

Lime Rock Resources

**Lea County, NM
Denius Federal
Denius Federal #1 ST#1
ST1**

Plan: Plan #6

Pathfinder X&Y Report

22 March, 2010

PATHFINDER®

Bureau of Land Management
RECEIVED

MAR 24 2010

Carlsbad Field Office
Carlsbad, N.M.

Lime Rock Resources

Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Plan: Plan #6 (Denius Federal #1 ST#1/ST1)



WELL DETAILS: Denius Federal #1 ST#1

Ground Elevation: 4086.00
RKB Elevation: Gyro - GL @ 4085.00ft (Gyro)
Rig Name: Gyro

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	651492.72	708228.16	32° 47' 21.28680 N 103° 39' 44.17580 W		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSoc	Target
1	8300.00	5.31	87.12	8281.39	278.84	113.70	0.00	0.00	116.69	
2	8368.90	5.22	59.73	8360.00	281.95	118.09	0.37	111.89	121.10	
3	8910.89	95.00	92.80	8874.78	280.98	480.99	16.72	32.93	482.99	
4	9070.88	95.00	89.59	8860.85	277.85	650.11	2.00	-89.83	852.08	
5	11730.78	95.00	89.59	8428.93	298.52	3300.00	0.00	0.00	3302.04	#1 (BHL) Permit

PROJECT DETAILS: Lea County, NM

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001

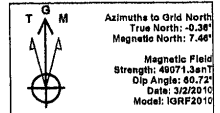
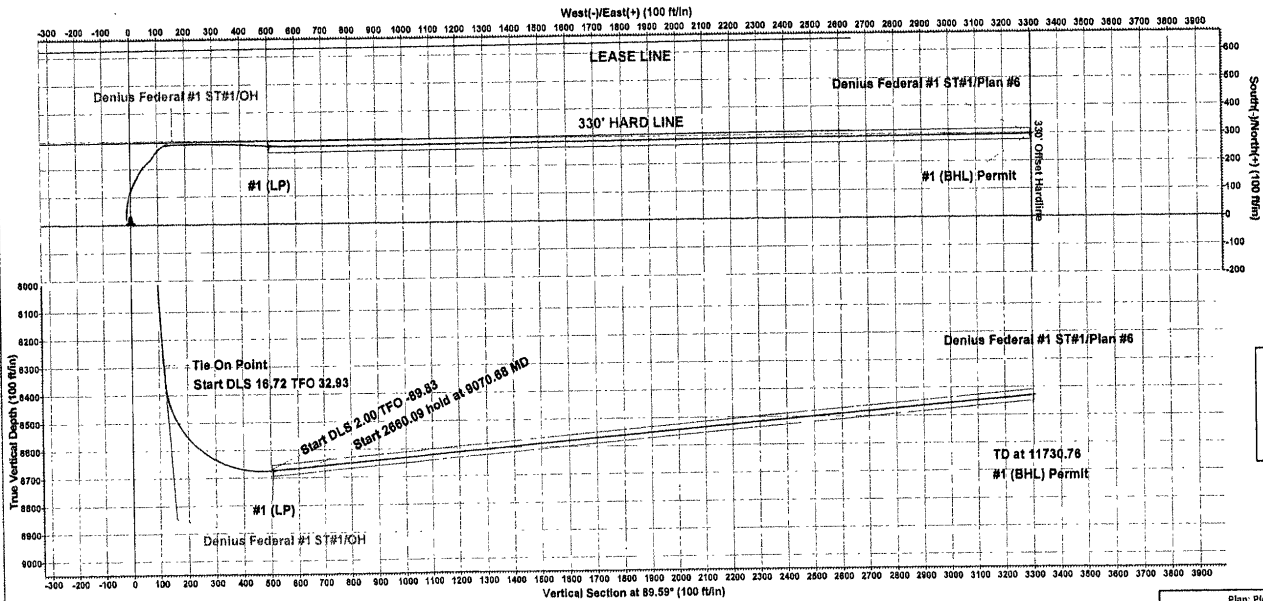
System Datum: Mean Sea Level
Local North: Grid

COMPANY DETAILS: Lime Rock Resources

Calculation Method: Minimum Curvature
Error System: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Warning Method: Error Ratio

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
#1 (BHL) Permit	8428.93	298.52	3300.00	651789.24	709526.16	Circle (Radius: 20.00)
#1 (LP)	8877.00	276.84	503.80	651789.36	708729.96	Point



Note:
All Lease Lines and Hard Lines are estimates only,
and are subject to customers approval.

