

Results of Directional Survey

API number:	30-025-41195		
OGRID:		Operator:	CIMAREX ENERFGY CO.
		Property:	LYNCH 23 FEDERAL COM # 6H

surface	ULSTR:	A	23	T	20S	R	34E
				290	FNL	385	FEL

BH Loc	ULSTR:	P	23	T	20S	R	34E
13997	MD	9606.3	TVD	331	FSL	467	FEL
				4949	FNL		

Top Perf/OH	ULSTR:	A	23	T	20S	R	34E
9700	MD	9520.7	TVD	658	FNL	397	FEL

Bot Perf/OH	ULSTR:	P	23	T	20S	R	34E
13694	MD	9607.4	TVD	634	FSL	463	FEL
				4646	FNL		

	MD	N/S	E/W	VD
	9685	-353.76	-12.82	9517.06
TOP PERFS/OH	9700	-368.31	-12.32	9520.68
	9716	-383.82	-11.78	9524.55
	13635	-4297.46	-76.35	9607.80
BOT PERFS/OH	13694	-4356.44	-77.97	9607.44
	13730	-4392.42	-78.96	9607.22

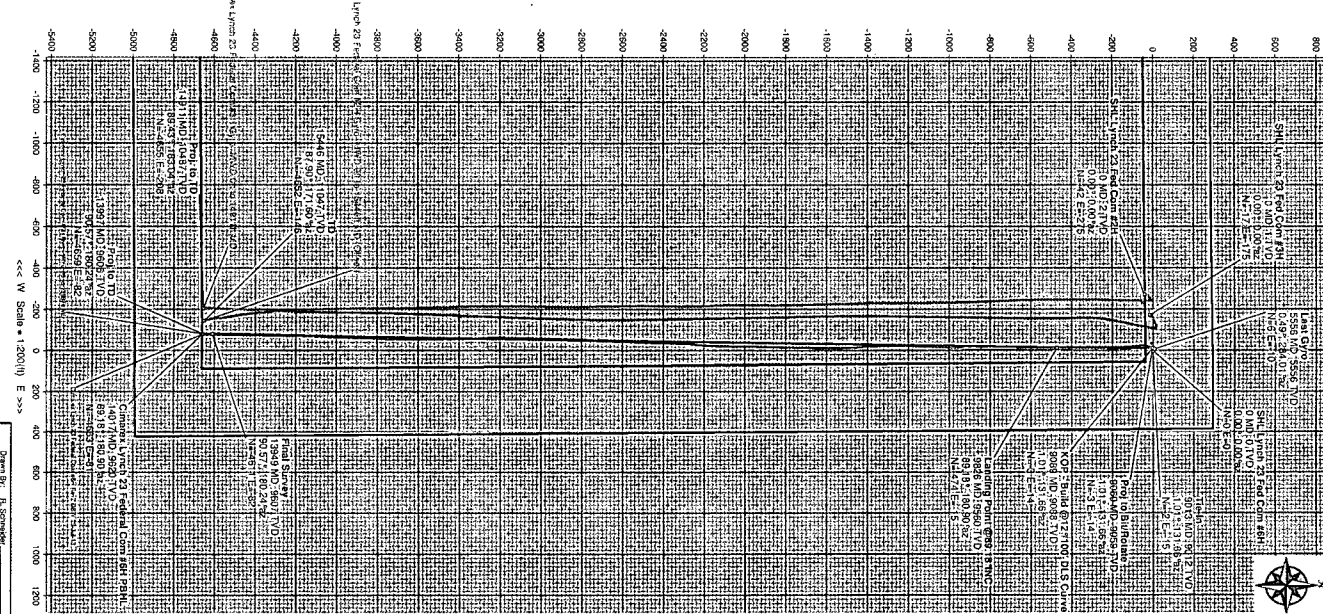
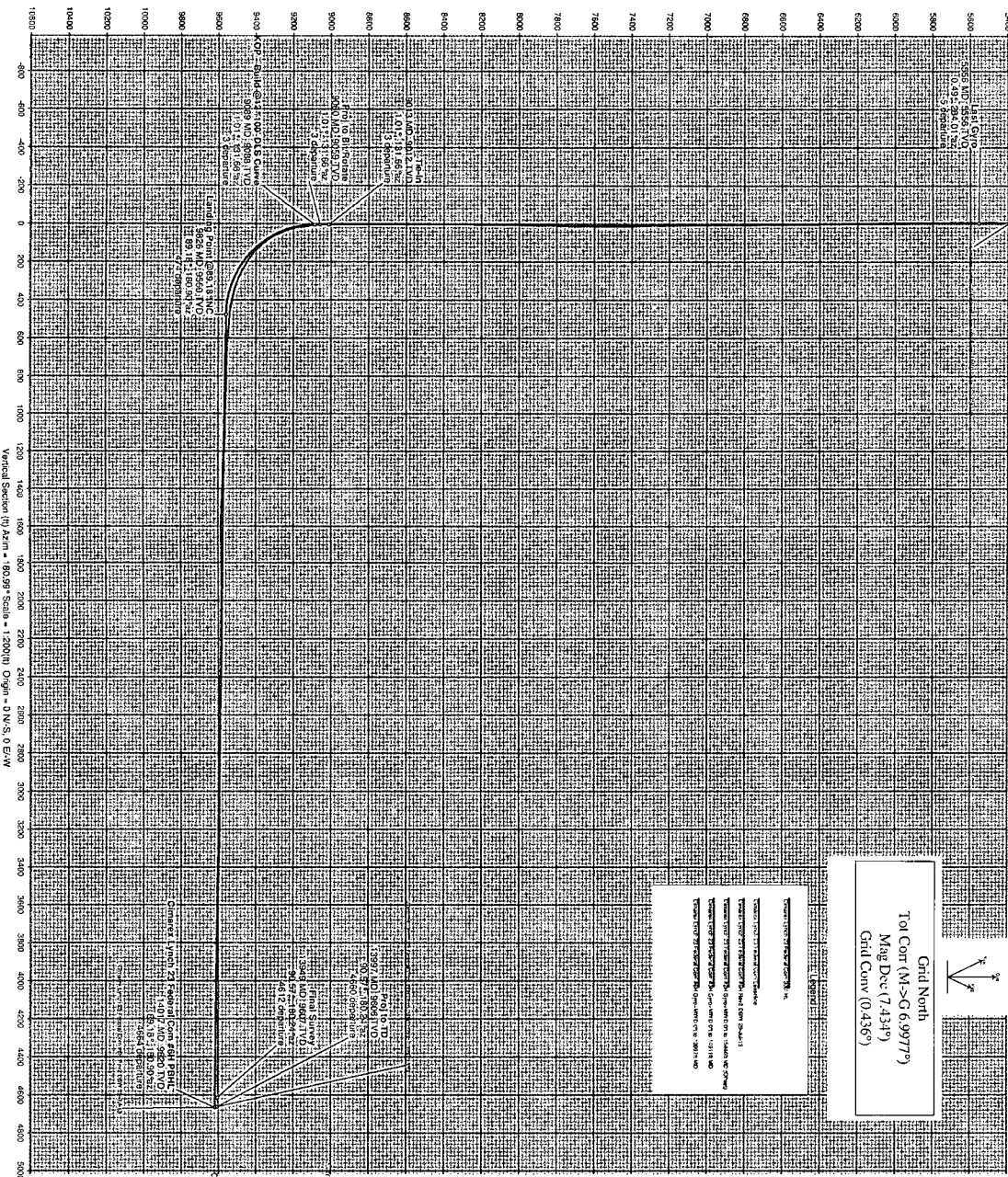
NEXT TO LAST	13949	-4611.38	-82.24	9606.75
LAST READING	13997	-4659.38	-82.44	9606.27
TD	13997	-4659.38	-82.44	9606.27

Surface Location	290	FN	385	FE
Projected BHL	4949	FN	467	FE
Location of				
Top Perfs/OH	658	FN	397	FE
Bottom Perfs/OH	4646	FN	463	FE

SUMMARY of Subsurface Locations

Surface Location	A-23-20S-34E	290	FN	385	FE	Vert. Depth
Top Perfs/OH	A-23-20S-34E	658	FN	397	FE	9520.68
Bottom Perfs/OH	P-23-20S-34E	4646	FN	463	FE	9607.44
Projected TD	P-23-20S-34E	4949	FN	467	FE	9606.27

