



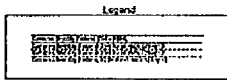
Rig TBD

Cimarex

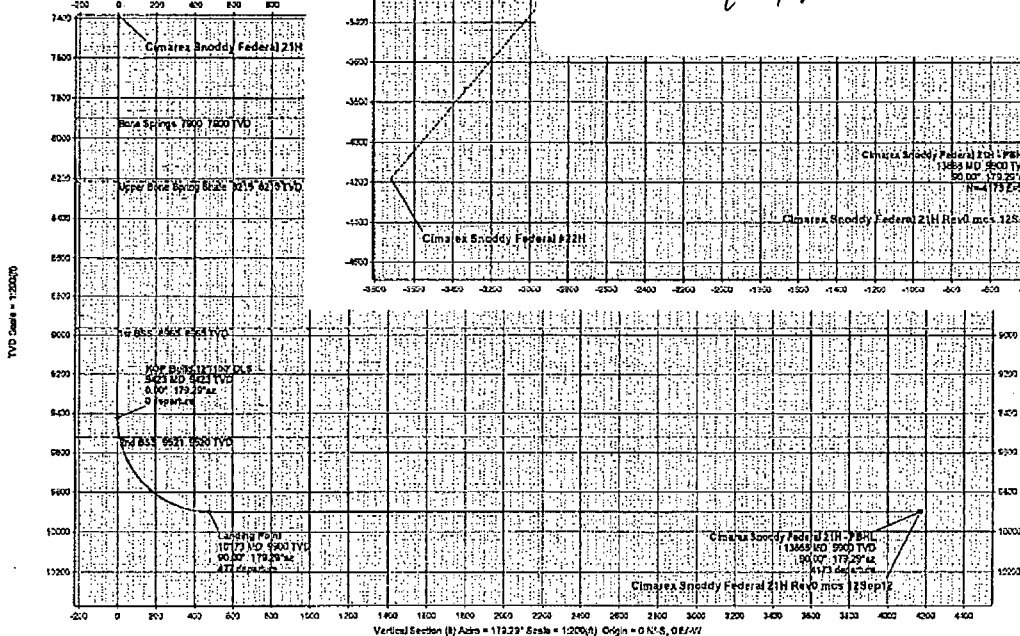
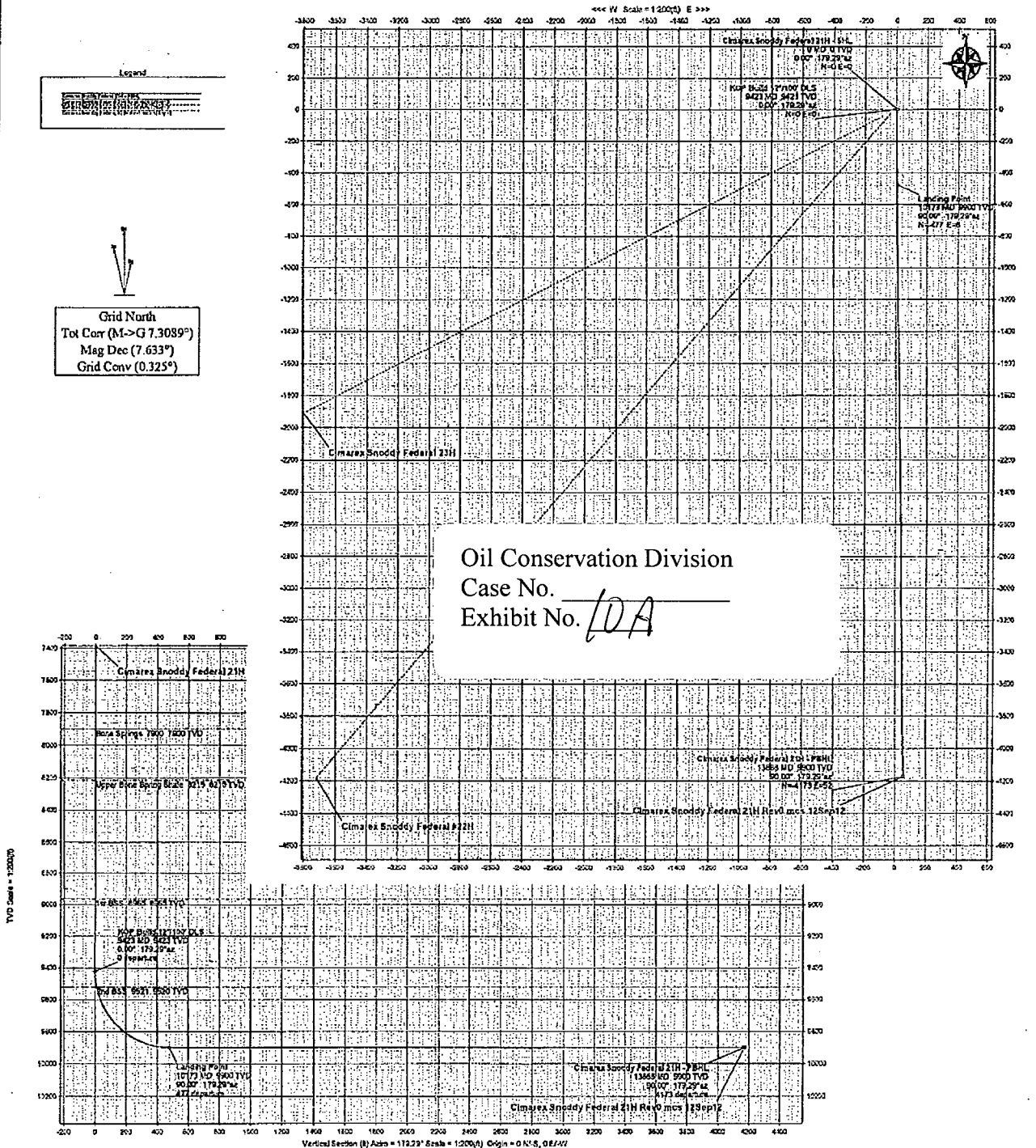
REV 0



