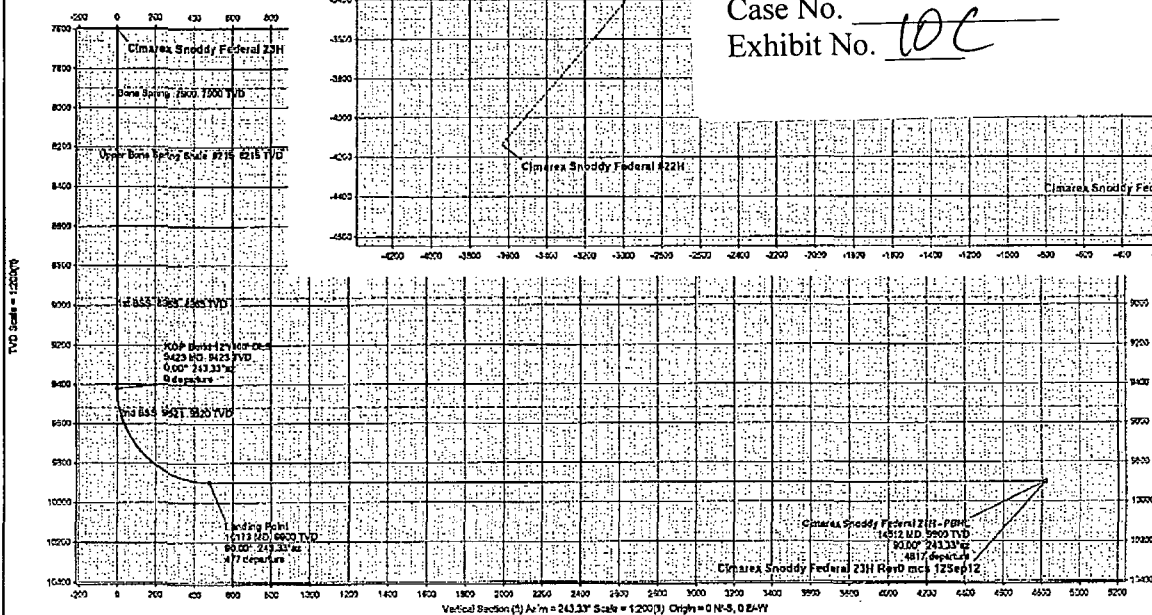
