



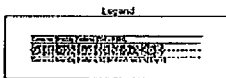
Rig TBD

Cimarex

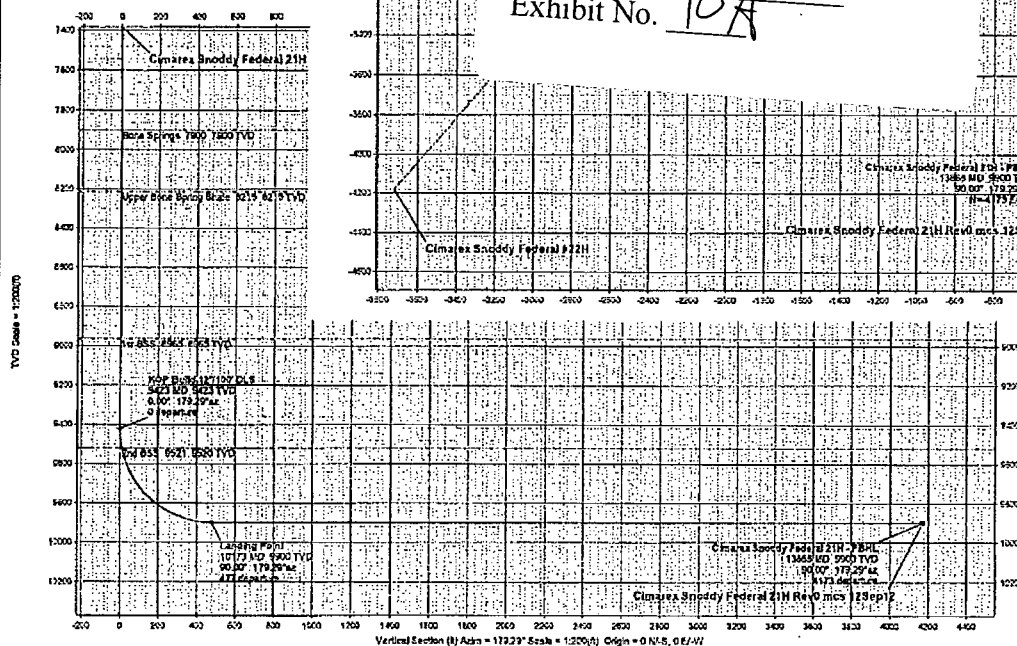
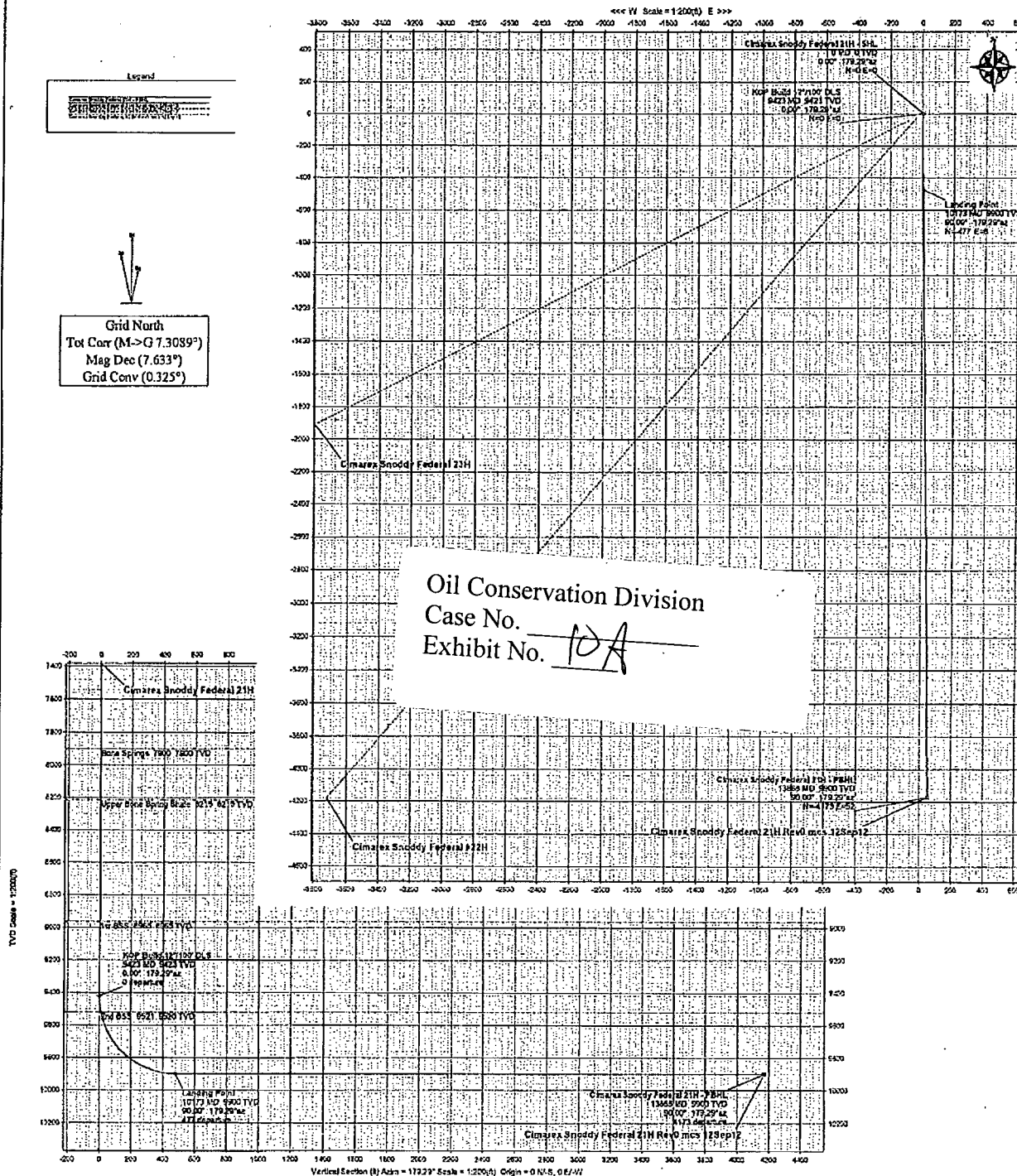
REV 0