WELL				FIELD				FRACTURE			
Cimarex Snoddy Federal 21H				Lea County, NM (NAD 83)				Cimarex Snoddy Federal 21H			
Fracture Process				Bottom Location				Fracture			
Model	FCOM 2011	Dir	61.33'	Lat	Signature 12.27.12	Lat	N 72.33 31.763	Fracture	10127.00 10127.00	Fracture	10127.00 10127.00
		Mag Dec	1.6187	Dir	42.343.80	Lat	W 103.43 48.435	Fracture	10127.00 10127.00	Fracture	10127.00 10127.00



Grid North
Tot Cor (M-G 7.3089°)
Mag Dec (7.633°)
Grid Conv (0.325°)



Comments	Critical Points													
	Survey MD	Inc	Azim	TVD	SSVD	VS	NS	EW	Longitude	Latitude	Easting	Northing	DLS	Tool Face
SHL	0.00	0.00	179.29	0.00	3555.00	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60		179.29
Delevare Sands	5235.00	0.00	179.29	5235.00	1680.00	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60	0.00	179.29
Bone Springs	7900.00	0.00	179.29	7900.00	4345.00	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60	0.00	179.29
Upper Bone Spring Shale	8215.00	0.00	179.29	8215.00	4660.00	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60	0.00	179.29
1st BSS	8965.00	0.00	179.29	8965.00	5410.00	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60	0.00	179.29
KOP Build 12'100' DLS	9422.50	0.00	179.29	9422.50	5867.50	0.00	0.00	0.00	W 103.43 48.435	N 32.32 57.383	727204.30	564082.60	0.00	0.00
2nd BSS	9520.69	11.78	179.29	9520.00	5965.00	10.00	-10.00	0.12	W 103.43 48.434	N 32.32 57.283	727204.42	564072.54	12.00	179.29
Landing Point	10172.50	90.00	179.29	8899.96	6344.96	477.46	-477.43	5.92	W 103.43 48.398	N 32.32 52.658	727210.22	563605.20	12.00	-138.66
PBHL	13887.95	90.00	179.29	9900.00	6345.00	4172.92	-4172.50	51.74	W 103.43 48.107	N 32.32 16.094	727256.04	559910.22	0.00	