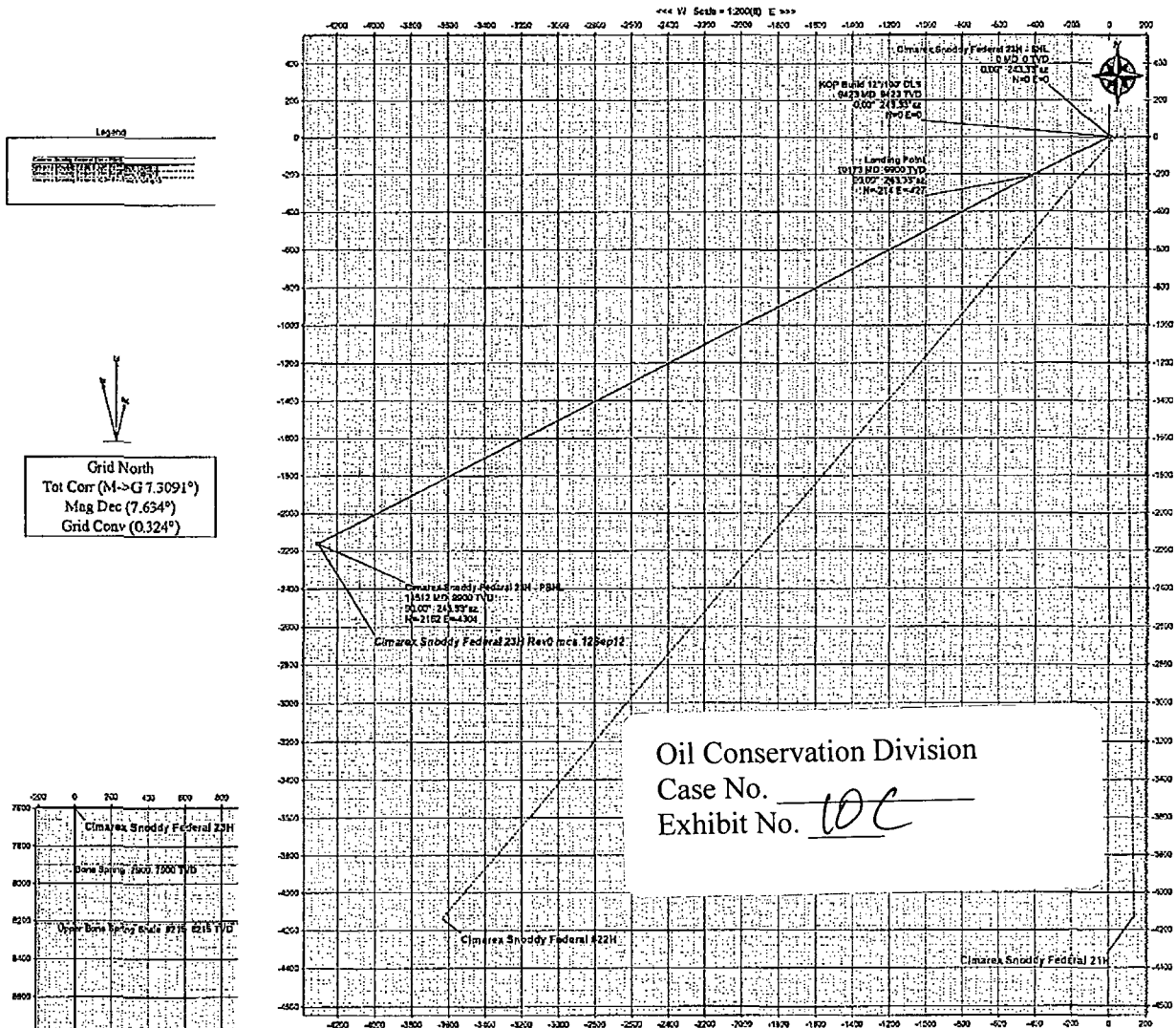


