

Ind Copy

Schlumberger



Cimarex Chief 30 State #8H Rev1 RM 16July18 Proposal Geodetic Report

(Non-Def Plan)

Report Date: July 16, 2018 - 09:22 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Chief 30 State #8H / Cimarex Chief 30 State #8H
Well: Cimarex Chief 30 State #8H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Chief 30 State #8H Rev1 RM 16July18
Survey Date: November 09, 2017
Tort / AHD / DDI / ERD Ratio: 90.000 * / 4855.322 ft / 5.786 / 0.415
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 33' 1.72767", W 103° 29' 24.84645"
Location Grid N/E Y/X: N 565023.820 NUS, E 801135.470 NUS
CRS Grid Convergence Angle: 0.4537 *
Grid Scale Factor: 0.99998639
Version / Patch: 2.10.740.0

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: 3731.300 ft above MSL
Seabed / Ground Elevation: 3705.300 ft above MSL
Magnetic Declination: 6.655 *
Total Gravity Field Strength: 998.4979mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48181.183 nT
Magnetic Dip Angle: 60.483 *
Declination Date: July 16, 2018
Magnetic Declination Model: HDGM 2017
North Reference: Grid North
Grid Convergence Used: 0.4537 *
Total Corr Mag North->Grid North: 6.2015 *
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 [330° FNL, 660° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	100.00	0.00	179.54	100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	200.00	0.00	179.54	200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	300.00	0.00	179.54	300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	400.00	0.00	179.54	400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	500.00	0.00	179.54	500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	600.00	0.00	179.54	600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	700.00	0.00	179.54	700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	800.00	0.00	179.54	800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	900.00	0.00	179.54	900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1000.00	0.00	179.54	1000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1100.00	0.00	179.54	1100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1200.00	0.00	179.54	1200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1300.00	0.00	179.54	1300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1400.00	0.00	179.54	1400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1500.00	0.00	179.54	1500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1600.00	0.00	179.54	1600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1700.00	0.00	179.54	1700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1800.00	0.00	179.54	1800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	1900.00	0.00	179.54	1900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2000.00	0.00	179.54	2000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2100.00	0.00	179.54	2100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2200.00	0.00	179.54	2200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2300.00	0.00	179.54	2300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2400.00	0.00	179.54	2400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2500.00	0.00	179.54	2500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2600.00	0.00	179.54	2600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2700.00	0.00	179.54	2700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2800.00	0.00	179.54	2800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	2900.00	0.00	179.54	2900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3000.00	0.00	179.54	3000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3100.00	0.00	179.54	3100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3200.00	0.00	179.54	3200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3300.00	0.00	179.54	3300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3400.00	0.00	179.54	3400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3500.00	0.00	179.54	3500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3600.00	0.00	179.54	3600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3700.00	0.00	179.54	3700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3800.00	0.00	179.54	3800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	3900.00	0.00	179.54	3900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4000.00	0.00	179.54	4000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4100.00	0.00	179.54	4100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4200.00	0.00	179.54	4200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4300.00	0.00	179.54	4300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4400.00	0.00	179.54	4400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4500.00	0.00	179.54	4500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4600.00	0.00	179.54	4600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4700.00	0.00	179.54	4700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4800.00	0.00	179.54	4800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	4900.00	0.00	179.54	4900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5000.00	0.00	179.54	5000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5100.00	0.00	179.54	5100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5200.00	0.00	179.54	5200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5300.00	0.00	179.54	5300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5400.00	0.00	179.54	5400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5500.00	0.00	179.54	5500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5600.00	0.00	179.54	5600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5700.00	0.00	179.54	5700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
Delaware Sands	5780.00	0.00	179.54	5780.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5800.00	0.00	179.54	5800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	5900.00	0.00	179.54	5900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6000.00	0.00	179.54	6000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6100.00	0.00	179.54	6100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6200.00	0.00	179.54	6200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6300.00	0.00	179.54	6300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6400.00	0.00	179.54	6400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6500.00	0.00	179.54	6500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6600.00	0.00	179.54	6600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6700.00	0.00	179.54	6700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6800.00	0.00	179.54	6800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	6900.00	0.00	179.54	6900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	7000.00	0.00	179.54	7000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	7100.00	0.00	179.54	7100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	7200.00	0.00	179.54	7200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
	7300.00											