MAR 05 2014

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Cimarex Lynch 23 Federal Com #6H Gyro+MWD 0ft to 13997ft MD (Def Survey)

Report Date: August 09, 2013 - 09:45 AM
Client: Cimarex
Field: NM Lea County (NAD 83)
Structure / Slot: Cactus 104 / Cimarex Lynch 23 Federal Com #6H
Well: Cimarex Lynch 23 Federal Com #6H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Lynch 23 Federal Com #6H Gyro+MWD 0ft to 13997ft MD
Survey Date: July 29, 2013
Tort / AHD / DDI / ERD Ratio: 169.167 ° / 4753.616 ft / 6.069 / 0.495
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 33' 54.27907", W 103° 31' 24.85672"
Location Grid N/E Y/X: N 570254.800 ftUS, E 790805.900 ftUS
CRS Grid Convergence Angle: 0.4359 °
Grid Scale Factor: 0.99998036

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 180.990 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB
TVD Reference Elevation: 3677.000 ft above MSL
Seabed / Ground Elevation: 3657.000 ft above MSL
Magnetic Declination: 7.434 °
Total Gravity Field Strength: 998.4908mgn (9.80665 Based)
Total Magnetic Field Strength: 48605.316 nT
Magnetic Dip Angle: 60.450 °
Declination Date: July 29, 2013
Magnetic Declination Model: BGGM 2013
North Reference: Grid North
Grid Convergence Used: 0.4359 °
Total Corr Mag North->Grid North: 6.9977 °
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 Fed Com #6H	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	166.69M
	100.00	0.11	166.69	100.00	0.09	-0.09	0.02	0.10	166.69	0.11	155.43M
	200.00	0.05	155.43	200.00	0.23	-0.23	0.06	0.23	164.61	0.06	299.61M
	300.00	0.07	299.61	300.00	0.24	-0.24	0.03	0.24	173.38	0.11	237.2M
	400.00	0.22	237.20	400.00	0.31	-0.31	-0.19	0.36	211.13	0.20	248.45M
	500.00	0.21	248.45	500.00	0.49	-0.48	-0.52	0.71	227.16	0.04	272.85M
	600.00	0.31	272.85	600.00	0.55	-0.54	-0.96	1.10	240.86	0.15	265.03M
	700.00	0.37	265.03	700.00	0.58	-0.55	-1.55	1.65	250.50	0.08	261.65M
	800.00	0.42	261.65	799.99	0.67	-0.63	-2.24	2.32	254.25	0.06	249.76M
	901.48	0.42	249.76	901.47	0.86	-0.81	-2.95	3.06	254.60	0.09	252.26M
	996.56	0.40	252.26	996.55	1.10	-1.04	-3.60	3.74	253.94	0.03	242.37M
	1091.77	0.41	242.37	1091.76	1.37	-1.29	-4.21	4.41	252.93	0.07	242.41M
	1186.67	0.54	242.41	1186.65	1.74	-1.66	-4.91	5.18	251.34	0.14	246.08M
	1281.85	0.63	246.08	1281.83	2.18	-2.08	-5.79	6.15	250.24	0.10	245.49M
	1376.76	0.69	245.49	1376.73	2.64	-2.53	-6.78	7.24	249.57	0.06	255.37M
	1471.93	0.65	255.37	1471.90	3.04	-2.90	-7.83	8.35	249.66	0.13	262.49M
	1567.18	0.65	262.49	1567.14	3.26	-3.11	-8.89	9.41	250.72	0.08	258.25M
	1662.72	0.44	258.25	1662.67	3.42	-3.25	-9.78	10.31	251.60	0.22	242.75M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	1757.57	0.25	242.75	1757.52	3.60	-3.42	-10.32	10.88	251.66	0.22	291.62M
	1852.34	0.25	291.62	1852.29	3.63	-3.44	-10.70	11.24	252.17	0.22	335.36M
	1946.82	0.46	335.36	1946.77	3.21	-3.02	-11.05	11.45	254.71	0.35	312.67M
	2042.00	0.39	312.67	2041.95	2.65	-2.45	-11.45	11.71	257.90	0.19	308.33M