Rig TBD

Cimarex Energy

REV 0

PATHFINDER
A Schlumberger Company

[illegible]

Comments	Survey	ID	Inc	Azim	TVD	SSTVD	Critical Points								
							VS	NS	EW	Longitude	Latitude	Eastng	Northng	DLS	Tool Face
SHL	0.00	0.00	243.33	0.00	-3555.00	0.00	0.00	0.00	W 103 43 49.472	N	32 32 56.962	727115.80	564039.60		243.33
Deleware Sands	5236.00	0.00	243.33	5235.00	1880.00	0.00	0.00	0.00	W 103 43 48.472	N	32 32 56.962	727115.80	564039.60	0.00	243.33
Bone Spring	7900.00	0.00	243.33	7900.00	4345.00	0.00	0.00	0.00	W 103 43 49.472	N	32 32 58.962	727115.80	564039.60	0.00	243.33
Upper Bone Spring Shale	8215.00	0.00	243.33	8215.00	4560.00	0.00	0.00	0.00	W 103 43 49.472	E	32 32 56.962	727115.80	564039.60	0.00	243.33
1st BSS	8965.00	0.00	243.33	8965.00	5410.00	0.00	0.00	0.00	W 103 43 49.472	N	32 32 56.962	727115.80	564039.60	0.00	243.33
KOP Build 12"/100' DLS	9422.50	0.00	243.33	9422.50	5857.50	0.00	0.00	0.00	W 103 43 49.472	N	32 32 56.962	727115.80	564039.60	0.00	0.00
2nd BSS	9520.69	11.78	243.33	9520.00	5965.00	10.06	-4.52	-8.99	W 103 43 49.577	N	32 32 58.618	727108.81	564035.08	12.00	243.33
Landing Point	10172.50	90.00	243.33	9899.98	6344.96	477.45	-214.31	-426.67	W 103 43 54.471	N	32 32 54.868	726689.16	563825.30	12.00	-129.42
PBHL	14512.00	90.00	243.33	9900.00	6345.00	4816.97	-2162.14	-4304.45	W 103 44 39.897	N	32 32 35.807	722811.57	561877.58	0.00	