PATHFINDER
A Schlumberger Company

WELL	Cimarex Snoddy Federal 21H		FIELD	Lea County, NM (NAD 83)		STRUCTURE	Cimarex Snoddy Federal 21H	
Plugged Perforations	None	8/1/2011	Top	81.333'	81.333'	8/1/2011	81.333'	81.333'
8/1/2011	81.333'	81.333'	8/1/2011	81.333'	81.333'	8/1/2011	81.333'	81.333'



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



Critical Points											
Comments	Survey ID	Inc	Azim	TVD	SSVD	VS	NS	EW	Longitude	Latitude	Easting - Northing
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
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
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
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
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
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
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
Landing Point	10172.50	90.00	179.29	8899.95	6344.95	477.46	-477.43	5.92	W 103 43 48.398 N	32 32 52.658	727210.22 563605.20
PBHL	13887.95	90.00	179.29	9900.00	6345.00	4172.92	-4172.60	51.74	W 103 43 48.107 N	32 32 16.094	727256.04 559910.22

Drawn by: KMS
Date: 12/21/2011
Checked by: R/S
Approved by: R/S



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

PATHFINDER
A Schlumberger Company

(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	308.89	-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	-504.92	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	-904.90	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

PATHFINDER
A Schlumberger Company

(Def Plan)

Report Date: September 12, 2012 - 12:36 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 - SRL	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
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
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	11.78	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
2nd BSS	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
Landing Point												
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