Drawn By: [Name]
Checked By: [Name]
Approved By: [Name]



Cimarex Snoddy Federal 21H Rev0 mcs 12Sep12 Proposal Geodetic Report

(Def Plan)

Report Date: September 12, 2012 - 12:39 PM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Snoddy Federal 21H / Cimarex Snoddy Federal 21H
Well: Cimarex Snoddy Federal 21H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Snoddy Federal 21H Rev0 mcs 12Sep12
Survey Date: September 12, 2012
Tort / AHD / DDI / ERD Ratio: 90.001° / 4172.919 ft / 5.721 / 0.422
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 32' 57.38264", W 103° 43' 48.43523"
Location Grid N/E Y/X: N 564082.600 ftUS, E 727204.300 ftUS
CRS Grid Convergence Angle: 0.3246°
Grid Scale Factor: 0.99994865

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 179.290° (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: 7.633°
Total Gravity Field Strength: 999.1774 mgn (9.8 based)
Total Magnetic Field Strength: 48660.934 nT
Magnetic Dip Angle: 60.395°
Declination Date: September 12, 2012
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: 0.3246°

Total Corr Mag North->Grid North: 7.3089°

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 21H - SHL	0.00	0.00	179.29	0.00	0.00	0.00	0.00	N/A	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	100.00	0.00	179.29	100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	200.00	0.00	179.29	200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	300.00	0.00	179.29	300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	400.00	0.00	179.29	400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	500.00	0.00	179.29	500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	600.00	0.00	179.29	600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	700.00	0.00	179.29	700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	800.00	0.00	179.29	800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	900.00	0.00	179.29	900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1000.00	0.00	179.29	1000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1100.00	0.00	179.29	1100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1200.00	0.00	179.29	1200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1300.00	0.00	179.29	1300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1400.00	0.00	179.29	1400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1500.00	0.00	179.29	1500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1600.00	0.00	179.29	1600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1700.00	0.00	179.29	1700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1800.00	0.00	179.29	1800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	1900.00	0.00	179.29	1900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2000.00	0.00	179.29	2000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2100.00	0.00	179.29	2100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2200.00	0.00	179.29	2200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44

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 ° ' ")
	2300.00	0.00	179.29	2300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2400.00	0.00	179.29	2400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2500.00	0.00	179.29	2500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2600.00	0.00	179.29	2600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2700.00	0.00	179.29	2700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2800.00	0.00	179.29	2800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	2900.00	0.00	179.29	2900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3000.00	0.00	179.29	3000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3100.00	0.00	179.29	3100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3200.00	0.00	179.29	3200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3300.00	0.00	179.29	3300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3400.00	0.00	179.29	3400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3500.00	0.00	179.29	3500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3600.00	0.00	179.29	3600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3700.00	0.00	179.29	3700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3800.00	0.00	179.29	3800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	3900.00	0.00	179.29	3900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4000.00	0.00	179.29	4000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4100.00	0.00	179.29	4100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4200.00	0.00	179.29	4200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4300.00	0.00	179.29	4300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4400.00	0.00	179.29	4400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4500.00	0.00	179.29	4500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4600.00	0.00	179.29	4600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4700.00	0.00	179.29	4700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4800.00	0.00	179.29	4800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	4900.00	0.00	179.29	4900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5000.00	0.00	179.29	5000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5100.00	0.00	179.29	5100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5200.00	0.00	179.29	5200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Delaware Sands	5235.00	0.00	179.29	5235.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5300.00	0.00	179.29	5300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5400.00	0.00	179.29	5400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5500.00	0.00	179.29	5500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5600.00	0.00	179.29	5600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5700.00	0.00	179.29	5700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5800.00	0.00	179.29	5800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	5900.00	0.00	179.29	5900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6000.00	0.00	179.29	6000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6100.00	0.00	179.29	6100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6200.00	0.00	179.29	6200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6300.00	0.00	179.29	6300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6400.00	0.00	179.29	6400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6500.00	0.00	179.29	6500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6600.00	0.00	179.29	6600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6700.00	0.00	179.29	6700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6800.00	0.00	179.29	6800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	6900.00	0.00	179.29	6900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44