Drawn By: _____
Date Created: September 12, 2012 12:40:33 PM
Created By: Ryan Schindler
Created Date: _____
Approved By: _____
Approved Date: _____



Cimarex Snoddy Federal 23H Rev0 mcs 12Sep12 Proposal Geodetic Report

PATHFINDER
A Schlumberger Company

(Def Plan)

Report Date: September 12, 2012 - 02:24 PM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Snoddy Federal 23H / Cimarex Snoddy Federal 23H
Well: Cimarex Snoddy Federal 23H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Snoddy Federal 23H Rev0 mcs 12Sep12
Survey Date: September 12, 2012
Tort / AHD / DDI / ERD Ratio: 90.001° / 4816.969 ft / 5.803 / 0.487
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 32' 56.96212", W 103° 43' 49.47201"
Location Grid N/E Y/X: N 564039.600 ftUS, E 727115.800 ftUS
CRS Grid Convergence Angle: 0.3244°
Grid Scale Factor: 0.99994862

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 243.329° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: Ground Elevation
TVD Reference Elevation: 3555.000 ft above MSL
Seabed / Ground Elevation: 3555.000 ft above MSL
Magnetic Declination: 7.634°
Total Gravity Field Strength: 999.1774 mgn (9.8 based)
Total Magnetic Field Strength: 48660.828 nT
Magnetic Dip Angle: 60.395°
Declination Date: September 12, 2012
Magnetic Declination Model: BGM 2012
North Reference: Grid North
Grid Convergence Used: 0.3244°
Total Corr Mag North->Grid North: 7.3091°

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)	Eastng (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Cimarex Snoddy Federal 23H - SHL	0.00	0.00	243.33	0.00	0.00	0.00	0.00	N/A	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	100.00	0.00	243.33	100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	200.00	0.00	243.33	200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	300.00	0.00	243.33	300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	400.00	0.00	243.33	400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	500.00	0.00	243.33	500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	600.00	0.00	243.33	600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	700.00	0.00	243.33	700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	800.00	0.00	243.33	800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	900.00	0.00	243.33	900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1000.00	0.00	243.33	1000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1100.00	0.00	243.33	1100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1200.00	0.00	243.33	1200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1300.00	0.00	243.33	1300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1400.00	0.00	243.33	1400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1500.00	0.00	243.33	1500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1600.00	0.00	243.33	1600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1700.00	0.00	243.33	1700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1800.00	0.00	243.33	1800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	1900.00	0.00	243.33	1900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2000.00	0.00	243.33	2000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2100.00	0.00	243.33	2100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2200.00	0.00	243.33	2200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (ftUS)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	2300.00	0.00	243.33	2300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2400.00	0.00	243.33	2400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2500.00	0.00	243.33	2500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2600.00	0.00	243.33	2600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2700.00	0.00	243.33	2700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2800.00	0.00	243.33	2800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	2900.00	0.00	243.33	2900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3000.00	0.00	243.33	3000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3100.00	0.00	243.33	3100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3200.00	0.00	243.33	3200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3300.00	0.00	243.33	3300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3400.00	0.00	243.33	3400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3500.00	0.00	243.33	3500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3600.00	0.00	243.33	3600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3700.00	0.00	243.33	3700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3800.00	0.00	243.33	3800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	3900.00	0.00	243.33	3900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4000.00	0.00	243.33	4000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4100.00	0.00	243.33	4100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4200.00	0.00	243.33	4200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4300.00	0.00	243.33	4300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4400.00	0.00	243.33	4400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4500.00	0.00	243.33	4500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4600.00	0.00	243.33	4600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4700.00	0.00	243.33	4700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4800.00	0.00	243.33	4800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	4900.00	0.00	243.33	4900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5000.00	0.00	243.33	5000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5100.00	0.00	243.33	5100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5200.00	0.00	243.33	5200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Delaware Sands	5235.00	0.00	243.33	5235.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5300.00	0.00	243.33	5300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5400.00	0.00	243.33	5400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5500.00	0.00	243.33	5500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5600.00	0.00	243.33	5600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5700.00	0.00	243.33	5700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5800.00	0.00	243.33	5800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	5900.00	0.00	243.33	5900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6000.00	0.00	243.33	6000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6100.00	0.00	243.33	6100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6200.00	0.00	243.33	6200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6300.00	0.00	243.33	6300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6400.00	0.00	243.33	6400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6500.00	0.00	243.33	6500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6600.00	0.00	243.33	6600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6700.00	0.00	243.33	6700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6800.00	0.00	243.33	6800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	6900.00	0.00	243.33	6900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47

