

Results of Directional Survey

API number:	30-025-40726		
OGRID:		Operator:	CIMAREX ENERGY CO. OF COLORADO
		Property:	LYNCH 23 FEDERAL COM # 4H

surface	ULSTR:	B	23	T 20S	R 34E
				326 FNL	1727 FEL

BH Loc	ULSTR:	O	23	T 20S	R 34E
13982	MD	9619.0	TVD	331 FSL	1594 FEL
				4949 FNL	

Top Perf/OH	ULSTR:	B	23	T 20S	R 34E
9760	MD	9564.8	TVD	735 FNL	1659 FEL

Bot Perf/OH	ULSTR:	O	23	T 20S	R 34E
13958	MD	9619.2	TVD	355 FSL	1593 FEL
				4925 FNL	

	MD	N/S	E/W	VD
	9722	-371.31	64.59	9561.49
TOP PERFS/OH	9760	-408.95	68.40	9564.75
	9785	-433.71	70.91	9566.89
	13929	-4570.01	134.51	9619.38
BOT PERFS/OH	13958	-4598.99	133.61	9619.16
	13982	-4622.98	132.86	9618.97

NEXT TO LAST	13929	-4570.01	134.51	9619.38
LAST READING	13982	-4622.98	132.86	9618.97
TD	13982	-4622.98	132.86	9618.97

Surface Location	326 FN	1727 FE
Projected BHL	4949 FN	1594 FE
Location of		
Top Perfs/OH	735 FN	1659 FE
Bottom Perfs/OH	4925 FN	1593 FE

SUMMARY of Subsurface Locations

Surface Location	B-23-20S-34E	326 FN	1727 FE	Vert. Depth
Top Perfs/OH	B-23-20S-34E	735 FN	1659 FE	9564.75
Bottom Perfs/OH	O-23-20S-34E	4925 FN	1593 FE	9619.16
Projected TD	O-23-20S-34E	4949 FN	1594 FE	9618.97

AUG 29 2013

Reservoir Development

Drilling & Measurements (Anadrill)

4301 SW 44th St

Oklahoma City, Oklahoma 73119 USA

Phone: (405) 682-2284

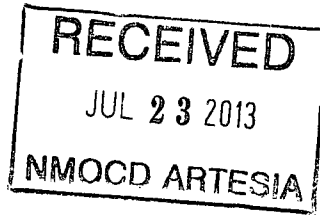
Fax: (405) 682-3937

February 15, 2013

Cimarex

600 N MARIENFELD STREET SUITE 600

MIDLAND, TX 79701



Re:

326 FNL & 1727 FEL
N 32.56498 W 103.52793

CLIENT: Cimarex Energy Co. of Colorado
WELL: Lynch 23 Federal Com No. 4
FIELD: Quail Ridge
RIG: Cactus 115
COUNTY: Lea County
API NO: 30-025-40726
JOB NO: 12MLD0602

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements , a division of Schlumberger Technology Corporation .
Other information required by your office is as follows.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Kingsley Nlewem MWD	Lynch 23 Federal Com No. 4 Original Hole	9054.00 Ft to 13929.00 Ft	November 18, 2012 to December 4, 2012	SlimPulse

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Chad McMillan
Field Service Manager

Reservoir Development

Drilling & Measurements (Anadrill)

4301 SW 44th St

Oklahoma City, Oklahoma 73119 USA

Phone: (405) 682-2284

Fax: (405) 682-3937

Well Reference:

326 FNL & 1727 FEL

N 32.266559 W 103.63562

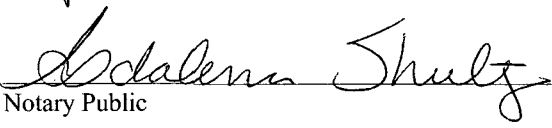
I, Kingsley Nlewem certify that; I am employed by Drilling & Measurements (formerly Anadrill), a division of Schlumberger Technology Corporation; that I did on the day(s) of November 18, 2012 through December 04, 2012, conduct or supervise the taking of the SlimPulse surveys from a depth of 9054.00 feet to a depth of 13929.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Cimarex Energy Co. of Colorado for the Lynch 23 Federal Com No. 4 Well (Original Hole) API No. 30-025-40726 and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

By 
Kingsley Nlewem
MWD

Subscribed and Sworn to before me this 15th day of Feb (month) 2013 (yr)

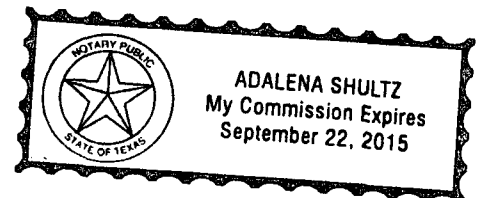
My Commission expires:

Sept 22, 2015


Notary Public

(signature)

Midland, Texas
(County State)



4-Dec-12

SCHLUMBERGER

Survey Report

Client: Cimarex Energy Co. of Colorado
Field: Quail Ridge

Well: Lynch 23 Federal Com No. 4

API number: 30-025-40726

Engineer: K. Niewem

COUNTY: Lea County
STATE: New Mexico
RIG: Cactus 115

Latitude: 32° 33' 53.92462" N

Longitude: 103° 31' 40.53427" W

Survey calculation methods:
Method for positions: Minimum curvature
Method for DLS: Lubinski

Depth reference

Permanent datum: MEAN SEA LEVEL

Depth reference: Driller's Depth

GL above permanent: 3656.0 ft

KB above permanent: Top Drive

DF above permanent: 3674.0 ft

Vertical section origin

Latitude (+N/-): 0.00 ft

Departure (+E/-): 0.00 ft

Grid Coordinates

NAD 27 Pennsylvania State Planes, Southern Zone, US Feet

X: 789464.500 ft US

Y: 570208.800 ft US

Azimuth from Vsect Origin to target: 178.63 degrees

-----Run1-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 18-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run2-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 19-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run3-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 20-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run4-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 22-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run5-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 22-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run6-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 28-Nov-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run7-----

