 10.92 W
7839.30	1.17	254.92	0.20	7838.66	19.4 318.5	14.56 N 12.88 W
7934.20	1.16	243.28	0.25	7933.54	20.2 313.4	13.87 N 14.67 W
8029.10	1.20	250.51	0.16	8028.42	21.1 308.5	13.11 N 16.47 W
8124.00	1.18	252.92	0.06	8123.30	22.2 304.3	12.49 N 18.34 W
8218.90	1.29	246.97	0.18	8218.18	23.4 300.2	11.79 N 20.26 W
8313.70	1.33	238.10	0.22	8312.96	24.7 295.9	10.79 N 22.17 W
8408.60	1.26	240.63	0.10	8407.83	25.9 292.0	9.69 N 24.02 W
8503.50	1.52	249.40	0.35	8502.70	27.5 288.5	8.74 N 26.11 W
8598.40	1.73	264.63	0.50	8597.57	29.8 285.9	8.16 N 28.71 W
8693.30	1.88	273.15	0.32	8692.42	32.7 284.4	8.11 N 31.69 W
8788.20	2.25	277.11	0.42	8787.26	36.1 283.5	8.43 N 35.09 W
8883.10	2.37	267.97	0.41	8882.08	39.8 282.5	8.59 N 38.90 W

A Gyrodata Directional Survey

CIMAREX ENERGY

Lease: CHIEF 30 STATE Well. #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
8978.00	3.04	269.96	0.71	8976.87	44.2 281.1	8.52 N 43.38 W
9072.90	3.23	266.81	0.27	9071.63	49.3 279.8	8.37 N 48.57 W
9167.80	3.67	260.67	0.60	9166.36	54.8 278.1	7.73 N 54.23 W
9262.60	4.26	250.92	0.94	9260.93	60.9 275.7	6.09 N 60.55 W
9357.50	4.19	248.20	0.22	9355.58	67.2 273.1	3.65 N 67.10 W
9452.40	3.76	248.77	0.46	9450.25	73.2 271.0	1.23 N 73.22 W
9547.30	3.57	256.41	0.55	9544.95	79.0 269.6	0.59 S 79.00 W
9642.20	3.82	263.25	0.53	9639.66	85.0 268.9	1.66 S 85.01 W
9737.10	3.66	259.94	0.28	9734.36	91.2 268.4	2.56 S 91.13 W
9832.00	3.25	262.65	0.46	9829.08	96.8 268.0	3.43 S 96.78 W
9926.90	3.05	273.19	0.64	9923.84	102.0 268.0	3.63 S 101.97 W
10021.80	2.88	268.67	0.30	10018.61	106.9 268.1	3.55 S 106.87 W
10116.70	2.83	266.99	0.10	10113.40	111.7 268.1	3.73 S 111.60 W
10211.50	3.16	267.38	0.35	10208.07	116.6 268.0	3.97 S 116.54 W
10306.40	3.03	274.65	0.44	10302.83	121.7 268.2	3.88 S 121.66 W
10401.30	3.01	276.78	0.12	10397.60	126.7 268.5	3.39 S 126.63 W
10496.20	3.48	277.15	0.50	10492.34	132.0 268.8	2.73 S 131.96 W
10591.10	3.51	280.82	0.24	10587.07	137.7 269.2	1.83 S 137.67 W
10686.00	2.84	276.29	0.75	10681.82	142.9 269.6	1.03 S 142.86 W
10780.90	2.46	278.12	0.41	10776.62	147.2 269.8	0.48 S 147.22 W
10875.80	2.51	281.04	0.14	10871.43	151.3 270.1	0.20 N 151.27 W
10970.70	2.76	270.46	0.58	10966.23	155.6 270.2	0.62 N 155.60 W
11065.50	4.22	279.92	1.65	11060.85	161.3 270.4	1.24 N 161.32 W
11160.40	4.09	280.63	0.15	11155.50	168.1 270.8	2.46 N 168.08 W

A Gyrodata Directional Survey

CIMAREX ENERGY

Lease: CHIEF 30 STATE Well: #1H, 4 1/2" DRILLPIPE

Location: CACTUS #115, LEA COUNTY, NEW MEXICO

Job Number: MD0512GDM325

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg	HORIZONTAL COORDINATES feet
11255.30	3.84	285.29	0.43	11250.18	174.5 271.3	3.93 N 174.47 W
11350.20	3.82	288.00	0.19	11344.86	180.6 271.8	5.74 N 180.54 W
11445.10	3.23	285.18	0.65	11439.58	186.3 272.3	7.42 N 186.13 W
11540.00	3.12	277.52	0.46	11534.34	191.5 272.5	8.46 N 191.27 W
11571.80	3.17	272.15	0.94	11566.09	193.2 272.6	8.60 N 193.01 W

Final Station Closure: Distance: 193.20 ft Az: 272.55 deg.