Rig TBD

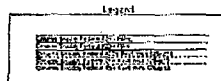
Cimarex

REV 1

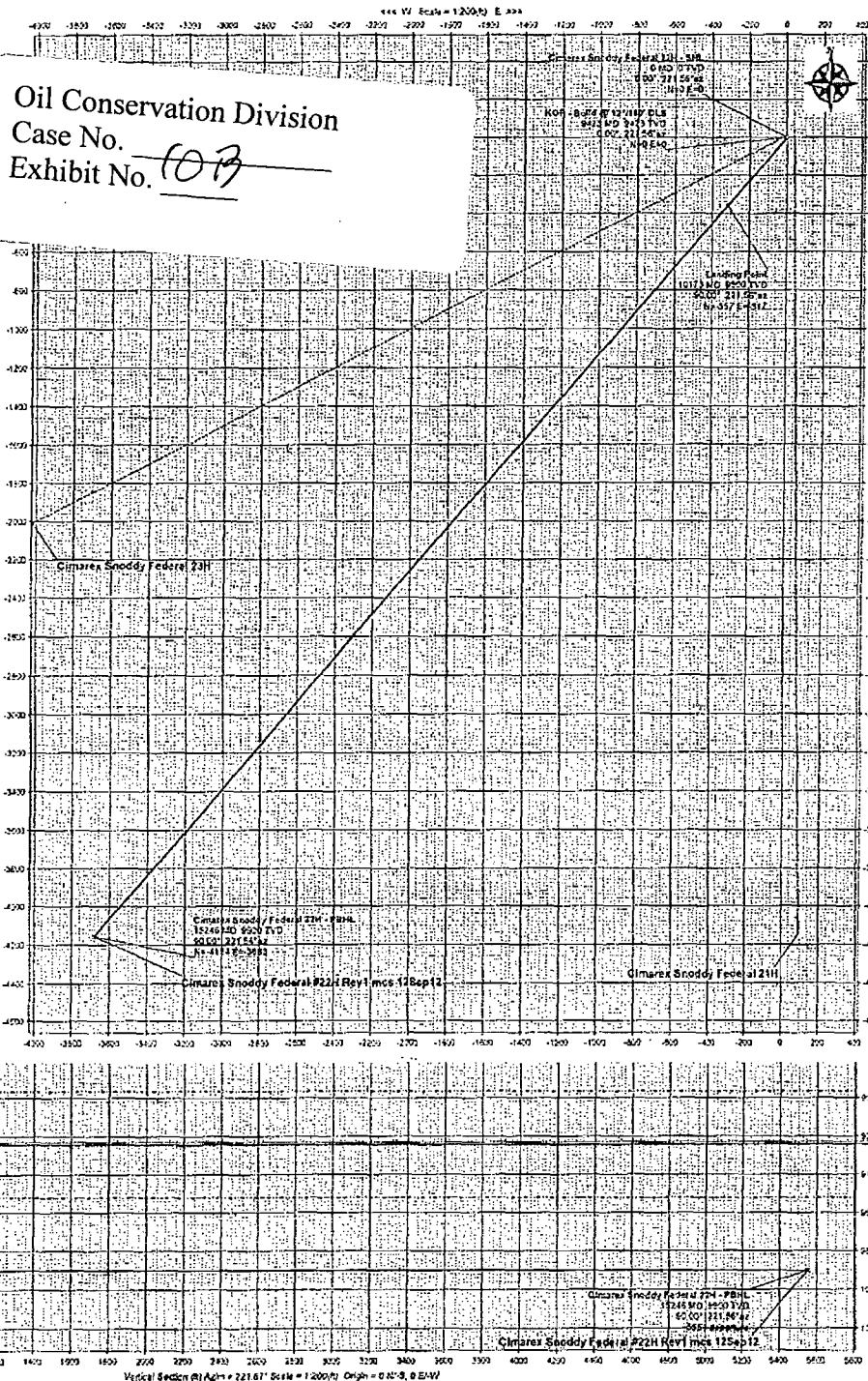
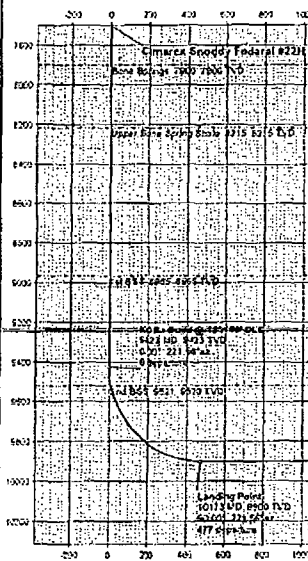
PATHFINDER
A Schlumberger Company

WELL				FIELD				STRUCTURE			
Cimarex Snoddy Federal #22H				Lea County, NM (NAD 83)				Cimarex Snoddy Federal #22H			
Map Date: 8/20/2011	Log: 4/2/12	Draw: 4/2/12	Rev: 4/2/12	Survey: 4/2/12	Well: 4/2/12	Field: 4/2/12	Structure: 4/2/12	Map Date: 8/20/2011	Log: 4/2/12	Draw: 4/2/12	Rev: 4/2/12

Oil Conservation Division
Case No. 103
Exhibit No. 103



Grid North
Tot Corr (M→G 7.3143°)
Mag Dec (7.639°)
Grid Conv (0.324°)



Critical Points													
Comments	Survey MD	Inc	Azim	TVD	SSTVD	VS	NS	EW	Longitude	Latitude	Easting	Northing	DLS Tool Face
SHL	0.00	0.00	221.56	0.00	-3555.00	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	221.56
Delaware Sands	5235.00	0.00	221.56	5235.00	1680.00	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	0.00
Bone Springs	7900.00	0.00	221.56	7900.00	4345.00	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	0.00
Upper Bone Spring Shale	8215.00	0.00	221.56	8215.00	4660.00	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	0.00
1st BSS	8965.00	0.00	221.56	8965.00	5410.00	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	0.00
KOP - Build @ 12°/100' DLS	9422.50	0.00	221.56	9422.50	5867.50	0.00	0.00	0.00	W 103 43 48.915 N	32 32 57.099	727163.40	564053.70	0.00
2nd BSS	9520.69	11.78	221.56	9520.69	5965.00	10.06	-7.53	-6.67	W 103 43 48.993 N	32 32 57.025	727156.73	564045.17	12.00
Landing Point	10172.56	90.00	221.56	9900.00	6345.00	477.50	-357.32	-316.74	W 103 43 52.639 N	32 32 53.581	726846.67	563696.40	12.00
PBHL	15246.35	90.00	221.56	9900.00	6345.00	5551.29	-4154.02	-3662.53	W 103 44 32.205 N	32 32 16.201	723481.06	559899.90	0.00

Drawn by: [Name]
Checked by: [Name]
Approved by: [Name]