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 ° ' ")
	7000.00	0.00	243.33	7000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7100.00	0.00	243.33	7100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7200.00	0.00	243.33	7200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7300.00	0.00	243.33	7300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7400.00	0.00	243.33	7400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7500.00	0.00	243.33	7500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7600.00	0.00	243.33	7600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7700.00	0.00	243.33	7700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	7800.00	0.00	243.33	7800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Bone Spring	7900.00	0.00	243.33	7900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8000.00	0.00	243.33	8000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8100.00	0.00	243.33	8100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8200.00	0.00	243.33	8200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Upper Bone Spring Shale	8215.00	0.00	243.33	8215.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8300.00	0.00	243.33	8300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8400.00	0.00	243.33	8400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8500.00	0.00	243.33	8500.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8600.00	0.00	243.33	8600.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8700.00	0.00	243.33	8700.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8800.00	0.00	243.33	8800.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	8900.00	0.00	243.33	8900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
1st BSS	8965.00	0.00	243.33	8965.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9000.00	0.00	243.33	9000.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9100.00	0.00	243.33	9100.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9200.00	0.00	243.33	9200.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9300.00	0.00	243.33	9300.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9400.00	0.00	243.33	9400.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
KOP Build 12"/100' DLS	9422.50	0.00	243.33	9422.50	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
	9500.00	9.30	243.33	9499.66	6.28	-2.82	-5.61	12.00	564036.78	727110.19	N 32 32 56.93	W 103 43 49.54
2nd BSS	9520.69	11.78	243.33	9520.00	10.06	-4.52	-8.99	12.00	564035.08	727106.81	N 32 32 56.92	W 103 43 49.58
	9600.00	21.30	243.33	9595.94	32.62	-14.64	-29.15	12.00	564024.96	727086.66	N 32 32 56.82	W 103 43 49.81
	9700.00	33.30	243.33	9684.64	78.40	-35.19	-70.06	12.00	564004.41	727045.75	N 32 32 56.62	W 103 43 50.29
	9800.00	45.30	243.33	9761.88	141.62	-63.57	-126.55	12.00	563976.04	726989.26	N 32 32 56.34	W 103 43 50.95
	9900.00	57.30	243.33	9824.29	219.52	-98.53	-196.16	12.00	563941.07	726919.65	N 32 32 56.00	W 103 43 51.77
	10000.00	69.30	243.33	9869.14	308.69	-138.56	-275.85	12.00	563901.05	726839.96	N 32 32 55.61	W 103 43 52.70
	10100.00	81.30	243.33	9894.47	405.24	-181.89	-362.13	12.00	563857.72	726753.69	N 32 32 55.18	W 103 43 53.71
Landing Point	10172.50	90.00	243.33	9899.96	477.46	-214.31	-426.67	12.00	563825.30	726689.16	N 32 32 54.87	W 103 43 54.47
	10200.00	90.00	243.33	9899.96	504.96	-226.65	-451.24	0.00	563812.96	726664.58	N 32 32 54.74	W 103 43 54.76
	10300.00	90.00	243.33	9899.96	604.96	-271.54	-540.60	0.00	563768.08	726575.23	N 32 32 54.31	W 103 43 55.61
	10400.00	90.00	243.33	9899.96	704.96	-316.42	-626.96	0.00	563723.19	726485.87	N 32 32 53.87	W 103 43 56.85
	10500.00	90.00	243.33	9899.97	804.96	-361.31	-719.32	0.00	563678.31	726396.52	N 32 32 53.43	W 103 43 57.90
	10600.00	90.00	243.33	9899.97	904.96	-406.19	-808.68	0.00	563633.43	726307.16	N 32 32 52.99	W 103 43 58.95
	10700.00	90.00	243.33	9899.97	1004.96	-451.08	-898.04	0.00	563588.54	726217.81	N 32 32 52.55	W 103 43 59.99
	10800.00	90.00	243.33	9899.97	1104.96	-495.97	-987.40	0.00	563543.66	726128.45	N 32 32 52.11	W 103 44 1.04
	10900.00	90.00	243.33	9899.97	1204.96	-540.85	-1076.76	0.00	563498.78	726039.09	N 32 32 51.67	W 103 44 2.09
	11000.00	90.00	243.33	9899.97	1304.96	-585.74	-1166.12	0.00	563453.89	725949.74	N 32 32 51.23	W 103 44 3.13
	11100.00	90.00	243.33	9899.97	1404.96	-630.62	-1255.48	0.00	563409.01	725860.38	N 32 32 50.79	W 103 44 4.18