Geomag Model: BGM 2012

Location G : 998.85 mgn

Location B (Override): 48679.21 nt

Magnetic Dip (Override): 60.44 degrees

Calculation Date: 02-Dec-2012

Tolerance G : 2.50 mgn

Tolerance B : 300.00 nt

Tolerance Dip : 0.45 degrees

-----Run1-----

BGM Model 2009

Magnetic dec (+E/W-) : 7.5260 degrees(Override)

Grid convergence (+E/W-) : 0.4340 degrees

Total az corr (+E/W-) : 7.0920 degrees

-----Run2-----

Magnetic dec (+E/Nw.) : 7.5260 degrees(Override)
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0920 degrees

-----Run3-----
Magnetic dec (+E/Nw.) : 7.5176 degrees
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0935 degrees

-----Run4-----
Magnetic dec (+E/Nw.) : 7.5260 degrees(Override)
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0920 degrees

-----Run5-----
Magnetic dec (+E/Nw.) : 7.5260 degrees(Override)
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0920 degrees

-----Run6-----
Magnetic dec (+E/Nw.) : 7.5260 degrees(Override)
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0920 degrees

-----Run7-----
Magnetic dec (+E/Nw.) : 7.5260 degrees(Override)
Grid convergence (+E/Nw.) : 0.4340 degrees
GTotal az corr (+E/Nw.) : 7.0920 degrees

-----Survey Correction Index Description-----
0 = Uncorrected 1 = Sag Corrected 9 = Projection to bit
2 = DMAG Corrected 3 = Sag + DMAG Corrected

Survey List												Correction	
Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V Sec (ft)	N/S (ft)	E/W (ft)	Closure (ft)	at Azi (deg)	DLS (deg/100ft)	Tool	
1	0.00	0.00	0.00	-992.25	0.00	0.00	0.00	0.00	0	90.00	0.00	Tip	0
2	104.80	0.68	205.06	104.80	104.80	0.56	-0.56	-0.26	0.62189	205.06	0.65	GyroTool	0
3	204.80	0.73	200.80	100.00	304.79	1.68	-1.70	-0.74	1.85116	203.60	0.07	GyroTool	0
4	304.80	0.75	206.08	100.00	304.78	2.85	-2.88	-1.25	3.1413	203.55	0.07	GyroTool	0
5	404.80	0.89	210.10	100.00	404.77	4.09	-4.14	-1.93	4.56821	205.02	0.15	GyroTool	0
6	504.80	1.09	212.77	100.00	504.76	5.54	-5.61	-2.84	6.28736	208.82	0.21	GyroTool	0
7	604.80	1.11	214.57	100.00	604.74	7.11	-7.21	-3.90	8.19632	208.42	0.04	GyroTool	0
8	721.30	1.33	216.27	116.50	721.21	9.10	-9.23	-5.34	10.66199	210.06	0.19	GyroTool	0
9	816.60	1.42	216.05	95.30	816.48	10.91	-11.07	-6.69	12.93815	211.14	0.09	GyroTool	0
10	911.80	1.44	211.96	95.20	911.65	12.85	-13.04	-8.02	15.30993	211.58	0.11	GyroTool	0
11	1006.80	1.46	204.43	95.00	1006.62	14.93	-15.16	-9.15	17.7095	211.12	0.20	GyroTool	0
12	1101.70	1.32	210.22	94.90	1101.50	16.95	-17.20	-10.20	19.99932	210.67	0.21	GyroTool	0
13	1196.50	0.98	221.42	94.80	1196.28	18.48	-18.75	-11.29	21.88814	211.04	0.43	GyroTool	0
14	1291.20	0.77	228.13	94.70	1290.97	19.49	-19.79	-12.30	23.29533	211.86	0.25	GyroTool	0
15	1386.70	0.77	234.53	95.50	1386.46	20.26	-20.59	-13.30	24.50715	212.86	0.09	GyroTool	0
16	1482.40	0.58	246.20	95.70	1482.15	20.81	-21.16	-14.26	25.51435	213.99	0.24	GyroTool	0
17	1577.10	0.36	247.12	94.70	1576.85	21.10	-21.46	-14.98	26.17236	214.90	0.23	GyroTool	0
18	1672.90	0.37	243.78	95.80	1672.65	21.34	-21.72	-15.53	26.69665	215.57	0.02	GyroTool	0
19	1768.90	0.25	136.99	96.00	1768.64	21.63	-22.01	-15.67	27.01434	215.44	0.52	GyroTool	0
20	1864.00	0.66	102.91	95.10	1863.74	21.92	-22.28	-14.99	26.85333	213.93	0.50	GyroTool	0
21	1960.10	0.87	96.90	96.10	1959.83	22.16	-22.49	-13.73	26.35106	211.39	0.23	GyroTool	0
22	2056.10	0.86	80.40	96.00	2055.82	22.16	-22.46	-12.29	25.60478	208.69	0.26	GyroTool	0
23	2150.80	0.60	43.65	94.70	2150.52	21.71	-21.98	-11.25	24.69488	207.10	0.55	GyroTool	0
24	2246.40	0.61	328.76	95.60	2246.11	20.91	-21.19	-11.17	23.94971	207.79	0.77	GyroTool	0
25	2341.50	0.62	280.82	95.10	2341.21	20.37	-20.66	-11.94	23.85745	210.02	0.53	GyroTool	0
26	2436.60	0.42	223.08	95.10	2436.30	20.51	-20.82	-12.68	24.37274	211.35	0.56	GyroTool	0
27	2531.70	0.46	104.89	95.10	2531.40	20.86	-21.17	-12.55	24.60764	210.66	0.79	GyroTool	0
28	2626.90	0.59	25.90	95.20	2626.60	20.53	-20.82	-11.97	24.01754	209.88	0.71	GyroTool	0
29	2722.30	0.90	1.70	95.40	2721.99	19.35	-19.63	-11.73	22.8704	210.85	0.46	GyroTool	0
30	2817.00	1.11	27.04	94.70	2816.68	17.80	-18.07	-11.29	21.30983	211.99	0.51	GyroTool	0
31	2912.40	1.89	35.76	95.40	2912.04	15.73	-15.97	-9.95	18.81943	211.92	0.85	GyroTool	0
32	3007.00	1.64	17.84	94.60	3006.60	13.21	-13.42	-8.62	15.95145	212.72	0.64	GyroTool	0
33	3101.80	1.28	354.83	94.80	3101.37	10.87	-11.07	-8.30	13.8409	216.86	0.72	GyroTool	0
34	3196.40	0.89	325.59	94.60	3195.95	9.20	-9.42	-8.81	12.89677	223.11	0.70	GyroTool	0
35	3291.30	0.49	227.76	94.90	3290.85	8.24	-8.46	-9.45	12.68372	228.14	0.42	GyroTool	0
36	3386.10	0.27	36.53	94.80	3385.64	7.71	-7.94	-9.53	12.40515	230.19	0.49	GyroTool	0
37	3481.00	0.70	356.59	94.90	3480.54	6.96	-7.18	-9.43	11.85529	232.71	0.55	GyroTool	0
38	3575.50	0.98	217.96	94.50	3575.03	6.33	-6.58	-10.27	12.19953	237.36	1.22	GyroTool	0
39	3670.50	1.05	219.56	95.00	3670.02	6.94	-7.22	-11.64	13.69845	238.18	0.95	GyroTool	0
40	3765.00	0.80	178.50	94.50	3764.51	8.26	-8.55	-12.17	14.87612	234.92	0.73	GyroTool	0
41	3859.80	0.56	140.60	94.80	3859.30	9.28	-9.57	-11.86	15.24101	231.11	0.52	GyroTool	0
42	3954.50	0.56	97.95	94.70	3954.00	9.72	-9.99	-11.11	14.94181	228.04	0.43	GyroTool	0
43	4049.10	0.21	2.41	94.60	4048.60	9.62	-9.88	-10.65	14.52469	227.13	0.65	GyroTool	0
44	4143.80	0.65	301.15	94.70	4143.29	9.16	-9.43	-11.10	14.56327	229.64	0.61	GyroTool	0
45	4238.90	1.30	285.08	95.10	4238.38	8.57	-8.87	-12.60	15.41011	234.86	0.73	GyroTool	0
46	4333.70	1.15	244.61	94.80	4333.16	8.65	-9.00	-14.50	17.06432	238.17	0.91	GyroTool	0
47	4428.20	0.85	181.98	94.50	4427.65	9.74	-10.11	-15.38	18.40285	236.69	1.13	GyroTool	0
48	4523.10	0.40	158.29	94.90	4522.54	10.75	-11.12	-15.28	18.8975	233.96	0.54	GyroTool	0
49	4616.60	0.51	237.29	93.50	4616.04	11.77	-11.65	-15.51	19.39588	233.10	0.63	GyroTool	0
50	4711.40	0.38	216.50	94.80	4710.84	11.74	-12.13	-16.05	20.11801	232.93	0.22	GyroTool	0
51	4806.10	0.42	200.06	94.70	4805.53	12.31	-12.70	-16.36	20.71259	232.17	0.13	GyroTool	0
52	4901.00	0.46	162.19	94.90	4900.43	13.00	-13.39	-16.36	21.14463	230.70	0.30	GyroTool	0
53	4996.40	0.42	169.28	95.40	4995.83	13.71	-14.10	-16.18	21.46249	228.92	0.07	GyroTool	0