Comments	MD	Incl	Azim Grid	TVD	VSEC	NS	EW	DLS	Northing	Easting	Latitude	Longitude
	(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(N/S - °)	(E/W - °)
Brusby Canyon	7500.00	0.00	179.54	7500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	7600.00	0.00	179.54	7600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	7700.00	0.00	179.54	7700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	7800.00	0.00	179.54	7800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	7900.00	0.00	179.54	7900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8000.00	0.00	179.54	8000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8100.00	0.00	179.54	8100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8200.00	0.00	179.54	8200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8300.00	0.00	179.54	8300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8400.00	0.00	179.54	8400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
Bone Spring	8500.00	0.00	179.54	8500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8600.00	0.00	179.54	8600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8700.00	0.00	179.54	8770.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8800.00	0.00	179.54	8800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	8900.00	0.00	179.54	8900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9000.00	0.00	179.54	9100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9100.00	0.00	179.54	9200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9200.00	0.00	179.54	9300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9300.00	0.00	179.54	9400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9400.00	0.00	179.54	9500.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
1st Bone Spring Sand	9500.00	0.00	179.54	9600.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9600.00	0.00	179.54	9700.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9700.00	0.00	179.54	9800.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9800.00	0.00	179.54	9898.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	9900.00	0.00	179.54	9900.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	10000.00	0.00	179.54	10000.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	10100.00	0.00	179.54	10100.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	10200.00	0.00	179.54	10200.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	10300.00	0.00	179.54	10300.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	10400.00	0.00	179.54	10400.00	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
KOP - Build 12"/100' DLS	11232.54	0.00	179.54	11232.54	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32.33	W 103.29 24.65
	11300.00	8.10	179.54	11298.78	4.78	-4.76	0.04	12.00	565019.06	801135.51	N 32.33	W 103.29 24.65
	11400.00	20.10	179.54	11396.59	28.07	-28.07	0.23	12.00	564984.75	801135.70	N 32.33	W 103.29 24.65
	11500.00	32.10	178.54	11486.23	72.98	-72.97	0.59	12.00	564950.85	801136.06	N 32.33	W 103.29 24.65
	11600.00	44.10	178.54	11564.78	134.56	-134.56	1.08	12.00	564889.27	801136.55	N 32.33	W 103.29 24.65
	11607.32	44.97	178.54	11570.00	139.69	-139.69	1.12	12.00	564884.13	801136.59	N 32.33	W 103.29 24.65
	11700.00	56.10	178.54	11628.82	211.13	-211.13	1.69	12.00	564812.70	801137.16	N 32.32	W 103.29 24.65