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 ° ' ")
	11200.00	90.00	243.33	9899.97	1504.96	-675.51	-1344.85	0.00	563364.13	725771.03	N 32 32 50.35	W 103 44 5.23
	11300.00	90.00	243.33	9899.97	1604.96	-720.39	-1434.21	0.00	563319.25	725681.67	N 32 32 49.91	W 103 44 6.27
	11400.00	90.00	243.33	9899.97	1704.96	-765.28	-1523.57	0.00	563274.36	725592.32	N 32 32 49.48	W 103 44 7.32
	11500.00	90.00	243.33	9899.97	1804.96	-810.16	-1612.93	0.00	563229.48	725502.96	N 32 32 49.04	W 103 44 8.37
	11600.00	90.00	243.33	9899.97	1904.96	-855.05	-1702.29	0.00	563184.60	725413.60	N 32 32 48.60	W 103 44 9.41
	11700.00	90.00	243.33	9899.97	2004.96	-899.94	-1791.65	0.00	563139.71	725324.25	N 32 32 48.16	W 103 44 10.46
	11800.00	90.00	243.33	9899.97	2104.96	-944.82	-1881.01	0.00	563094.83	725234.89	N 32 32 47.72	W 103 44 11.51
	11900.00	90.00	243.33	9899.97	2204.96	-989.71	-1970.37	0.00	563049.95	725145.54	N 32 32 47.28	W 103 44 12.56
	12000.00	90.00	243.33	9899.97	2304.96	-1034.59	-2059.73	0.00	563005.06	725056.18	N 32 32 46.84	W 103 44 13.60
	12100.00	90.00	243.33	9899.97	2404.96	-1079.48	-2149.09	0.00	562960.18	724966.83	N 32 32 46.40	W 103 44 14.65
	12200.00	90.00	243.33	9899.97	2504.96	-1124.36	-2238.45	0.00	562915.30	724877.47	N 32 32 45.96	W 103 44 15.70
	12300.00	90.00	243.33	9899.97	2604.96	-1169.25	-2327.81	0.00	562870.41	724788.12	N 32 32 45.52	W 103 44 16.74
	12400.00	90.00	243.33	9899.97	2704.96	-1214.14	-2417.17	0.00	562825.53	724698.76	N 32 32 45.08	W 103 44 17.79
	12500.00	90.00	243.33	9899.97	2804.96	-1259.02	-2506.53	0.00	562780.64	724609.40	N 32 32 44.64	W 103 44 18.84
	12600.00	90.00	243.33	9899.98	2904.96	-1303.91	-2595.89	0.00	562735.76	724520.05	N 32 32 44.21	W 103 44 19.88
	12700.00	90.00	243.33	9899.98	3004.96	-1348.79	-2685.25	0.00	562690.88	724430.69	N 32 32 43.77	W 103 44 20.93
	12800.00	90.00	243.33	9899.98	3104.96	-1393.68	-2774.61	0.00	562645.99	724341.34	N 32 32 43.33	W 103 44 21.98
	12900.00	90.00	243.33	9899.98	3204.96	-1438.57	-2863.97	0.00	562601.11	724251.98	N 32 32 42.89	W 103 44 23.02
	13000.00	90.00	243.33	9899.98	3304.96	-1483.45	-2953.33	0.00	562556.23	724162.63	N 32 32 42.45	W 103 44 24.07
	13100.00	90.00	243.33	9899.98	3404.96	-1528.34	-3042.69	0.00	562511.34	724073.27	N 32 32 42.01	W 103 44 25.12
	13200.00	90.00	243.33	9899.98	3504.96	-1573.23	-3132.05	0.00	562466.46	723983.92	N 32 32 41.57	W 103 44 26.16
	13300.00	90.00	243.33	9899.98	3604.96	-1618.11	-3221.41	0.00	562421.57	723894.56	N 32 32 41.13	W 103 44 27.21
	13400.00	90.00	243.33	9899.98	3704.96	-1663.00	-3310.77	0.00	562376.69	723805.21	N 32 32 40.69	W 103 44 28.26
	13500.00	90.00	243.33	9899.99	3804.96	-1707.89	-3400.13	0.00	562331.81	723715.85	N 32 32 40.25	W 103 44 29.30
	13600.00	90.00	243.33	9899.99	3904.96	-1752.77	-3489.49	0.00	562286.92	723626.50	N 32 32 39.81	W 103 44 30.35
	13700.00	90.00	243.33	9899.99	4004.96	-1797.66	-3578.85	0.00	562242.04	723537.14	N 32 32 39.37	W 103 44 31.40
	13800.00	90.00	243.33	9899.99	4104.96	-1842.54	-3668.21	0.00	562197.15	723447.79	N 32 32 38.93	W 103 44 32.44
	13900.00	90.00	243.33	9899.99	4204.96	-1887.43	-3757.57	0.00	562152.27	723358.43	N 32 32 38.50	W 103 44 33.49
	14000.00	90.00	243.33	9899.99	4304.96	-1932.32	-3846.93	0.00	562107.38	723269.08	N 32 32 38.06	W 103 44 34.54
	14100.00	90.00	243.33	9899.99	4404.96	-1977.20	-3936.29	0.00	562062.50	723179.72	N 32 32 37.62	W 103 44 35.58
	14200.00	90.00	243.33	9900.00	4504.96	-2022.09	-4025.65	0.00	562017.62	723090.37	N 32 32 37.18	W 103 44 36.63
	14300.00	90.00	243.33	9900.00	4604.96	-2066.98	-4115.01	0.00	561972.73	723001.01	N 32 32 36.74	W 103 44 37.68
	14400.00	90.00	243.33	9900.00	4704.96	-2111.87	-4204.37	0.00	561927.85	722911.66	N 32 32 36.30	W 103 44 38.73
	14500.00	90.00	243.33	9900.00	4804.96	-2156.75	-4293.73	0.00	561882.96	722822.30	N 32 32 35.86	W 103 44 39.77
Cimarex Snoddy Federal 23H - PBHL	14512.00	90.00	243.33	9900.00	4816.97	-2162.14	-4304.46	0.00	561877.58	722811.57	N 32 32 35.81	W 103 44 39.90