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	179.29	7000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7100.00	0.00	179.29	7100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7200.00	0.00	179.29	7200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7300.00	0.00	179.29	7300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7400.00	0.00	179.29	7400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7500.00	0.00	179.29	7500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7600.00	0.00	179.29	7600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7700.00	0.00	179.29	7700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	7800.00	0.00	179.29	7800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Bone Springs	7900.00	0.00	179.29	7900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8000.00	0.00	179.29	8000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8100.00	0.00	179.29	8100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8200.00	0.00	179.29	8200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Upper Bone Spring Shale	8215.00	0.00	179.29	8215.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8300.00	0.00	179.29	8300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8400.00	0.00	179.29	8400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8500.00	0.00	179.29	8500.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8600.00	0.00	179.29	8600.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8700.00	0.00	179.29	8700.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8800.00	0.00	179.29	8800.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	8900.00	0.00	179.29	8900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
1st BSS	8965.00	0.00	179.29	8965.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9000.00	0.00	179.29	9000.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9100.00	0.00	179.29	9100.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9200.00	0.00	179.29	9200.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9300.00	0.00	179.29	9300.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9400.00	0.00	179.29	9400.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
KOP Build 12"/100' DLS	9422.50	0.00	179.29	9422.50	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
	9500.00	9.30	179.29	9499.66	6.28	-6.28	0.08	12.00	564076.32	727204.38	N 32 32 57.32	W 103 43 48.43
2nd BSS	9520.69	11.78	179.29	9520.00	10.06	-10.06	0.12	12.00	564072.54	727204.42	N 32 32 57.28	W 103 43 48.43
	9600.00	21.30	179.29	9595.94	32.62	-32.61	0.40	12.00	564049.99	727204.70	N 32 32 57.06	W 103 43 48.43
	9700.00	33.30	179.29	9684.64	78.40	-78.39	0.97	12.00	564004.21	727205.27	N 32 32 56.61	W 103 43 48.43
	9800.00	45.30	179.29	9761.88	141.62	-141.61	1.75	12.00	563941.00	727206.05	N 32 32 55.98	W 103 43 48.42
	9900.00	57.30	179.29	9824.29	219.52	-219.50	2.72	12.00	563863.11	727207.02	N 32 32 55.21	W 103 43 48.42
	10000.00	69.30	179.29	9869.14	308.69	-308.67	3.83	12.00	563773.95	727208.12	N 32 32 54.33	W 103 43 48.41
	10100.00	81.30	179.29	9894.47	405.24	-405.21	5.02	12.00	563677.41	727209.32	N 32 32 53.37	W 103 43 48.40
Landing Point	10172.50	90.00	179.29	9899.96	477.46	-477.43	5.92	12.00	563605.20	727210.22	N 32 32 52.66	W 103 43 48.40
	10200.00	90.00	179.29	9899.96	504.96	-504.93	6.26	0.00	563577.70	727210.56	N 32 32 52.39	W 103 43 48.40
	10300.00	90.00	179.29	9899.96	504.96	-604.92	7.50	0.00	563477.71	727211.80	N 32 32 51.40	W 103 43 48.39
	10400.00	90.00	179.29	9899.96	704.96	-704.91	8.74	0.00	563377.73	727213.04	N 32 32 50.41	W 103 43 48.38
	10500.00	90.00	179.29	9899.97	904.96	-804.90	9.97	0.00	563277.74	727214.27	N 32 32 49.42	W 103 43 48.37
	10600.00	90.00	179.29	9899.97	904.96	-904.90	11.21	0.00	563177.75	727215.51	N 32 32 48.43	W 103 43 48.36
	10700.00	90.00	179.29	9899.97	1004.96	-1004.89	12.45	0.00	563077.77	727216.75	N 32 32 47.44	W 103 43 48.36
	10800.00	90.00	179.29	9899.97	1104.96	-1104.88	13.68	0.00	562977.78	727217.99	N 32 32 46.45	W 103 43 48.35
	10900.00	90.00	179.29	9899.97	1204.96	-1204.87	14.93	0.00	562877.79	727219.23	N 32 32 45.46	W 103 43 48.34
	11000.00	90.00	179.29	9899.97	1304.96	-1304.86	16.17	0.00	562777.80	727220.47	N 32 32 44.47	W 103 43 48.33
	11100.00	90.00	179.29	9899.97	1404.96	-1404.86	17.41	0.00	562677.82	727221.71	N 32 32 43.48	W 103 43 48.32