Plan: Plan #6 (Denius Federal #1 ST#1/ST1)
Created By: John Walker Date: 17:33, March 22 2010

PathFinder
Pathfinder X&Y Report



Company:	Lime Rock Resources	Local Co-ordinate Reference:	Well Denilus Federal #1 ST#1
Project:	Lea County, NM	TVD Reference:	Gyro - GL @ 4085.00ft (Gyro)
Site:	Denilus Federal	MD Reference:	Gyro - GL @ 4085.00ft (Gyro)
Well:	Denilus Federal #1 ST#1	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #8	Database:	Smith Database

Project:	Lea County, NM	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Denilus Federal	Northing:	651,492.72 ft	Latitude:	32° 47' 21.28560 N
Site Position:		Easting:	706,226.16 ft	Longitude:	103° 39' 44.17560 W
From:	Lat/Long	Slot Radius:	"	Grid Convergence:	0.38 °
Position Uncertainty:	0.00 ft				

Well:	Denilus Federal #1 ST#1	Northing:	651,492.72 ft	Latitude:	32° 47' 21.28560 N
Well Position	+N/-S 0.00 ft	Easting:	706,226.16 ft	Longitude:	103° 39' 44.17560 W
Position Uncertainty	+E/-W 0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,085.00 ft

Wellbore:	ST1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/2/2010	7.83	60.73	49,071

Design:	Plan #8				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	8,300.00	
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	89.59	

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Company: Lime Rock Resources
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Site: Denilus Federal
Well: Denilus Federal #1 ST#1
Wellbore: ST1
Design: Plan #6

Local Co-ordinate Reference: Well Denilus Federal #1 ST#1
TVD Reference: Gyro - GL @ 4085.00ft (Gyro)
MD Reference: Gyro - GL @ 4085.00ft (Gyro)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Smith Database

Survey Tool Program Date 3/22/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	8,300.00	Survey #1 (OH)	NS-GYRO-MS	North sensing gyrocompassing m/s
8,300.00	11,730.76	Plan #6 (ST1)	MWD	MWD - Standard

Planned Survey											
MD (ft)	Incl (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	Oleg (°/100ft)	North (ft)	Easting (ft)	
0.00	0.00	0.00	0.00	-4,085.00	0.00	0.00	0.00	0.00	651,492.72	706,226.16	
100.00	0.55	338.56	100.00	-3,985.00	0.45	-0.18	-0.17	0.55	651,493.17	706,225.99	
200.00	0.52	335.31	199.99	-3,885.01	1.31	-0.54	-0.53	0.04	651,494.03	706,225.62	
300.00	0.37	341.69	299.99	-3,785.01	2.02	-0.83	-0.82	0.16	651,494.74	706,225.33	
400.00	0.34	338.96	399.99	-3,685.01	2.61	-1.04	-1.02	0.03	651,495.33	706,225.12	
500.00	0.31	330.13	499.99	-3,585.01	3.12	-1.28	-1.26	0.06	651,495.84	706,224.88	
600.00	0.38	315.22	599.99	-3,485.01	3.59	-1.65	-1.62	0.11	651,496.31	706,224.51	
700.00	0.52	311.42	699.98	-3,385.02	4.13	-2.22	-2.19	0.14	651,496.85	706,223.94	
800.00	0.60	300.38	799.98	-3,285.02	4.69	-3.01	-2.98	0.13	651,497.41	706,223.15	
900.00	0.52	292.25	899.97	-3,185.03	5.13	-3.89	-3.85	0.11	651,497.85	706,222.28	
1,000.00	0.50	295.18	999.97	-3,085.03	5.48	-4.70	-4.66	0.03	651,498.20	706,221.46	
1,100.00	0.43	296.23	1,099.97	-2,985.03	5.84	-5.43	-5.39	0.07	651,498.56	706,220.73	
1,200.00	0.27	342.48	1,199.96	-2,885.04	6.23	-5.84	-5.80	0.31	651,498.95	706,220.32	
1,300.00	0.32	340.86	1,299.96	-2,785.04	6.71	-6.00	-5.95	0.05	651,499.44	706,220.16	
1,400.00	0.45	340.92	1,399.96	-2,685.04	7.35	-6.22	-6.17	0.13	651,500.07	706,219.94	
1,500.00	0.56	340.95	1,499.96	-2,585.04	8.18	-6.51	-6.45	0.11	651,500.90	706,219.65	
1,600.00	0.62	344.19	1,599.95	-2,485.05	9.17	-6.82	-6.75	0.07	651,501.89	706,219.35	
1,700.00	0.68	341.29	1,699.94	-2,385.06	10.25	-7.16	-7.08	0.07	651,502.97	706,219.01	
1,800.00	0.70	343.33	1,799.94	-2,285.06	11.40	-7.52	-7.44	0.03	651,504.12	706,218.64	
1,900.00	0.71	336.70	1,899.93	-2,185.07	12.55	-7.94	-7.85	0.08	651,505.27	706,218.22	
2,000.00	0.73	337.69	1,999.92	-2,085.08	13.71	-8.43	-8.33	0.02	651,506.43	706,217.73	