149	12715.00	88.90	181.09	96.00	9608.33	3359.58	-3356.59	165.23	3360.64952	177.18	0.81	SlimPulse	2
150	12810.00	88.31	181.10	95.00	9610.65	3454.46	-3451.54	163.41	3455.40562	177.29	0.62	SlimPulse	2
151	12906.00	88.76	181.16	96.00	9613.10	3550.34	-3547.49	161.52	3551.16429	177.39	0.47	SlimPulse	2
152	13001.00	88.11	180.94	95.00	9615.70	3645.22	-3642.44	159.78	3645.93996	177.49	0.72	SlimPulse	2
153	13096.00	89.31	180.89	95.00	9617.84	3740.11	-3737.40	158.26	3740.74864	177.58	1.26	SlimPulse	2
154	13192.00	88.93	181.93	96.00	9619.31	3835.99	-3833.36	155.90	3836.52629	177.67	1.15	SlimPulse	2
155	13287.00	90.41	181.22	95.00	9619.86	3930.86	-3928.32	153.29	3931.30637	177.77	1.73	SlimPulse	2
156	13382.00	89.14	180.47	95.00	9620.23	4025.78	-4023.30	151.89	4026.16918	177.84	1.55	SlimPulse	0
157	13478.00	90.72	182.54	96.00	9620.34	4121.66	-4119.26	149.37	4121.96904	177.92	2.72	SlimPulse	0
158	13573.00	90.07	181.85	95.00	9619.69	4216.47	-4214.19	145.73	4216.70749	178.02	1.00	SlimPulse	0
159	13667.00	90.00	182.01	94.00	9619.63	4310.31	-4308.14	142.56	4310.49333	178.10	0.18	SlimPulse	0
160	13763.00	90.10	181.75	96.00	9619.55	4406.16	-4404.08	139.42	4406.28952	178.19	0.29	SlimPulse	0
161	13858.00	89.86	181.62	95.00	9619.57	4501.02	-4499.04	136.62	4501.11607	178.26	0.29	SlimPulse	0
162	13929.00	90.45	181.78	71.00	9619.38	4571.92	-4570.01	134.51	4571.98946	178.31	0.86	SlimPulse	0
163	13982.00	90.45	181.78	53.00	9618.97	4624.84	-4622.98	132.86	4624.8919	178.35	0.01	Projection	9