	2136.65	0.34	308.33	2136.60	2.27	-2.06	-11.90	12.08	260.17	0.06	303.36M
	2231.79	0.28	303.36	2231.73	1.97	-1.76	-12.32	12.44	261.88	0.07	300.42M
	2326.79	0.21	300.42	2326.73	1.76	-1.54	-12.66	12.76	263.05	0.07	297.86M
	2421.57	0.18	297.86	2421.51	1.61	-1.39	-12.94	13.02	263.89	0.03	294.75M
	2516.81	0.14	294.75	2516.75	1.49	-1.27	-13.18	13.24	264.51	0.04	116.38M
	2706.45	0.05	116.38	2706.39	1.44	-1.21	-13.32	13.37	264.82	0.10	77.09M
	2801.83	0.07	77.09	2801.77	1.44	-1.21	-13.22	13.28	264.76	0.05	346.18M
	2896.78	0.05	346.18	2896.72	1.39	-1.16	-13.18	13.23	264.97	0.09	5.49M
	2991.81	0.27	5.49	2991.75	1.12	-0.90	-13.17	13.20	266.11	0.24	335.62M
	3086.58	0.49	335.62	3086.52	0.53	-0.30	-13.31	13.32	268.69	0.31	354.66M
	3181.20	0.41	354.66	3181.14	-0.17	0.40	-13.51	13.52	271.70	0.18	356.26M
	3276.50	0.38	356.26	3276.43	-0.82	1.06	-13.56	13.60	274.45	0.03	350.47M
	3371.27	0.58	350.47	3371.20	-1.61	1.84	-13.66	13.79	277.68	0.22	350.52M
	3466.73	0.87	350.52	3466.65	-2.79	3.03	-13.86	14.19	282.35	0.30	11.78M
	3562.32	0.69	11.78	3562.24	-4.07	4.31	-13.86	14.52	287.28	0.35	334.38M
	3656.32	0.86	334.38	3656.23	-5.26	5.50	-14.05	15.09	291.39	0.56	350.5M
	3751.10	1.15	350.50	3750.99	-6.83	7.08	-14.52	16.15	296.01	0.42	1.99M
	3846.07	0.44	1.99	3845.95	-8.13	8.39	-14.66	16.89	299.77	0.76	142.87M
	3941.21	0.17	142.87	3941.09	-8.39	8.64	-14.57	16.94	300.68	0.61	162.4M
	4036.39	0.25	162.40	4036.27	-8.08	8.33	-14.42	16.65	300.02	0.11	134.76M
	4130.92	0.18	134.76	4130.80	-7.78	8.03	-14.25	16.36	299.40	0.13	129.06M
	4226.03	0.31	129.06	4225.91	-7.52	7.76	-13.94	15.96	299.10	0.14	125.25M
	4321.77	0.54	125.25	4321.65	-7.11	7.34	-13.37	15.25	298.75	0.24	140.21M
	4416.62	0.37	140.21	4416.49	-6.62	6.84	-12.81	14.53	298.11	0.22	165.49M
	4511.58	0.36	165.49	4511.45	-6.10	6.32	-12.54	14.04	296.74	0.17	191.71M
	4606.53	0.45	191.71	4606.40	-5.45	5.67	-12.54	13.76	294.31	0.21	202.17M
	4701.40	0.59	202.17	4701.27	-4.63	4.85	-12.80	13.69	290.74	0.18	200.87M
	4796.02	0.35	200.87	4795.88	-3.90	4.13	-13.09	13.73	287.50	0.25	193.78M
	4890.85	0.16	193.78	4890.71	-3.50	3.73	-13.22	13.74	285.74	0.20	65.52M
	4985.76	0.53	65.52	4985.62	-3.56	3.78	-12.86	13.40	286.39	0.68	88.88M
	5081.12	1.01	88.88	5080.97	-3.78	3.98	-11.61	12.28	288.92	0.59	87.72M
	5175.76	0.54	87.72	5175.60	-3.84	4.01	-10.34	11.09	291.23	0.50	52.05M
	5270.65	0.42	52.05	5270.49	-4.08	4.25	-9.61	10.51	293.83	0.33	11.63M
	5365.81	0.58	11.63	5365.65	-4.77	4.93	-9.24	10.48	298.09	0.40	349.11M
	5461.09	0.44	349.11	5460.92	-5.60	5.76	-9.21	10.87	302.03	0.25	284.01M
Last Gyro	5556.00	0.49	284.01	5555.83	-6.05	6.22	-9.68	11.50	302.73	0.53	246.09M
	5645.00	0.70	246.09	5644.83	-5.91	6.09	-10.54	12.18	300.02	0.49	248.99M
	5836.00	1.01	248.99	5835.80	-4.79	5.02	-13.18	14.10	290.83	0.16	246.27M
	6027.00	1.10	246.27	6026.77	-3.39	3.67	-16.43	16.84	282.61	0.05	238.1M
	6217.00	1.19	238.10	6216.73	-1.56	1.90	-19.78	19.87	275.48	0.10	229.39M