Cimarex Snoddy Federal #22H Rev1 mcs 12Sep12 Proposal Geodetic Report
(Def Plan)

PATHFINDER
A Schlumberger Company

Report: September 12, 2012 - 01:22 PM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Snoddy Federal #22H / Cimarex Snoddy Federal #22H
Well: Cimarex Snoddy Federal #22H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Snoddy Federal #22H Rev1 mcs 12Sep12
Survey Date: August 26, 2012
Tort / AHD / DDI / ERD Ratio: 90.004 * / 5551.299 ft / 5.886 / 0.561
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 32' 57.09897", W 103° 43' 48.91497"
Location Grid N/E Y/X: N 564053.700 ftUS, E 727163.400 ftUS
CRS Grid Convergence Angle: 0.3245 °
Grid Scale Factor: 0.99994864

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 221.674 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: Drillsite Elevation
TVD Reference Elevation: 3555.000 ft above MSL
Seabed / Ground Elevation: 3555.000 ft above MSL
Magnetic Declination: 7.639 °
Total Gravity Field Strength: 999.1774 mgn (9.8 based)
Total Magnetic Field Strength: 48666.739 nT
Magnetic Dip Angle: 60.397 °
Declination Date: August 26, 2012
Magnetic Declination Model: BGM 2012
North Reference: Grid North
Grid Convergence Used: 0.3245 °

Total Corr Mag North->Grid North: 7.3143 °

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 22H - SHL	0.00	0.00	221.56	0.00	0.00	0.00	0.00	N/A	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	100.00	0.00	221.56	100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	200.00	0.00	221.56	200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	300.00	0.00	221.56	300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	400.00	0.00	221.56	400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	500.00	0.00	221.56	500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	600.00	0.00	221.56	600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	700.00	0.00	221.56	700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	800.00	0.00	221.56	800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	900.00	0.00	221.56	900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1000.00	0.00	221.56	1000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1100.00	0.00	221.56	1100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1200.00	0.00	221.56	1200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1300.00	0.00	221.56	1300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1400.00	0.00	221.56	1400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1500.00	0.00	221.56	1500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1600.00	0.00	221.56	1600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1700.00	0.00	221.56	1700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1800.00	0.00	221.56	1800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	1900.00	0.00	221.56	1900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2000.00	0.00	221.56	2000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2100.00	0.00	221.56	2100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2200.00	0.00	221.56	2200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2300.00	0.00	221.56	2300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2400.00	0.00	221.56	2400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91

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 ° ° '")
	2500.00	0.00	221.56	2500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2600.00	0.00	221.56	2600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2700.00	0.00	221.56	2700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2800.00	0.00	221.56	2800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	2900.00	0.00	221.56	2900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3000.00	0.00	221.56	3000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3100.00	0.00	221.56	3100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3200.00	0.00	221.56	3200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3300.00	0.00	221.56	3300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3400.00	0.00	221.56	3400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3500.00	0.00	221.56	3500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3600.00	0.00	221.56	3600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3700.00	0.00	221.56	3700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3800.00	0.00	221.56	3800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	3900.00	0.00	221.56	3900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4000.00	0.00	221.56	4000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4100.00	0.00	221.56	4100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4200.00	0.00	221.56	4200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4300.00	0.00	221.56	4300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4400.00	0.00	221.56	4400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4500.00	0.00	221.56	4500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4600.00	0.00	221.56	4600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4700.00	0.00	221.56	4700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4800.00	0.00	221.56	4800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	4900.00	0.00	221.56	4900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5000.00	0.00	221.56	5000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5100.00	0.00	221.56	5100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5200.00	0.00	221.56	5200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Delaware Sands	5235.00	0.00	221.56	5235.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5300.00	0.00	221.56	5300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5400.00	0.00	221.56	5400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5500.00	0.00	221.56	5500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5600.00	0.00	221.56	5600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5700.00	0.00	221.56	5700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5800.00	0.00	221.56	5800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	5900.00	0.00	221.56	5900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6000.00	0.00	221.56	6000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6100.00	0.00	221.56	6100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6200.00	0.00	221.56	6200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6300.00	0.00	221.56	6300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6400.00	0.00	221.56	6400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6500.00	0.00	221.56	6500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6600.00	0.00	221.56	6600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6700.00	0.00	221.56	6700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6800.00	0.00	221.56	6800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	6900.00	0.00	221.56	6900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7000.00	0.00	221.56	7000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7100.00	0.00	221.56	7100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7200.00	0.00	221.56	7200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91