NMOCD ARTESIA

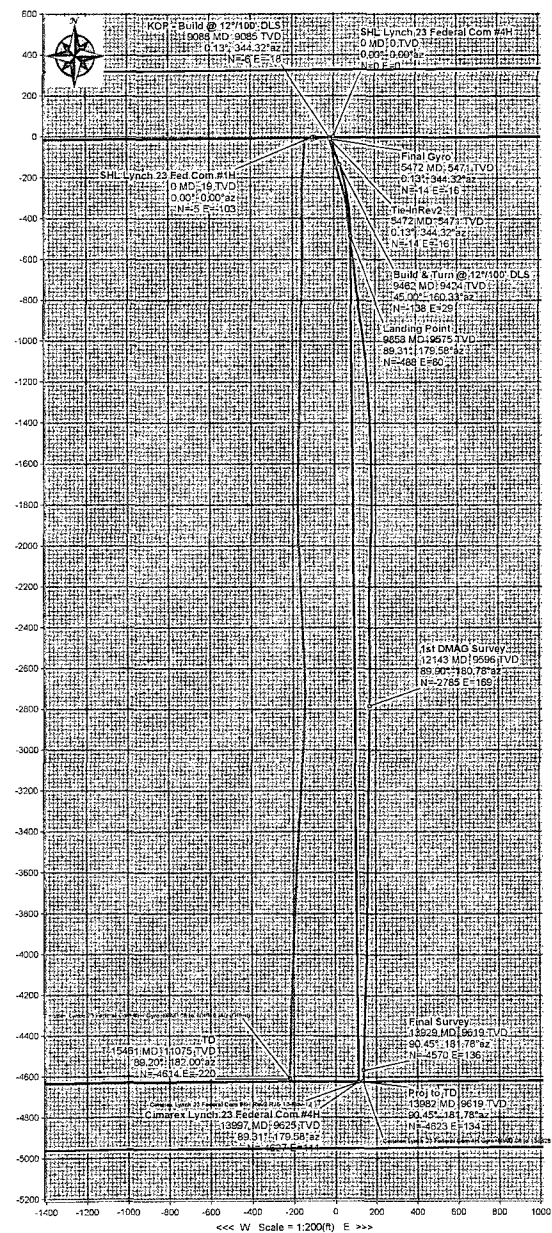
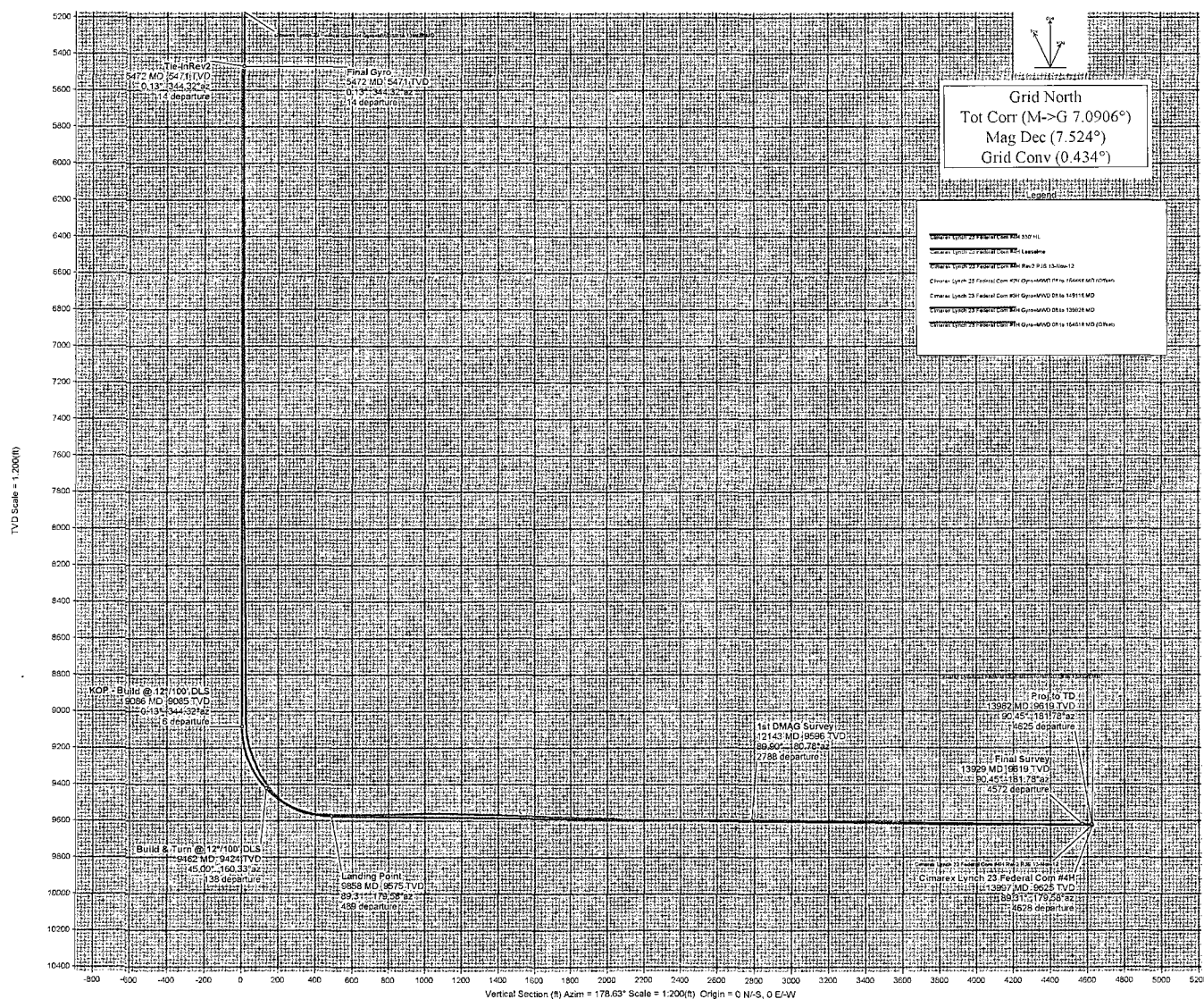