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	6408.00	1.01	229.39	6407.70	0.64	-0.25	-22.74	22.74	269.38	0.13	237.39M
	6628.00	1.01	237.39	6627.66	3.00	-2.55	-25.84	25.97	264.36	0.06	246.8M
	6788.00	0.70	246.80	6787.65	4.18	-3.70	-27.93	28.17	262.46	0.21	233.97M
	6914.00	0.70	233.97	6913.64	4.96	-4.45	-29.26	29.60	261.34	0.12	228.56M
	7104.00	0.88	228.56	7103.62	6.64	-6.10	-31.29	31.88	258.96	0.10	220.19M
	7294.00	0.70	220.19	7293.60	8.53	-7.95	-33.13	34.08	256.50	0.11	212.47M
	7483.00	0.70	212.47	7482.59	10.40	-9.81	-34.50	35.87	254.13	0.05	222.89M
	7580.00	0.22	222.89	7579.58	11.05	-10.45	-34.94	36.47	253.36	0.50	41.8M
	7674.00	1.41	41.80	7673.58	10.31	-9.72	-34.30	35.65	254.18	1.73	50M
	7865.00	1.19	50.00	7864.53	7.23	-6.69	-31.21	31.92	257.90	0.15	30.59M
	8056.00	1.01	30.59	8055.49	4.46	-3.97	-28.83	29.11	262.17	0.22	43.29M
	8245.00	0.70	43.29	8244.47	2.16	-1.69	-27.19	27.25	266.44	0.19	89.87M
	8436.00	0.79	89.87	8435.46	1.27	-0.84	-25.08	25.09	268.08	0.31	93.38M
	8626.00	1.19	93.38	8625.43	1.33	-0.95	-21.80	21.82	267.50	0.21	92.2M
	8816.00	1.10	92.20	8815.39	1.45	-1.14	-18.01	18.04	266.38	0.05	131.66M
	9013.00	1.01	131.66	9012.36	2.62	-2.37	-14.82	15.01	260.93	0.36	187.68M
	9112.00	5.89	187.68	9111.16	8.24	-7.98	-14.85	16.86	241.73	5.45	191.2M
	9143.00	8.35	191.20	9141.92	12.04	-11.77	-15.50	19.46	232.78	8.06	22.79R
Survey 31-Jul-13	9176.00	10.90	196.76	9174.45	17.40	-17.11	-16.86	24.02	224.58	8.22	0.8L
	9210.00	14.95	196.54	9207.59	24.72	-24.39	-19.04	30.94	217.97	11.91	25.04L
	9241.00	18.73	191.15	9237.25	33.47	-33.11	-21.14	39.29	212.55	13.18	38.65L
	9273.00	22.86	183.06	9267.17	44.75	-44.37	-22.47	49.73	206.86	15.69	30.96L
	9305.00	27.35	177.35	9296.14	58.31	-57.93	-22.46	62.13	201.19	15.93	14.79L
	9337.00	32.18	174.97	9323.91	74.13	-73.77	-21.37	76.80	196.16	15.54	2.43L
	9369.00	37.99	174.57	9350.09	92.40	-92.08	-19.69	94.16	192.07	18.17	2.59L
	9400.00	42.47	174.27	9373.75	112.29	-112.00	-17.74	113.39	189.00	14.47	9.07R
	9432.00	45.99	175.05	9396.68	134.47	-134.22	-15.67	135.13	186.66	11.13	24.73R
	9464.00	50.03	177.46	9418.08	158.17	-157.95	-14.13	158.58	185.11	13.81	19.78R
Survey 1-Aug-13	9495.00	54.78	179.54	9436.99	182.70	-182.49	-13.50	182.99	184.23	16.22	11.49R
	9527.00	58.65	180.46	9454.55	209.44	-209.24	-13.51	209.67	183.69	12.33	1.48L
	9558.00	62.08	180.36	9469.87	236.38	-236.18	-13.70	236.57	183.32	11.07	3.14L
	9590.00	64.72	180.20	9484.20	264.99	-264.79	-13.84	265.15	182.99	8.26	6.01L
	9622.00	67.53	179.88	9497.15	294.24	-294.04	-13.86	294.37	182.70	8.83	10.34L
	9653.00	71.75	179.07	9507.93	323.29	-323.10	-13.59	323.39	182.41	13.83	16.26L
	9685.00	75.10	178.06	9517.06	353.92	-353.76	-12.82	353.99	182.08	10.90	2.12L
	9716.00	76.94	177.99	9524.55	383.96	-383.82	-11.78	384.00	181.76	5.94	6.28L
	9748.00	77.65	177.91	9531.59	415.14	-415.01	-10.67	415.15	181.47	2.23	0.37R
	9780.00	80.72	177.93	9537.59	446.52	-446.42	-9.53	446.52	181.22	9.59	3.34R
Survey 2-Aug-13	9811.00	83.62	178.10	9541.82	477.19	-477.11	-8.46	477.19	181.02	9.37	8.38R
	9843.00	84.77	178.27	9545.05	508.98	-508.93	-7.45	508.98	180.84	3.63	26.75R
	9929.00	87.05	179.42	9551.19	594.70	-594.69	-5.73	594.71	180.55	2.97	17.61R
	10024.00	88.72	179.95	9554.69	689.60	-689.62	-5.20	689.64	180.43	1.84	92.64R
	10119.00	88.64	181.70	9556.88	784.57	-784.58	-6.57	784.61	180.48	1.84	139.49R
	10214.00	88.02	182.23	9559.65	879.52	-879.48	-9.83	879.54	180.64	0.86	4.85R