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 ° ° ' '')
	7300.00	0.00	221.56	7300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7400.00	0.00	221.56	7400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7500.00	0.00	221.56	7500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7600.00	0.00	221.56	7600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7700.00	0.00	221.56	7700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	7800.00	0.00	221.56	7800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Bone Springs	7900.00	0.00	221.56	7900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8000.00	0.00	221.56	8000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8100.00	0.00	221.56	8100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8200.00	0.00	221.56	8200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Upper Bone Spring Shale	8215.00	0.00	221.56	8215.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8300.00	0.00	221.56	8300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8400.00	0.00	221.56	8400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8500.00	0.00	221.56	8500.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8600.00	0.00	221.56	8600.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8700.00	0.00	221.56	8700.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8800.00	0.00	221.56	8800.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	8900.00	0.00	221.56	8900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
1st BSS	8965.00	0.00	221.56	8965.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9000.00	0.00	221.56	9000.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9100.00	0.00	221.56	9100.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9200.00	0.00	221.56	9200.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9300.00	0.00	221.56	9300.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9400.00	0.00	221.56	9400.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
KOP - Build @ 12"/100" DLS	9422.50	0.00	221.56	9422.50	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
	9500.00	9.30	221.55	9499.66	6.28	-4.70	-4.16	12.00	564049.00	727159.24	N 32 32 57.05	W 103 43 48.96
2nd BSS	9520.69	11.78	221.56	9520.00	10.08	-7.53	-6.67	12.00	564046.17	727156.73	N 32 32 57.02	W 103 43 48.99
	9600.00	21.30	221.56	9595.94	32.61	-24.40	-21.63	12.00	564029.30	727141.77	N 32 32 56.86	W 103 43 49.17
	9700.00	33.30	221.56	9684.64	78.39	-58.66	-52.00	12.00	563995.04	727111.40	N 32 32 56.52	W 103 43 49.53
	9800.00	45.30	221.56	9761.89	141.61	-105.97	-93.93	12.00	563947.74	727069.47	N 32 32 56.06	W 103 43 50.02
	9900.00	57.30	221.56	9824.30	219.51	-164.26	-145.61	12.00	563889.45	727017.80	N 32 32 55.48	W 103 43 50.63
	10000.00	69.29	221.56	9869.16	308.58	-230.99	-204.76	12.00	563822.72	726958.65	N 32 32 54.82	W 103 43 51.32
	10100.00	81.29	221.56	9894.50	405.22	-303.24	-268.80	12.00	563750.48	726894.61	N 32 32 54.11	W 103 43 52.08
Landing Point	10172.56	90.00	221.56	9900.00	477.50	-357.32	-316.74	12.00	563696.40	726846.67	N 32 32 53.58	W 103 43 52.64
	10200.00	90.00	221.56	9900.00	504.94	-377.86	-334.95	0.00	563675.86	726828.47	N 32 32 53.38	W 103 43 52.85
	10300.00	90.00	221.56	9900.00	604.94	-452.69	-401.28	0.00	563601.03	726762.14	N 32 32 52.64	W 103 43 53.53
	10400.00	90.00	221.56	9900.00	704.94	-527.52	-467.62	0.00	563526.20	726695.81	N 32 32 51.91	W 103 43 54.41
	10500.00	90.00	221.56	9900.00	804.94	-602.36	-533.95	0.00	563451.38	726629.48	N 32 32 51.17	W 103 43 55.19
	10600.00	90.00	221.56	9900.00	904.94	-677.19	-600.29	0.00	563376.55	726563.15	N 32 32 50.43	W 103 43 55.97
	10700.00	90.00	221.56	9900.00	1004.94	-752.02	-666.62	0.00	563301.72	726496.82	N 32 32 49.70	W 103 43 56.75
	10800.00	90.00	221.56	9900.00	1104.94	-826.85	-732.95	0.00	563226.89	726430.48	N 32 32 48.96	W 103 43 57.53
	10900.00	90.00	221.56	9900.00	1204.94	-901.68	-799.29	0.00	563152.07	726364.15	N 32 32 48.22	W 103 43 58.31
	11000.00	90.00	221.56	9900.00	1304.94	-976.51	-865.62	0.00	563077.24	726297.82	N 32 32 47.49	W 103 43 59.09
	11100.00	90.00	221.56	9900.00	1404.94	-1051.34	-931.96	0.00	563002.41	726231.49	N 32 32 46.75	W 103 43 59.87
	11200.00	90.00	221.56	9900.00	1504.94	-1126.17	-998.29	0.00	562927.59	726165.16	N 32 32 46.01	W 103 44 0.65
	11300.00	90.00	221.56	9900.00	1604.94	-1201.00	-1064.63	0.00	562852.76	726098.83	N 32 32 45.28	W 103 44 1.43