Cimarex



WELL	FIELD	STRUCTURE
Lynch 23 Federal Com #4H	NM Lea County	Cactus 115

Majority Parameters:				Station Location		NAD83 New Mexico State Plane, Eastern Zone, US Feet		Miscellaneous	
Model:	IRIGANS 2012	Dyn	60 442*	Dttn.	October 30, 2012	Lat	N 32 33 33.925	Northings	5760258.00 US
		Mag Dec.	7.524*	FS:	48677.567	Lon	W 103 31 40.534	Eastings	6904580.00 US
								Scale Factor:	0.99997950
								Sta	Lynch 23 Federal com #418
								Plot	KR6367401 above MSL
								Shy Date	October 25, 2012



Drawn By:	R. Schneider
Date Created:	
Checked By:	
Checked Date:	
Approved By:	
Approved Date:	



Cimarex Lynch 23 Federal Com 4H Gyro+MWD 0ft to 13982ft MD

(Def Survey)

Report Date: December 05, 2012 - 08:56 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cactus 115/ Cimarex Lynch 23 Federal Com 4H
Well: Cimarex Lynch 23 Federal Com #4H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Lynch 23 Federal Com 4H Gyro+MWD 0ft to 13982ft MD
Survey Date: November 09, 2012
Tort / AHD / DDI / ERD Ratio: 173.779 ° / 4706.213 ft / 6.075 / 0.489
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 33' 53.92462", W 103° 31' 40.53427"
Location Grid N/E Y/X: N 570208.800 ftUS, E 789464.500 ftUS
CRS Grid Convergence Angle: 0.4335 °
Grid Scale Factor: 0.9999796