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 ° ' '')
	11200.00	90.00	179.29	9899.97	1504.96	-1504.85	18.65	0.00	562577.83	727222.95	N 32 32 42.49	W 103 43 48.32
	11300.00	90.00	179.29	9899.97	1604.96	-1604.84	19.89	0.00	562477.84	727224.19	N 32 32 41.50	W 103 43 48.31
	11400.00	90.00	179.29	9899.97	1704.96	-1704.83	21.13	0.00	562377.86	727225.43	N 32 32 40.51	W 103 43 48.30
	11500.00	90.00	179.29	9899.97	1804.96	-1804.83	22.37	0.00	562277.87	727226.67	N 32 32 39.52	W 103 43 48.29
	11600.00	90.00	179.29	9899.97	1904.96	-1904.82	23.61	0.00	562177.88	727227.91	N 32 32 38.53	W 103 43 48.29
	11700.00	90.00	179.29	9899.97	2004.96	-2004.81	24.85	0.00	562077.90	727229.15	N 32 32 37.54	W 103 43 48.28
	11800.00	90.00	179.29	9899.97	2104.96	-2104.80	26.09	0.00	561977.91	727230.39	N 32 32 36.56	W 103 43 48.27
	11900.00	90.00	179.29	9899.97	2204.96	-2204.80	27.33	0.00	561877.92	727231.63	N 32 32 35.57	W 103 43 48.26
	12000.00	90.00	179.29	9899.97	2304.96	-2304.79	28.57	0.00	561777.94	727232.87	N 32 32 34.58	W 103 43 48.25
	12100.00	90.00	179.29	9899.97	2404.96	-2404.78	29.81	0.00	561677.95	727234.11	N 32 32 33.59	W 103 43 48.25
	12200.00	90.00	179.29	9899.98	2504.96	-2504.77	31.05	0.00	561577.96	727235.35	N 32 32 32.60	W 103 43 48.24
	12300.00	90.00	179.29	9899.98	2604.96	-2604.76	32.29	0.00	561477.97	727236.59	N 32 32 31.61	W 103 43 48.23
	12400.00	90.00	179.29	9899.98	2704.96	-2704.76	33.53	0.00	561377.99	727237.83	N 32 32 30.62	W 103 43 48.22
	12500.00	90.00	179.29	9899.98	2804.96	-2804.75	34.77	0.00	561278.00	727239.07	N 32 32 29.63	W 103 43 48.21
	12600.00	90.00	179.29	9899.98	2904.96	-2904.74	36.01	0.00	561178.01	727240.31	N 32 32 28.64	W 103 43 48.21
	12700.00	90.00	179.29	9899.98	3004.96	-3004.73	37.25	0.00	561078.03	727241.55	N 32 32 27.65	W 103 43 48.20
	12800.00	90.00	179.29	9899.98	3104.96	-3104.73	38.49	0.00	560978.04	727242.79	N 32 32 26.66	W 103 43 48.19
	12900.00	90.00	179.29	9899.98	3204.96	-3204.72	39.73	0.00	560878.05	727244.03	N 32 32 25.67	W 103 43 48.18
	13000.00	90.00	179.29	9899.99	3304.96	-3304.71	40.97	0.00	560778.07	727245.27	N 32 32 24.68	W 103 43 48.18
	13100.00	90.00	179.29	9899.99	3404.96	-3404.70	42.21	0.00	560678.08	727246.51	N 32 32 23.69	W 103 43 48.17
	13200.00	90.00	179.29	9899.99	3504.96	-3504.70	43.45	0.00	560578.09	727247.75	N 32 32 22.70	W 103 43 48.16
	13300.00	90.00	179.29	9899.99	3604.96	-3604.69	44.69	0.00	560478.10	727248.99	N 32 32 21.71	W 103 43 48.15
	13400.00	90.00	179.29	9899.99	3704.96	-3704.68	45.93	0.00	560378.12	727250.23	N 32 32 20.72	W 103 43 48.14
	13500.00	90.00	179.29	9899.99	3804.96	-3804.67	47.17	0.00	560278.13	727251.47	N 32 32 19.73	W 103 43 48.14
	13600.00	90.00	179.29	9900.00	3904.96	-3904.66	48.42	0.00	560178.14	727252.71	N 32 32 18.75	W 103 43 48.13
	13700.00	90.00	179.29	9900.00	4004.96	-4004.66	49.66	0.00	560078.16	727253.95	N 32 32 17.76	W 103 43 48.12
	13800.00	90.00	179.29	9900.00	4104.96	-4104.65	50.90	0.00	559978.17	727255.19	N 32 32 16.77	W 103 43 48.11