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	10309.00	89.08	182.32	9562.05	974.46	-974.37	-13.60	974.47	180.80	1.12	170.37L
	10405.00	88.02	182.14	9564.48	1070.41	-1070.27	-17.33	1070.41	180.93	1.12	161.26R
	10500.00	87.49	182.32	9568.20	1165.31	-1165.12	-21.03	1165.31	181.03	0.59	81.43L
	10596.00	87.93	179.42	9572.04	1261.23	-1261.03	-22.48	1261.23	181.02	3.05	102.88L
	10690.00	87.67	178.28	9575.65	1355.09	-1354.94	-20.60	1355.09	180.87	1.24	112.22L
	10785.00	86.88	176.34	9580.17	1449.78	-1449.72	-16.14	1449.81	180.64	2.20	51.25R
	10881.00	88.72	178.63	9583.85	1545.52	-1545.55	-11.94	1545.59	180.44	3.06	61.48R
	10975.00	89.96	180.91	9584.93	1639.49	-1639.53	-11.56	1639.57	180.40	2.76	9.82R
	11070.00	90.48	181.00	9584.57	1734.48	-1734.52	-13.14	1734.57	180.43	0.56	60.88R
Survey 5-Aug-13	11165.00	90.92	181.79	9583.41	1829.47	-1829.48	-15.45	1829.55	180.48	0.95	141.5L
	11260.00	90.48	181.44	9582.25	1924.46	-1924.43	-18.13	1924.52	180.54	0.59	164.22L
	11355.00	87.05	180.47	9584.29	2019.42	-2019.38	-19.72	2019.48	180.56	3.75	39.2R
Survey 6-Aug-13	11451.00	88.46	181.62	9588.06	2115.35	-2115.29	-21.47	2115.40	180.58	1.89	57.18R
	11546.00	91.01	185.57	9588.49	2210.22	-2210.08	-27.42	2210.25	180.71	4.95	116.61L
	11641.00	89.08	181.72	9588.42	2305.10	-2304.86	-33.46	2305.10	180.83	4.53	145.72L
	11736.00	88.64	181.42	9590.31	2400.07	-2399.81	-36.06	2400.08	180.86	0.56	70.89R
	11831.00	88.99	182.43	9592.28	2495.04	-2494.73	-39.25	2495.04	180.90	1.12	52.3R
	11927.00	89.16	182.65	9593.82	2590.99	-2590.62	-43.51	2590.99	180.96	0.29	151.7L
	12022.00	88.90	182.51	9595.43	2685.94	-2685.51	-47.78	2685.94	181.02	0.31	31.06L
	12117.00	89.78	181.98	9596.53	2780.91	-2780.43	-51.50	2780.91	181.06	1.08	59.42R
	12212.00	90.04	182.42	9596.68	2875.89	-2875.36	-55.15	2875.89	181.10	0.54	76.05L
	12307.00	90.40	180.97	9596.31	2970.88	-2970.32	-57.96	2970.88	181.12	1.57	66.97R
	12402.00	90.57	181.37	9595.51	3065.87	-3065.30	-59.90	3065.88	181.12	0.46	90L