	11800.00	68.10	178.54	11675.53	286.34	-286.33	2.40	12.00	564724.48	801137.87	N 32.32	W 103.29 24.65
	11900.00	80.10	178.54	11702.88	385.34	-385.33	3.17	12.00	564628.50	801138.64	N 32.32	W 103.29 24.65
	11982.54	90.00	178.54	11710.00	477.46	-477.45	3.83	12.00	564546.38	801139.30	N 32.32	W 103.29 24.65
Landing Point	12000.00	90.00	178.54	11710.00	484.93	-484.91	3.97	0.00	564528.91	801139.44	N 32.32	W 103.29 24.65
	12100.00	90.00	178.54	11710.00	584.93	-584.91	4.77	0.00	564428.92	801140.24	N 32.32	W 103.29 24.65
	12200.00	90.00	178.54	11710.00	684.93	-684.91	5.57	0.00	564328.92	801141.04	N 32.32	W 103.29 24.65
	12300.00	90.00	178.54	11710.00	784.93	-784.90	6.38	0.00	564228.93	801141.85	N 32.32	W 103.29 24.65
	12400.00	90.00	178.54	11710.00	884.93	-884.90	7.18	0.00	564128.93	801142.65	N 32.32	W 103.29 24.65
	12500.00	90.00	178.54	11710.00	984.93	-984.89	7.98	0.00	564028.94	801143.45	N 32.32	W 103.29 24.65
	12600.00	90.00	178.54	11710.00	1084.93	-1084.89	8.78	0.00	563928.94	801144.25	N 32.32	W 103.29 24.65
	12700.00	90.00	178.54	11710.00	1184.93	-1184.89	9.58	0.00	563828.95	801145.05	N 32.32	W 103.29 24.65
	12800.00	90.00	178.54	11710.00	1284.93	-1284.88	10.39	0.00	563728.95	801145.86	N 32.32	W 103.29 24.65
	12900.00	90.00	178.54	11710.00	1384.93	-1384.88	11.19	0.00	563628.96	801146.66	N 32.32	W 103.29 24.65
Top 3rd Bone Spring Sand	13000.00	90.00	179.54	11710.00	1484.93	-1484.86	12.79	0.00	563528.96	801147.46	N 32.32	W 103.29 24.64
	13100.00	90.00	179.54	11710.00	1584.93	-1584.86	13.59	0.00	563428.97	801148.26	N 32.32	W 103.29 24.64
	13200.00	90.00	179.54	11710.00	1684.93	-1684.86	13.99	0.00	563328.97	801148.06	N 32.32	W 103.29 24.64
	13300.00	90.00	179.54	11710.00	1784.93	-1784.87	14.40	0.00	563228.98	801148.06	N 32.32	W 103.29 24.64
	13400.00	90.00	179.54	11710.00	1884.93	-1884.87	15.20	0.00	563128.98	801148.06	N 32.32	W 103.29 24.64
	13500.00	90.00	179.54	11710.00	1984.93	-1984.87	16.00	0.00	563028.99	801148.06	N 32.32	W 103.29 24.64
	13600.00	90.00	178.54	11710.00	2084.93	-2084.86	16.80	0.00	562928.99	801148.06	N 32.32	W 103.29 24.64
	13700.00	90.00	178.54	11710.00	2184.93	-2184.86	17.60	0.00	562828.00	801148.06	N 32.32	W 103.29 24.64
	13800.00	90.00	178.54	11710.00	2284.93	-2284.86	18.41	0.00	562728.00	801148.06	N 32.32	W 103.29 24.64
	13900.00	90.00	178.54	11710.00	2384.93	-2384.85	19.21	0.00	562628.00	801148.06	N 32.32	W 103.29 24.64
Cimarex Chief 30 State #8H - BHL100' FSL 960' FELI	14000.00	90.00	178.54	11710.00	2484.93	-2484.85	20.01	0.00	562528.01	801148.06	N 32.32	W 103.29 24.64
	14100.00	90.00	178.54	11710.00	2584.93	-2584.85	20.81	0.00	562428.01	801148.06	N 32.32	W 103.29 24.64
	14200.00	90.00	178.54	11710.00	2684.93	-2684.84	21.61	0.00	562328.02	801148.06	N 32.32	W 103.29 24.64
	14300.00	90.00	178.54	11710.00	2784.93	-2784.84	22.42	0.00	562228.02	801148.06	N 32.32	W 103.29 24.64
	14400.00	90.00	178.54	11710.00	2884.93	-2884.84	23.22	0.00	562128.03	801148.06	N 32.32	W 103.29 24.64
	14500.00	90.00	178.54	11710.00	2984.93	-2984.83	24.02	0.00	562028.03	801148.06	N 32.32	W 103.29 24.64
	14600.00	90.00	178.54	11710.00	3084.93	-3084.83	24.82	0.00	561928.04	801148.06	N 32.32	W 103.29 24.64
	14700.00	90.00	178.54	11710.00	3184.93	-3184.83	25.62	0.00	561828.04	801148.06	N 32.32	W 103.29