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11400.00	90.00	221.56	9900.00	1704.94	-1275.84	-1130.96	0.00	562777.93	726032.50	N 32 32 44.54	W 103 44 2.21
	11500.00	90.00	221.56	9900.00	1804.94	-1350.67	-1187.30	0.00	562703.11	725966.16	N 32 32 43.80	W 103 44 2.99
	11600.00	90.00	221.56	9900.00	1904.94	-1425.50	-1263.63	0.00	562628.28	725899.83	N 32 32 43.06	W 103 44 3.77
	11700.00	90.00	221.56	9900.00	2004.94	-1500.33	-1329.97	0.00	562553.45	725833.50	N 32 32 42.33	W 103 44 4.55
	11800.00	90.00	221.56	9900.00	2104.94	-1575.16	-1396.31	0.00	562478.63	725767.17	N 32 32 41.59	W 103 44 5.33
	11900.00	90.00	221.56	9900.00	2204.94	-1649.99	-1462.64	0.00	562403.80	725700.84	N 32 32 40.85	W 103 44 6.11
	12000.00	90.00	221.56	9900.00	2304.94	-1724.82	-1528.98	0.00	562328.97	725634.50	N 32 32 40.12	W 103 44 6.89
	12100.00	90.00	221.56	9900.00	2404.94	-1799.65	-1595.31	0.00	562254.15	725568.17	N 32 32 39.38	W 103 44 7.67
	12200.00	90.00	221.56	9900.00	2504.94	-1874.48	-1661.65	0.00	562179.32	725501.84	N 32 32 38.64	W 103 44 8.45
	12300.00	90.00	221.56	9900.00	2604.94	-1949.31	-1727.99	0.00	562104.50	725435.51	N 32 32 37.91	W 103 44 9.23
	12400.00	90.00	221.56	9900.00	2704.94	-2024.14	-1794.32	0.00	562029.67	725369.17	N 32 32 37.17	W 103 44 10.01
	12500.00	90.00	221.56	9900.00	2804.94	-2098.97	-1860.66	0.00	561954.84	725302.84	N 32 32 36.43	W 103 44 10.79
	12600.00	90.00	221.56	9900.00	2904.94	-2173.80	-1926.99	0.00	561880.02	725236.51	N 32 32 35.70	W 103 44 11.57
	12700.00	90.00	221.56	9900.00	3004.94	-2248.63	-1993.33	0.00	561805.19	725170.17	N 32 32 34.96	W 103 44 12.35
	12800.00	90.00	221.56	9900.00	3104.94	-2323.46	-2059.67	0.00	561730.37	725103.84	N 32 32 34.22	W 103 44 13.13
	12900.00	90.00	221.56	9900.00	3204.94	-2398.29	-2126.01	0.00	561655.54	725037.51	N 32 32 33.49	W 103 44 13.91
	13000.00	90.00	221.56	9900.00	3304.94	-2473.11	-2192.34	0.00	561580.72	724971.17	N 32 32 32.75	W 103 44 14.69
	13100.00	90.00	221.56	9900.00	3404.94	-2547.94	-2258.68	0.00	561505.89	724904.84	N 32 32 32.01	W 103 44 15.47
	13200.00	90.00	221.56	9900.00	3504.94	-2622.77	-2325.02	0.00	561431.07	724838.51	N 32 32 31.28	W 103 44 16.25
	13300.00	90.00	221.56	9900.00	3604.94	-2697.60	-2391.35	0.00	561356.24	724772.17	N 32 32 30.54	W 103 44 17.03
	13400.00	90.00	221.56	9900.00	3704.94	-2772.43	-2457.69	0.00	561281.42	724705.84	N 32 32 29.80	W 103 44 17.81
	13500.00	90.00	221.56	9900.00	3804.94	-2847.26	-2524.03	0.00	561206.59	724639.51	N 32 32 29.07	W 103 44 18.59
	13600.00	90.00	221.56	9900.00	3904.94	-2922.09	-2590.37	0.00	561131.77	724573.17	N 32 32 28.33	W 103 44 19.37
	13700.00	90.00	221.56	9900.00	4004.94	-2996.92	-2656.70	0.00	561056.94	724506.84	N 32 32 27.59	W 103 44 20.15
	13800.00	90.00	221.56	9900.00	4104.94	-3071.74	-2723.04	0.00	560982.12	724440.50	N 32 32 26.86	W 103 44 20.93
	13900.00	90.00	221.56	9900.00	4204.94	-3146.57	-2789.38	0.00	560907.29	724374.17	N 32 32 26.12	W 103 44 21.71
	14000.00	90.00	221.56	9900.00	4304.94	-3221.40	-2855.72	0.00	560832.47	724307.83	N 32 32 25.38	W 103 44 22.49
	14100.00	90.00	221.56	9900.00	4404.94	-3296.23	-2922.06	0.00	560757.65	724241.50	N 32 32 24.65	W 103 44 23.27
	14200.00	90.00	221.56	9900.00	4504.94	-3371.06	-2988.39	0.00	560682.82	724175.17	N 32 32 23.91	W 103 44 24.05
	14300.00	90.00	221.56	9900.00	4604.94	-3445.89	-3054.73	0.00	560608.00	724108.83	N 32 32 23.17	W 103 44 24.83
	14400.00	90.00	221.56	9900.00	4704.93	-3520.71	-3121.07	0.00	560533.17	724042.50	N 32 32 22.44	W 103 44 25.61
	14500.00	90.00	221.56	9900.00	4804.93	-3595.54	-3187.41	0.00	560458.35	723976.16	N 32 32 21.70	W 103 44 26.38
	14600.00	90.00	221.56	9900.00	4904.93	-3670.37	-3253.75	0.00	560383.53	723909.83	N 32 32 20.96	W 103 44 27.16
	14700.00	90.00	221.56	9900.00	5004.93	-3745.20	-3320.09	0.00	560308.70	723843.49	N 32 32 20.23	W 103 44 27.94
	14800.00	90.00	221.56	9900.00	5104.93	-3820.02	-3386.43	0.00	560233.88	723777.15	N 32 32 19.49	W 103 44 28.72
	14900.00	90.00	221.56	9900.00	5204.93	-3894.85	-3452.77	0.00	560159.06	723710.82	N 32 32 18.75	W 103 44 29.50
	15000.00	90.00	221.56	9900.00	5304.93	-3969.68	-3519.10	0.00	560084.23	723644.48	N 32 32 18.02	W 103 44 30.28
	15100.00	90.00	221.56	9900.00	5404.93	-4044.50	-3585.44	0.00	560009.41	723578.15	N 32 32 17.28	W 103 44 31.06
	15200.00	90.00	221.56	9900.00	5504.93	-4119.33	-3651.78	0.00	559934.59	723511.81	N 32 32 16.54	W 103 44 31.84
Cimarex Snoddy Federal 22H - PBHL	15246.35	90.00	221.56	9900.00	5551.29	-4154.02	-3682.53	0.00	559899.90	723481.06	N 32 32 16.20	W 103 44 32.20