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	9400.000	1/100.000	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Cimarex Snoddy Federal 23H Rev0 mcs

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	9400.000		14512.004		1/100.000	30.000	30.000	SLB_MWVD-STD			Original Borehole / Cimarex Snoddy Federal 23H Rev0 mcs	



Cimarex Snoddy Federal 23H Rev0 mcs 12Sep12 Proposal Geodetic Report



(Def Plan)

Report Date: September 12, 2012 - 02:20 PM
 Client: Cimarex Energy
 Field: NM Lea County (NAD 83)
 Structure / Slot: Cimarex Snoddy Federal 23H / Cimarex Snoddy Federal 23H
 Well: Cimarex Snoddy Federal 23H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Snoddy Federal 23H Rev0 mcs 12Sep12
 Survey Date: September 12, 2012
 Tort / AHD / DDI / ERD Ratio: 90.001 ° / 4816.969 ft / 5.803 / 0.487
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 32' 56.96212", W 103° 43' 49.47201"
 Location Grid N/E Y/X: N 564039.600 ftUS, E 727115.800 ftUS
 CRS Grid Convergence Angle: 0.3244 °
 Grid Scale Factor: 0.99994862

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 243.329 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: Ground Elevation
 TVD Reference Elevation: 3555.000 ft above MSL
 Seabed / Ground Elevation: 3555.000 ft above MSL
 Magnetic Declination: 7.634 °
 Total Gravity Field Strength: 999.1774 mgn (9.8 based)
 Total Magnetic Field Strength: 48660.828 nT
 Magnetic Dip Angle: 60.395 °
 Declination Date: September 12, 2012
 Magnetic Declination Model: BGGM 2012
 North Reference: Grid North
 Grid Convergence Used: 0.3244 °

Total Corr Mag North->Grid North: 7.3091 °

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 ° ' ")
Cimarex Snoddy Federal 23H - SHL	0.00	0.00	243.33	0.00	0.00	0.00	0.00	N/A	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Delaware Sands	5235.00	0.00	243.33	5235.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Bone Spring	7900.00	0.00	243.33	7900.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
Upper Bone Spring Shale	8215.00	0.00	243.33	8215.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
1st BSS	8965.00	0.00	243.33	8965.00	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
KOP Build 12" / 100' DLS	9422.50	0.00	243.33	9422.50	0.00	0.00	0.00	0.00	564039.60	727115.80	N 32 32 56.96	W 103 43 49.47
2nd BSS	9520.69	11.78	243.33	9520.00	10.06	-4.52	-8.99	12.00	564035.08	727106.81	N 32 32 56.92	W 103 43 49.58
Landing Point	10172.50	90.00	243.33	9899.96	477.46	-214.31	-426.67	12.00	563825.30	726689.16	N 32 32 54.87	W 103 43 54.47
Cimarex Snoddy Federal 23H - PBHL	14512.00	90.00	243.33	9900.00	4816.97	-2162.14	-4304.46	0.00	561877.58	722811.57	N 32 32 35.81	W 103 44 39.90

Survey Type: Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
 Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	9400.000	1/100.000	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Cimarex Snoddy Federal 23H Rev0 mcs

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 ° ° '")
	9400.000		14512.004		1/100.000	30.000	30.000	SLB_MWD-STD			Original Borehole / Cimarex Snoddy Federal 23H Rev0 mcs	