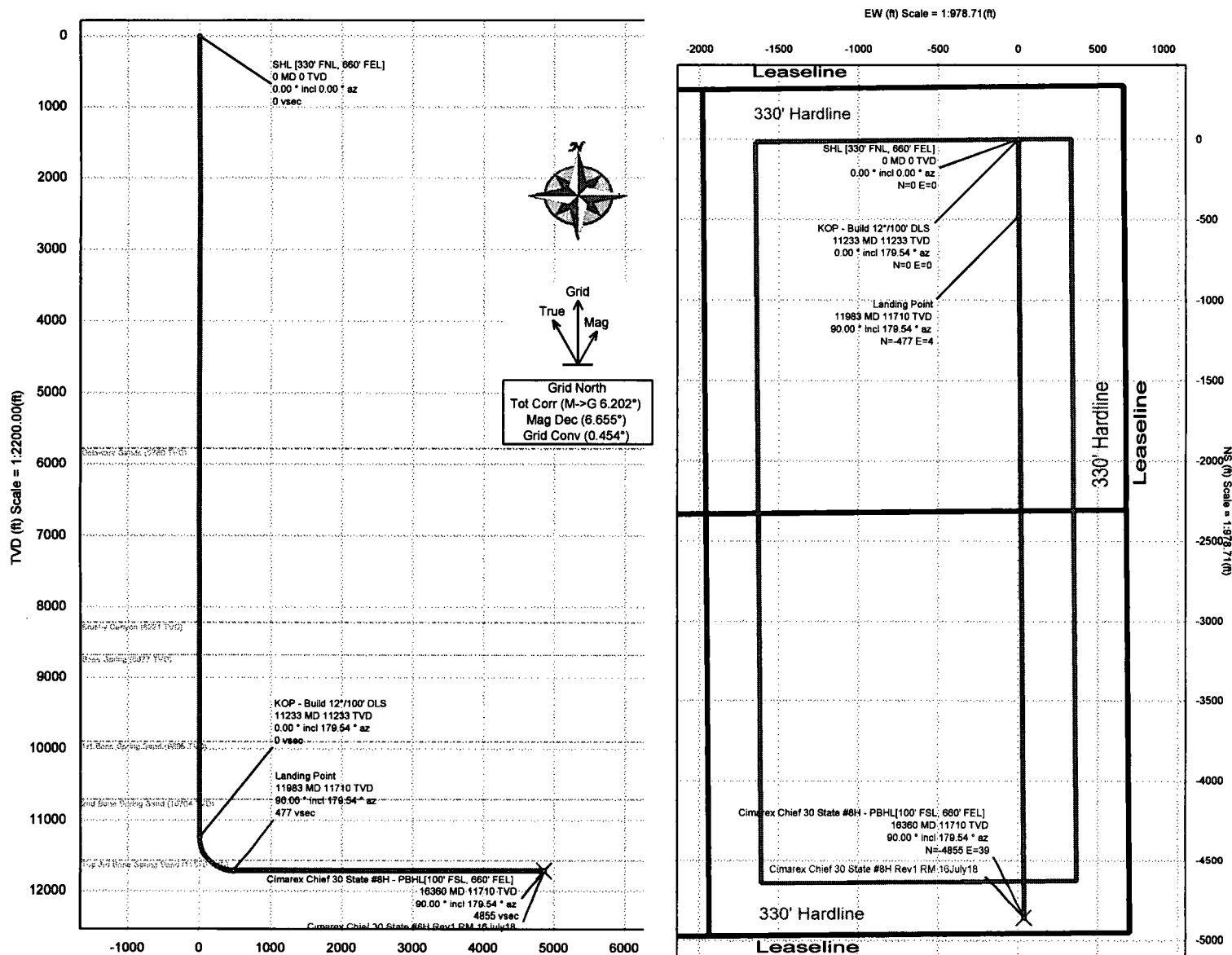
Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
----------	------------	-------------	------------------	-------------	--------------	------------	------------	------------------	--------------------	-------------------	-------------------------	--------------------------