Survey Type: Def Plan

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

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 ° ' ")
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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
	9400.000	15246.354		1/100.000	30.000	30.000	SLB_MWD-STD



Cimarex Snoddy Federal #22H Rev1 mcs 12Sep12 Proposal Geodetic Report

(Def Plan)

Report Date: September 12, 2012 - 01:17 PM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Snoddy Federal #22H / Cimarex Snoddy Federal #22H
Well: Cimarex Snoddy Federal #22H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Snoddy Federal #22H Rev1 mcs 12Sep12
Survey Date: August 26, 2012
Tort / AHD / DDI / ERD Ratio: 90.004 ° / 5551.299 ft / 5.886 / 0.561
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 32' 57.09897", W 103° 43' 48.91497"
Location Grid N/E Y/X: N 564053.700 ftUS, E 727163.400 ftUS
CRS Grid Convergence Angle: 0.3245 °
Grid Scale Factor: 0.99994864

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 221.674 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: Drillsite Elevation
TVD Reference Elevation: 3555.000 ft above MSL
Seabed / Ground Elevation: 3555.000 ft above MSL
Magnetic Declination: 7.639 °
Total Gravity Field Strength: 999.1774 mgn (9.8 based)
Total Magnetic Field Strength: 48666.739 nT
Magnetic Dip Angle: 60.397 °
Declination Date: August 26, 2012
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: 0.3245 °
Total Corr Mag North->Grid North: 7.3143 °

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 22H - SHL	0.00	0.00	221.56	0.00	0.00	0.00	0.00	N/A	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Deleware Sands	5235.00	0.00	221.56	5235.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Bone Springs	7900.00	0.00	221.56	7900.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
Upper Bone Spring Shale	8215.00	0.00	221.56	8215.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
1st BSS	8965.00	0.00	221.56	8965.00	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
KOP - Build @ 12"/100' DLS	9422.50	0.00	221.56	9422.50	0.00	0.00	0.00	0.00	564053.70	727163.40	N 32 32 57.10	W 103 43 48.91
2nd BSS	9520.69	11.78	221.56	9520.00	10.06	-7.53	-8.67	12.00	564046.17	727156.73	N 32 32 57.02	W 103 43 48.99
Landing Point	10172.56	90.00	221.56	9900.00	477.50	-357.32	-316.74	12.00	563696.40	726846.67	N 32 32 53.58	W 103 43 52.64
Cimarex Snoddy Federal 22H - PBHL	15246.35	90.00	221.56	9900.00	5551.29	-4154.02	-3682.53	0.00	559899.90	723481.06	N 32 32 16.20	W 103 44 32.20

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 #22H Rev1 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		15246.354		1/100.000	30.000	30.000	SLB_MWD-STD				
											Original Borehole / Cimarex Snoddy Federal #22H Rev1 mcs	