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 178.632 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3674.000 ft above MSL
Seabed / Ground Elevation: 3656.000 ft above MSL
Magnetic Declination: 7.521 °
Total Gravity Field Strength: 999.1685 mgn (9.8 based)
Total Magnetic Field Strength: 48674.021 nT
Magnetic Dip Angle: 60.441 °
Declination Date: November 09, 2012
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: 0.4335 °
Total Corr Mag North->Grid North: 7.0875 °
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
SHL Lynch 23 Federal Com #4H	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	205.06M
	104.80	0.68	205.06	104.80	0.56	-0.56	-0.26	0.62	205.06	0.65	200.8M
	204.80	0.73	200.80	204.79	1.68	-1.70	-0.74	1.85	203.60	0.07	206.08M
	304.80	0.75	206.08	304.78	2.85	-2.88	-1.25	3.14	203.55	0.07	210.1M
	404.80	0.89	210.10	404.77	4.09	-4.14	-1.93	4.57	205.02	0.15	212.77M
	504.80	1.09	212.77	504.76	5.54	-5.61	-2.84	6.29	206.82	0.21	214.57M
	604.80	1.11	214.57	604.74	7.11	-7.21	-3.90	8.20	208.42	0.04	216.27M
	721.30	1.33	216.27	721.21	9.10	-9.23	-5.34	10.66	210.06	0.19	216.05M
	816.60	1.42	216.05	816.48	10.91	-11.07	-6.69	12.94	211.14	0.09	211.96M
	911.80	1.44	211.96	911.65	12.85	-13.04	-8.02	15.31	211.58	0.11	204.43M
	1006.80	1.46	204.43	1006.62	14.93	-15.16	-9.15	17.71	211.12	0.20	210.22M
	1101.70	1.32	210.22	1101.50	16.95	-17.20	-10.20	20.00	210.67	0.21	221.42M
	1196.50	0.98	221.42	1196.28	18.48	-18.75	-11.29	21.89	211.04	0.43	228.13M
	1291.20	0.77	228.13	1290.97	19.49	-19.79	-12.30	23.30	211.86	0.25	234.53M
	1386.70	0.77	234.53	1386.46	20.26	-20.59	-13.30	24.51	212.86	0.09	246.2M
	1482.40	0.58	246.20	1482.15	20.81	-21.16	-14.26	25.51	213.99	0.24	247.12M
	1577.10	0.36	247.12	1576.85	21.10	-21.46	-14.98	26.17	214.90	0.23	243.78M
	1672.90	0.37	243.78	1672.65	21.34	-21.72	-15.53	26.70	215.57	0.02	136.99M
	1768.90	0.25	136.99	1768.64	21.63	-22.01	-15.67	27.01	215.44	0.52	102.91M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	1864.00	0.66	102.91	1863.74	21.92	-22.28	-14.99	26.86	213.93	0.50	96.9M
	1960.10	0.87	96.90	1959.83	22.16	-22.49	-13.73	26.35	211.39	0.23	80.4M
	2056.10	0.86	80.40	2055.82	22.16	-22.46	-12.29	25.60	208.69	0.26	43.65M
	2150.80	0.60	43.65	2150.52	21.71	-21.98	-11.25	24.69	207.10	0.55	328.76M
	2246.40	0.61	328.76	2246.11	20.91	-21.19	-11.17	23.95	207.79	0.77	280.82M
	2341.50	0.62	280.82	2341.21	20.37	-20.66	-11.94	23.86	210.02	0.53	223.08M
	2436.60	0.42	223.08	2436.30	20.51	-20.82	-12.68	24.37	211.35	0.56	104.89M
	2531.70	0.46	104.89	2531.40	20.86	-21.17	-12.55	24.61	210.66	0.79	25.9M
	2626.90	0.59	25.90	2626.60	20.53	-20.82	-11.97	24.02	209.88	0.71	1.7M
	2722.30	0.90	1.70	2721.99	19.35	-19.63	-11.73	22.87	210.85	0.46	27.04M
	2817.00	1.11	27.04	2816.68	17.80	-18.07	-11.29	21.31	211.99	0.51	35.76M
	2912.40	1.89	35.76	2912.04	15.73	-15.97	-9.95	18.82	211.92	0.85	17.84M
	3007.00	1.64	17.84	3006.60	13.21	-13.42	-8.62	15.95	212.72	0.64	354.83M
	3101.80	1.28	354.83	3101.37	10.87	-11.07	-8.30	13.84	216.86	0.72	325.59M
	3196.40	0.89	325.59	3195.95	9.20	-9.42	-8.81	12.90	223.11	0.70	327.76M
	3291.30	0.49	327.76	3290.85	8.24	-8.46	-9.45	12.68	228.14	0.42	36.53M
	3386.10	0.27	36.53	3385.64	7.71	-7.94	-9.53	12.41	230.19	0.49	356.59M
	3481.00	0.70	356.59	3480.54	6.96	-7.18	-9.43	11.86	232.71	0.55	271.96M
	3575.50	0.98	271.96	3575.03	6.33	-6.58	-10.27	12.20	237.36	1.22	219.56M
	3670.50	1.05	219.56	3670.02	6.94	-7.22	-11.64	13.70	238.18	0.95	178.5M
	3765.00	0.80	178.50	3764.51	8.26	-8.55	-12.17	14.88	234.92	0.73	140.6M
	3859.80	0.56	140.60	3859.30	9.28	-9.57	-11.86	15.24	231.11	0.52	97.95M
	3954.50	0.56	97.95	3954.00	9.72	-9.99	-11.11	14.94	228.04	0.43	2.41M
	4049.10	0.21	2.41	4048.60	9.62	-9.88	-10.65	14.52	227.13	0.65	301.15M
	4143.80	0.65	301.15	4143.29	9.16	-9.43	-11.10	14.56	229.64	0.61	285.08M
	4238.90	1.30	285.08	4238.38	8.57	-8.87	-12.60	15.41	234.86	0.73	244.61M
	4333.70	1.15	244.61	4333.16	8.65	-9.00	-14.50	17.06	238.17	0.91	181.98M
	4428.20	0.85	181.98	4427.65	9.74	-10.11	-15.38	18.40	236.69	1.13	158.29M
	4523.10	0.40	158.29	4522.54	10.75	-11.12	-15.28	18.90	233.96	0.54	237.29M
	4616.60	0.51	237.29	4616.04	11.27	-11.65	-15.51	19.40	233.10	0.63	216.5M
	4711.40	0.38	216.50	4710.84	11.74	-12.13	-16.05	20.12	232.93	0.22	200.06M
	4806.10	0.42	200.06	4805.53	12.31	-12.70	-16.36	20.71	232.17	0.13	162.19M
	4901.00	0.46	162.19	4900.43	13.00	-13.39	-16.36	21.14	230.70	0.30	169.28M
	4996.40	0.42	169.28	4995.83	13.71	-14.10	-16.18	21.46	228.92	0.07	113.09M
	5091.90	0.15	113.09	5091.33	14.11	-14.50	-16.00	21.59	227.82	0.38	343.67M
	5186.60	0.33	343.67	5186.03	13.90	-14.28	-15.96	21.42	228.18	0.47	212.34M
	5281.60	0.13	212.34	5281.03	13.72	-14.11	-16.10	21.41	228.76	0.45	67.87M
	5376.70	0.09	67.87	5376.13	13.79	-14.17	-16.08	21.44	228.61	0.22	344.32M
Final Gyro	5471.60	0.13	344.32	5471.03	13.65	-14.04	-16.05	21.32	228.81	0.16	296.01M
	5588.00	0.48	296.01	5587.43	13.30	-13.70	-16.52	21.46	230.33	0.35	286.6M
	5684.00	0.40	286.60	5683.42	13.01	-13.43	-17.20	21.82	232.02	0.11	291.22M
	5778.00	0.31	291.22	5777.42	12.82	-13.24	-17.75	22.15	233.28	0.10	293.42M
	5873.00	0.40	293.42	5872.42	12.58	-13.02	-18.30	22.46	234.57	0.10	279.4M
	5969.00	0.40	279.40	5968.42	12.37	-12.83	-18.93	22.87	235.88	0.10	268.72M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	6064.00	0.31	268.72	6063.41	12.31	-12.78	-19.52	23.33	236.78	0.12	251.1M
	6158.00	0.22	251.10	6157.41	12.37	-12.85	-19.94	23.72	237.21	0.13	287.09M
	6254.00	0.31	287.09	6253.41	12.34	-12.83	-20.37	24.07	237.79	0.19	303.92M
	6349.00	0.31	303.92	6348.41	12.11	-12.61	-20.83	24.35	238.80	0.10	288.71M
	6443.00	0.40	288.71	6442.41	11.85	-12.36	-21.35	24.67	239.92	0.14	255.4M
	6539.00	0.22	255.40	6538.41	11.78	-12.30	-21.84	25.07	240.61	0.26	297.11M
	6634.00	0.09	297.11	6633.41	11.78	-12.31	-22.09	25.29	240.86	0.17	129.59M
	6729.00	0.22	129.59	6728.41	11.87	-12.40	-22.01	25.26	240.61	0.32	120.58M
	6824.00	0.22	120.58	6823.41	12.08	-12.61	-21.71	25.11	239.86	0.04	123M
	6919.00	0.22	123.00	6918.41	12.28	-12.80	-21.40	24.94	239.13	0.01	162.11M
	7012.00	0.40	162.11	7011.40	12.69	-13.20	-21.15	24.94	238.03	0.29	153.41M
	7107.00	0.40	153.41	7106.40	13.31	-13.82	-20.90	25.06	236.54	0.06	148.22M
	7202.00	0.48	148.22	7201.40	13.96	-14.45	-20.55	25.12	234.88	0.09	146.2M
	7296.00	0.40	146.20	7295.40	14.57	-15.06	-20.16	25.16	233.24	0.09	134.82M
	7392.00	0.22	134.82	7391.40	14.99	-15.47	-19.84	25.16	232.06	0.20	111M
	7489.00	0.31	111.00	7488.39	15.22	-15.69	-19.46	25.00	231.12	0.14	117.99M
	7584.00	0.31	117.99	7583.39	15.45	-15.90	-19.00	24.77	230.06	0.04	132.31M
	7678.00	0.31	132.31	7677.39	15.75	-16.19	-18.58	24.65	228.93	0.08	148.88M
	7773.00	0.40	148.88	7772.39	16.21	-16.65	-18.22	24.68	227.58	0.14	144.49M
	7868.00	0.40	144.49	7867.39	16.77	-17.21	-17.86	24.80	226.07	0.03	179.51M
	7963.00	0.48	179.51	7962.38	17.45	-17.87	-17.66	25.13	224.66	0.29	175.2M
	8057.00	0.79	175.20	8056.38	18.49	-18.91	-17.60	25.84	222.95	0.33	169.31M
	8152.00	0.79	169.31	8151.37	19.79	-20.21	-17.43	26.69	220.77	0.09	170.81M
	8247.00	0.79	170.81	8246.36	21.08	-21.50	-17.20	27.53	218.66	0.02	148.31M
	8342.00	0.62	148.31	8341.35	22.17	-22.58	-16.83	28.16	216.69	0.34	158.42M
	8437.00	0.40	158.42	8436.35	22.93	-23.33	-16.43	28.54	215.16	0.25	155.3M
	8532.00	0.31	155.30	8531.35	23.48	-23.87	-16.21	28.85	214.17	0.10	98.91M
	8628.00	0.09	98.91	8627.35	23.73	-24.12	-16.02	28.96	213.60	0.28	106.12M
	8724.00	0.09	106.12	8723.35	23.76	-24.15	-15.88	28.90	213.32	0.01	142.11M
	8820.00	0.62	142.11	8819.35	24.20	-24.58	-15.48	29.05	212.21	0.57	113.28M
	8916.00	0.62	113.28	8915.34	24.84	-25.20	-14.69	29.17	210.24	0.32	130.6M
	9012.00	0.70	130.60	9011.33	25.45	-25.78	-13.77	29.23	208.10	0.22	152.9M
	9054.00	0.84	152.90	9053.33	25.90	-26.22	-13.43	29.46	207.12	0.78	159.54M
	9086.00	2.52	159.54	9085.32	26.77	-27.09	-13.08	30.08	205.77	5.28	164.05M
	9117.00	6.09	164.05	9116.22	29.01	-29.31	-12.39	31.82	202.91	11.56	166.77M
	9149.00	10.37	166.77	9147.89	33.47	-33.75	-11.26	35.58	198.45	13.43	2.9R
	9181.00	13.88	167.51	9179.17	40.06	-40.30	-9.77	41.47	193.63	10.98	5.59R
	9213.00	17.63	168.72	9209.96	48.60	-48.81	-7.99	49.46	189.30	11.76	15.49R
	9245.00	21.49	171.62	9240.11	59.20	-59.36	-6.19	59.68	185.95	12.43	74.57R
	9277.00	22.03	176.22	9269.83	71.01	-71.15	-4.94	71.32	183.97	5.59	62.02L
	9309.00	23.14	171.27	9299.38	83.25	-83.36	-3.59	83.43	182.47	6.88	28.25L
	9341.00	26.55	167.24	9328.41	96.50	-96.55	-1.06	96.56	180.63	11.89	16.91L
	9371.00	30.08	165.11	9354.82	110.38	-110.36	2.36	110.38	178.78	12.24	11.77L
	9404.00	34.01	163.65	9382.79	127.35	-127.21	7.08	127.41	176.81	12.14	0.82R