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)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Chief 30 State #8H Rev1 RM 16July18
	1	26.000	16360.392	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Chief 30 State #8H Rev1 RM 16July18

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Chief 30 State #8H	NM Lea County (NAD 83)	Cimarex Chief 30 State #8H

Gravity & Magnetic Parameters				Surface Location				Miscellaneous			
Model:	HGM 2017	Dip:	80.483°	Date:	18-Jul-2018	Lat:	N 32 33 1.73	Northings:	968023.821US	Grid Conv:	0.4537°
MagDec:	6.656°	FB:	48161.183nT	Gravity FB:	988.485mg (0.80685 Based)	Lon:	W 103 29 24.66	Easting:	901136.471US	Scale Fact:	0.99998898
								Slot: Cimarex Chief 30 State #8H			
								TVD Ref: RKB(3731.38 above MSL)			
								Plan: Cimarex Chief 30 State #8H Rev1 RM 16 July 18			



Vertical Section (ft) Azim = 179.54° Scale = 1:2200.00 (ft) Origin = 0N/-S, 0E/-W

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [330' FNL, 660' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Delaware Sands	5780.00	0.00	179.54	5780.00	0.00	0.00	0.00	0.00
Brushy Canyon	8221.00	0.00	179.54	8221.00	0.00	0.00	0.00	0.00
Bone Spring	8677.00	0.00	179.54	8677.00	0.00	0.00	0.00	0.00
1st Bone Spring Sand	9898.00	0.00	179.54	9898.00	0.00	0.00	0.00	0.00
2nd Bone Spring Sand	10704.00	0.00	179.54	10704.00	0.00	0.00	0.00	0.00
KOP - Build 12°/100' DLS	11232.54	0.00	179.54	11232.54	0.00	0.00	0.00	0.00
Top 3rd Bone Spring Sand	11607.32	44.97	179.54	11570.00	139.69	-139.69	1.12	12.00
Landing Point	11982.54	90.00	179.54	11710.00	477.46	-477.45	3.83	12.00
Cimarex Chief 30 State #8H - PBHL[100' FSL, 660' FEL]	16360.39	90.00	179.54	11710.00	4855.32	-4855.17	38.94	0.00
Base 3rd Bone Spring Sand	NaN			11751.00				

Cimarex Chief 30 State #8H Rev1 RM 16July18 Proposal Geodetic Report

(Non-Def Plan)

Report Date: July 16, 2018 - 09:23 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Chief 30 State #8H / Cimarex Chief 30 State #8H
Well: Cimarex Chief 30 State #8H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Chief 30 State #8H Rev1 RM 16July18
Survey Date: November 09, 2017
Tort / AHD / DDI / ERD Ratio: 90.000 ° / 4855.322 ft / 5.788 / 0.415
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 33' 1.72767", W 103° 29' 24.64645"
Location Grid N/E Y/X: N 565023.820 ftUS, E 801135.470 ftUS
CRS Grid Convergence Angle: 0.4537 °
Grid Scale Factor: 0.99998639
Version / Patch: 2.10.740.0

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: 3731.300 ft above MSL
Seabed / Ground Elevation: 3705.300 ft above MSL
Magnetic Declination: 6.655 °
Total Gravity Field Strength: 998.4979mgm (9.80685 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48161.183 nT
Magnetic Dip Angle: 60.483 °
Declination Date: July 16, 2018
Magnetic Declination Model: HDGM 2017
North Reference: Grid North
Grid Convergence Used: 0.4537 °
Total Corr Mag North->Grid North: 6.2015 °
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 [330' FNL, 660' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
KOP - Build 12"/100' DLS	11232.54	0.00	179.54	11232.54	0.00	0.00	0.00	0.00	565023.82	801135.47	N 32 33 1.73	W 103 29 24.65
Landing Point Cimarex Chief 30 State #8H - PBHL[100' FSL, 660' FEL]	11982.54	90.00	179.54	11710.00	477.46	-477.45	3.83	12.00	564546.38	801139.30	N 32 32 57.00	W 103 29 24.65
	16360.39	90.00	179.54	11710.00	4855.32	-4855.17	38.94	0.00	560168.73	801174.41	N 32 32 13.69	W 103 29 24.64

Survey Type: Non-Def Plan

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)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Chief 30 State #8H Rev1 RM 16July18
	1	26.000	16360.392	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Chief 30 State #8H Rev1 RM 16July18