Rig TBD

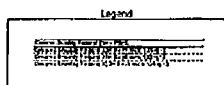
Cimarex Energy

REV 0

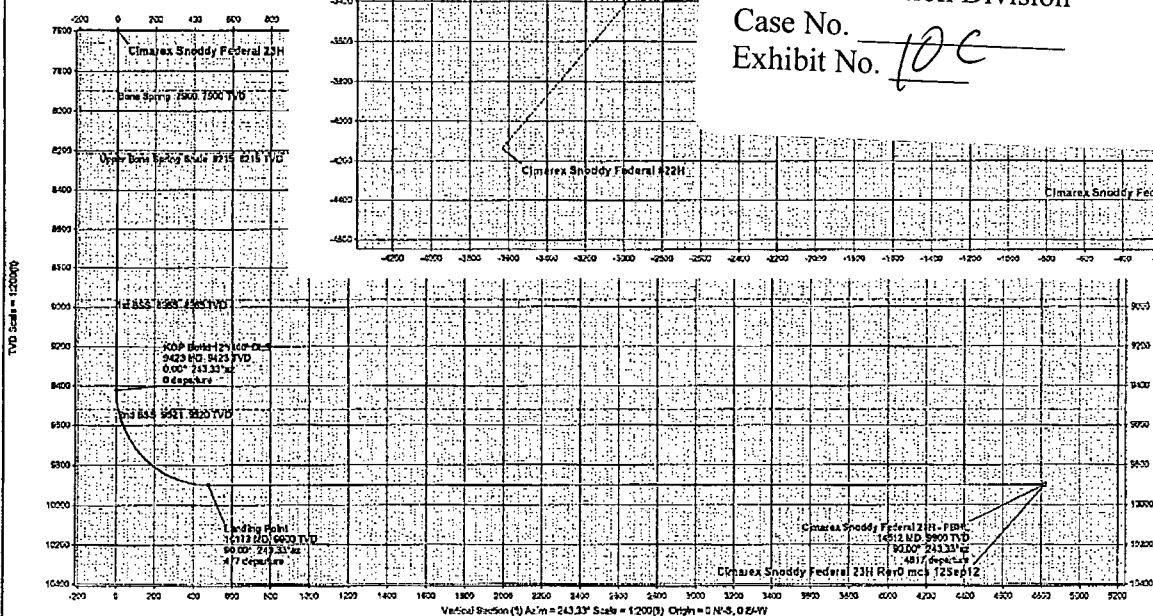
PATHFINDER

A Schlumberger Company

WELL		Cimarex Snoddy Federal 23H		FIELD		Lea County, NM (NAD 83)		STATION		Cimarex Snoddy Federal 23H																					
Height Pressure		Model BOG4 2111		Dip 61.80°		Dev 21		Sept 12, 2012		4375' BSL		Surf Location		N 32 10 W 10 S		Section		3423.00		East		10711.88		Old Elev		1131'		Grid Elev		5640.39	



Grid North
Tot Corr (M→G) 7.3091°
Mag Dec (7.634°)
Grid Conv (0.324°)



Oil Conservation Division
Case No. 10C
Exhibit No. 10C

Comments	Critical Points														
	Survey	R/O	Inc	Azim	TVD	SS/TVD	VS	NS	EW	Longitude	Latitude	Easting	Northing	DLS	Tool Face
SHL	0.00	0.00	243.33	0.00	-3555.00	0.00	0.00	0.00	0.00	W 103 43 49.472 N	32 32 56.962	727115.80	564039.60		243.33
Delaware Sands	5235.00	0.00	243.33	5235.00	1680.00	0.00	0.00	0.00	0.00	W 103 43 49.472 N	32 32 56.962	727115.80	564039.60	0.00	243.33
Bone Spring	7900.00	0.00	243.33	7900.00	4345.00	0.00	0.00	0.00	0.00	W 103 43 49.472 N	32 32 56.962	727115.80	564039.60	0.00	243.33
Upper Bone Spring Shale	8215.00	0.00	243.33	8215.00	4660.00	0.00	0.00	0.00	0.00	W 103 43 49.472 N	32 32 56.962	727115.80	564039.60	0.00	243.33
1st BSS	8965.00	0.00	243.33	8965.00	5410.00	0.00	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	5867.50	0.00	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 56.918	727108.81	564039.08	12.00	243.33	
Landing Point	10172.50	90.00	243.33	9899.98	6344.98	477.46	-214.31	-426.67	W 103 43 54.471 N	32 32 54.868	726589.16	563825.30	12.00	-129.42	
PBHL	14512.00	90.00	243.33	9900.00	6345.00	4816.97	-2162.14	-4304.48	W 103 44 39.897 N	32 32 35.807	722811.57	561877.58	0.00		

Drawn By: Lyle Butler
Checked By: Ryan Schaeffer
Approved By: [Signature]
Date: 09/12/2012



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: 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
	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 (ftUS)	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	308.89	-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	-625.96	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	-875.61	-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	-844.82	-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)	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	



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	