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	9437.00	36.94	163.72	9409.66	145.85	-145.59	12.46	146.12	175.11	8.88	1.57R
	9469.00	39.50	163.83	9434.80	164.98	-164.60	17.99	165.58	173.76	8.00	7.72R
	9501.00	43.08	164.54	9458.84	185.43	-184.91	23.74	186.43	172.68	11.28	0.61R
	9532.00	47.98	164.61	9480.55	206.88	-206.23	29.62	208.35	171.83	15.81	7.79L
	9564.00	53.58	163.66	9500.77	230.87	-230.07	36.41	232.93	171.01	17.65	1.94L
	9595.00	59.70	163.42	9517.81	255.86	-254.89	43.74	258.61	170.26	19.75	22.36R
	9627.00	65.04	165.83	9532.65	283.36	-282.21	51.24	286.83	169.71	17.97	48.17R
	9659.00	69.15	170.65	9545.11	312.34	-311.06	57.23	316.28	169.58	18.90	26.6R
	9690.00	74.65	173.49	9554.74	341.60	-340.23	61.28	345.70	169.79	19.76	7.3R
	9722.00	80.99	174.31	9561.48	372.75	-371.32	64.60	376.89	170.13	19.97	1.26L
Survey 21-Nov-12	9785.00	89.17	174.13	9566.88	435.28	-433.71	70.91	439.47	170.71	12.99	74.92L
	9866.00	89.48	172.98	9567.84	515.96	-514.19	80.01	520.38	171.16	1.47	165.96R
	9961.00	89.24	173.04	9568.90	610.49	-608.48	91.57	615.33	171.44	0.26	23.07R
	10046.00	90.86	173.73	9568.82	695.13	-692.91	101.36	700.29	171.68	2.07	46.72L
	10141.00	91.82	172.71	9566.60	789.68	-787.22	112.57	795.23	171.86	1.47	76.32L
	10246.00	92.24	170.98	9562.88	893.88	-891.09	127.45	900.16	171.89	1.69	129.07R
	10342.00	91.03	172.47	9560.14	989.14	-986.05	141.26	996.11	171.85	2.00	122.31R
	10437.00	89.79	174.43	9559.46	1083.74	-1080.42	152.10	1091.07	171.99	2.44	152.7R
	10533.00	87.97	175.37	9561.34	1179.51	-1176.01	160.63	1186.93	172.22	2.13	97R
	10628.00	87.76	177.09	9564.88	1274.36	-1270.74	166.87	1281.65	172.52	1.82	43.44R
	10723.00	88.14	177.45	9568.28	1369.27	-1365.57	171.39	1376.28	172.85	0.55	51R
	10818.00	88.31	177.66	9571.22	1464.21	-1460.44	175.45	1470.94	173.15	0.28	82.01R
	10913.00	88.49	178.94	9573.87	1559.17	-1555.36	178.26	1565.54	173.46	1.36	120.27R
	11008.00	88.42	179.06	9576.43	1654.13	-1650.31	179.92	1660.09	173.78	0.15	90R
	11104.00	88.42	180.39	9579.08	1750.08	-1746.27	180.38	1755.56	174.10	1.38	95.49L
	11199.00	88.35	179.66	9581.76	1845.01	-1841.23	180.34	1850.04	174.41	0.77	90R
	11295.00	88.35	181.65	9584.52	1940.91	-1937.18	179.24	1945.45	174.71	2.07	170.03L
	11390.00	86.59	181.34	9588.72	2035.69	-2032.05	176.77	2039.72	175.03	1.88	37.12R
	11485.00	88.97	183.14	9592.40	2130.42	-2126.90	173.06	2133.92	175.35	3.14	91.83L
	11580.00	88.90	180.93	9594.16	2225.23	-2221.81	169.68	2228.28	175.63	2.33	44.06L
	11676.00	89.52	180.33	9595.49	2321.16	-2317.80	168.63	2323.92	175.84	0.90	72.29L
	11771.00	89.90	179.14	9595.97	2416.14	-2412.79	169.07	2418.71	175.99	1.31	58.39R
	11866.00	90.14	179.53	9595.93	2511.13	-2507.79	170.17	2513.55	176.12	0.48	126.43R
	11963.00	89.83	179.95	9595.96	2608.12	-2604.78	170.61	2610.37	176.25	0.54	62.1R
	12058.00	90.10	180.46	9596.02	2703.08	-2699.78	170.27	2705.15	176.39	0.61	122.01R
	12143.00	89.90	180.78	9596.02	2788.03	-2784.78	169.35	2789.92	176.52	0.44	150.26L
	12238.00	89.62	180.62	9596.42	2882.97	-2879.77	168.19	2884.68	176.66	0.34	167.95L
	12334.00	88.59	180.40	9597.92	2978.90	-2975.75	167.33	2980.45	176.78	1.10	152.79L
	12429.00	87.56	179.87	9601.11	3073.81	-3070.70	167.11	3075.24	176.88	1.22	9.4R
	12524.00	89.07	180.12	9603.90	3168.74	-3165.65	167.12	3170.06	176.98	1.61	149.75R
	12619.00	88.35	180.54	9606.04	3263.68	-3260.63	166.57	3264.88	177.08	0.88	45R
	12715.00	88.90	181.09	9608.34	3359.58	-3356.59	165.21	3360.65	177.18	0.81	179.03R
	12810.00	88.31	181.10	9610.66	3454.46	-3451.54	163.39	3455.41	177.29	0.62	7.59R
	12906.00	88.76	181.16	9613.11	3550.34	-3547.49	161.50	3551.17	177.39	0.47	161.31L