Cimarex Snoddy
Federal 21H - PBHL 13867.95 90.00 179.29 9900.00 4172.92 -4172.60 51.74 0.00 559910.22 727256.04 N 32 32 16.09 W 103 43 48.11

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 21H Rev0 mcs
	9400.000	13867.955	1/100.000	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Snoddy Federal 21H Rev0 mcs



Cimarex Snoddy Federal 21H Rev0 mcs 12Sep12 Proposal Geodetic Report



(Def Plan)

Report Date: September 12, 2012 - 12:36 PM
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure / Stot: Cimarex Snoddy Federal 21H / Cimarex Snoddy Federal 21H
 Well: Cimarex Snoddy Federal 21H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Snoddy Federal 21H Rev0 mcs 12Sep12
 Survey Date: September 12, 2012
 Tort / AHD / DDI / ERD Ratio: 90.001 " / 4172.919 ft / 5.721 / 0.422
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 32' 57.38264", W 103° 43' 48.43523"
 Location Grid N/E Y/X: N 564082.600 ftUS, E 727204.300 ftUS
 CRS Grid Convergence Angle: 0.3246 °
 Grid Scale Factor: 0.99994865

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 179.290 ° (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: 7.633 °
 Total Gravity Field Strength: 999.1774 mgn (9.8 based)
 Total Magnetic Field Strength: 48660.934 nT
 Magnetic Dip Angle: 60.395 °
 Declination Date: September 12, 2012
 Magnetic Declination Model: BGGM 2012
 North Reference: Grid North
 Grid Convergence Used: 0.3246 °

Total Corr Mag North->Grid North: 7.3089 °

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 21H - SHL	0.00	0.00	179.29	0.00	0.00	0.00	0.00	N/A	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Deleware Sands	5235.00	0.00	179.29	5235.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Bone Springs	7900.00	0.00	179.29	7900.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
Upper Bone Spring Shale	8215.00	0.00	179.29	8215.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
1st BSS	8965.00	0.00	179.29	8965.00	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
KOP Build 12°/100'	9422.50	0.00	179.29	9422.50	0.00	0.00	0.00	0.00	564082.60	727204.30	N 32 32 57.38	W 103 43 48.44
DLS	9520.69	11.76	179.29	9520.00	10.06	-10.06	0.12	12.00	564072.54	727204.42	N 32 32 57.28	W 103 43 48.43
2nd BSS	9520.69	11.76	179.29	9520.00	10.06	-10.06	0.12	12.00	564072.54	727204.42	N 32 32 57.28	W 103 43 48.43
Landing Point	10172.50	90.00	179.29	9899.96	477.46	-477.43	5.92	12.00	563605.20	727210.22	N 32 32 52.66	W 103 43 48.40
Cimarex Snoddy Federal 21H - PBHL	13867.95	90.00	179.29	9900.00	4172.92	-4172.60	51.74	0.00	559910.22	727256.04	N 32 32 16.09	W 103 43 48.11

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 21H 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		13867.955		1/100.000	30.000	30.000	SLB_MWD-STD			Original Borehole / Cimarex Snoddy Federal 21H Rev0 mcs	