	12496.00	90.57	181.22	9594.57	3159.87	-3159.27	-62.02	3159.88	181.12	0.16	122.76L
Survey 7-Aug-13	12591.00	88.64	178.22	9595.23	3254.83	-3254.25	-61.56	3254.83	181.08	3.75	130.61L
	12686.00	88.46	178.01	9597.63	3349.68	-3349.17	-58.44	3349.68	181.00	0.29	71.24R
	12781.00	88.64	178.54	9600.04	3444.54	-3444.09	-55.58	3444.54	180.92	0.59	147.86R
	12876.00	88.29	178.76	9602.58	3539.42	-3539.03	-53.34	3539.43	180.86	0.44	105.99R
	12970.00	87.67	180.93	9605.89	3633.34	-3632.97	-53.08	3633.35	180.84	2.40	35.43R
	13065.00	89.16	181.99	9608.52	3728.30	-3727.90	-55.50	3728.31	180.85	1.92	53.26R
	13160.00	89.69	182.70	9609.48	3823.27	-3822.81	-59.39	3823.27	180.89	0.93	120.4L
	13255.00	89.08	181.66	9610.49	3918.24	-3917.73	-63.00	3918.24	180.92	1.27	50.53R
	13351.00	89.78	182.51	9611.45	4014.21	-4013.66	-66.50	4014.22	180.95	1.15	29.1L
	13445.00	90.75	181.97	9611.02	4108.19	-4107.59	-70.17	4108.19	180.98	1.18	67.75L
Survey 8-Aug-13	13540.00	90.84	181.75	9609.70	4203.17	-4202.53	-73.25	4203.17	181.00	0.25	20.65R
	13635.00	91.45	181.98	9607.80	4298.14	-4297.46	-76.35	4298.14	181.02	0.69	159.78L
	13730.00	89.25	181.17	9607.22	4393.13	-4392.42	-78.96	4393.13	181.03	2.47	11.56R
	13824.00	90.13	181.35	9607.73	4487.12	-4486.39	-81.02	4487.12	181.03	0.96	68.12L
	13919.00	90.66	180.03	9607.07	4582.12	-4581.38	-82.17	4582.12	181.03	1.50	113.2R
Final Survey Proj to TD	13949.00	90.57	180.24	9606.75	4612.11	-4611.38	-82.24	4612.11	181.02	0.76	HS
	13997.00	90.57	180.24	9606.27	4660.10	-4659.38	-82.44	4660.10	181.01	0.00	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
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	20.000				SLB_NSG+MSHOT-Depth Only	Original Borehole / Cimarex Lynch 23 Federal Com #6H Gyro+MWD 0ft to 13997ft MD
	20.000	5556.000				SLB_NSG+MSHOT	Original Borehole / Cimarex Lynch 23 Federal Com #6H Gyro+MWD
	5556.000	13949.000				SLB_MWD-STD	Original Borehole / Cimarex Lynch 23 Federal Com #6H Gyro+MWD
	13949.000	13997.000				SLB_BLIND+TREND	Original Borehole / Cimarex Lynch 23 Federal Com #6H Gyro+MWD