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
Survey 1-Dec-12	13001.00	88.11	180.94	9615.70	3645.22	-3642.44	159.76	3645.94	177.49	0.72	2.39L
	13096.00	89.31	180.89	9617.84	3740.12	-3737.40	158.24	3740.75	177.58	1.26	153.44R
	13192.00	88.93	181.08	9619.32	3836.02	-3833.38	156.59	3836.58	177.66	0.44	5.4R
Survey 2-Dec-12	13287.00	90.41	181.22	9619.86	3930.93	-3928.35	154.69	3931.40	177.75	1.56	149.44L
Survey 4-Dec-12	13382.00	89.14	180.47	9620.24	4025.85	-4023.34	153.28	4026.26	177.82	1.55	52.65R
	13478.00	90.72	182.54	9620.35	4121.72	-4119.30	150.76	4122.06	177.90	2.71	133.29L
	13573.00	90.07	181.85	9619.70	4216.54	-4214.23	147.13	4216.79	178.00	1.00	113.63R
	13667.00	90.00	182.01	9619.64	4310.38	-4308.17	143.96	4310.58	178.09	0.19	68.96L
	13763.00	90.10	181.75	9619.56	4406.23	-4404.12	140.81	4406.37	178.17	0.29	151.56L
Final Survey Proj to TD	13858.00	89.86	181.62	9619.59	4501.09	-4499.08	138.02	4501.20	178.24	0.29	15.17R
	13929.00	90.45	181.78	9619.40	4571.99	-4570.05	135.91	4572.07	178.30	0.86	HS
	13982.00	90.45	181.78	9618.98	4624.91	-4623.02	134.26	4624.97	178.34	0.00	

Survey Type: Def Survey

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	18.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Cimarex Lynch 23 Federal Com 4H Gyro+MWD 0ft to 13982ft MD
	18.000	5471.600	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Cimarex Lynch 23 Federal Com 4H Gyro+MWD
	5471.600	12058.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Cimarex Lynch 23 Federal Com 4H Gyro+MWD
	12058.000	13929.000	Act Stns	30.000	30.000	SLB_MWD+DMAG	Original Borehole / Cimarex Lynch 23 Federal Com 4H Gyro+MWD
	13929.000	13982.000	Act Stns	30.000	30.000	SLB_BLIND+TREND	Original Borehole / Cimarex Lynch 23 Federal Com 4H Gyro+MWD