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Design: Plan #6

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Denius Federal #1 ST#1
Gyro - GL @ 4085.00ft (Gyro)
Gyro - GL @ 4085.00ft (Gyro)
Grid
Minimum Curvature
Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,100.00	0.75	338.23	2,099.91	-1,985.09	14.90	-8.91	-8.81	0.02	651,507.63	706,217.25
2,200.00	0.99	318.73	2,199.90	-1,885.10	16.16	-9.73	-9.61	0.38	651,508.88	706,216.44
2,300.00	1.05	316.62	2,299.89	-1,785.11	17.48	-10.92	-10.80	0.07	651,510.20	706,215.24
2,400.00	1.07	317.11	2,399.87	-1,685.13	18.83	-12.19	-12.05	0.02	651,511.55	706,213.97
2,500.00	0.90	333.90	2,499.85	-1,585.15	20.22	-13.17	-13.03	0.33	651,512.94	706,212.99
2,600.00	0.95	339.55	2,599.84	-1,485.16	21.70	-13.81	-13.65	0.10	651,514.42	706,212.36
2,700.00	1.21	345.82	2,699.82	-1,385.18	23.50	-14.35	-14.19	0.29	651,516.22	706,211.81
2,800.00	1.49	354.46	2,799.80	-1,285.20	25.82	-14.74	-14.55	0.35	651,518.54	706,211.43
2,900.00	1.72	356.61	2,899.76	-1,185.24	28.61	-14.95	-14.75	0.24	651,521.33	706,211.21
3,000.00	1.95	356.33	2,999.71	-1,085.29	31.80	-15.15	-14.92	0.23	651,524.55	706,211.01
3,100.00	1.98	359.61	3,099.65	-985.35	35.23	-15.27	-15.02	0.12	651,527.95	706,210.89
3,200.00	2.02	1.19	3,199.59	-885.41	38.72	-15.25	-14.97	0.07	651,531.44	706,210.92
3,300.00	1.95	3.68	3,299.53	-785.47	42.18	-15.10	-14.80	0.11	651,534.90	706,211.06
3,400.00	1.92	6.29	3,399.47	-685.53	45.54	-14.81	-14.48	0.09	651,538.26	706,211.35
3,500.00	2.11	3.88	3,499.41	-585.59	49.04	-14.50	-14.15	0.21	651,541.76	706,211.66
3,600.00	2.35	6.87	3,599.33	-485.67	52.92	-14.13	-13.75	0.27	651,545.64	706,212.03
3,700.00	2.63	7.37	3,699.24	-385.76	57.23	-13.59	-13.18	0.28	651,549.95	706,212.57
3,800.00	2.82	9.45	3,799.12	-285.88	61.93	-12.89	-12.45	0.21	651,554.65	706,213.27
3,900.00	2.93	10.13	3,899.00	-186.00	66.87	-12.04	-11.56	0.12	651,559.59	706,214.12
4,000.00	3.01	9.39	3,998.86	-86.14	71.98	-11.16	-10.65	0.09	651,564.70	706,215.00
4,100.00	3.21	7.35	4,098.72	13.72	77.35	-10.37	-9.82	0.23	651,570.07	706,215.79
4,200.00	3.40	10.15	4,198.55	113.55	83.04	-9.49	-8.90	0.25	651,575.76	706,216.67
4,300.00	3.17	12.44	4,298.39	213.39	88.66	-8.38	-7.74	0.26	651,581.38	706,217.79
4,400.00	2.81	10.38	4,398.25	313.25	93.77	-7.34	-6.67	0.38	651,586.49	706,218.82
4,500.00	2.67	7.75	4,498.14	413.14	98.49	-6.58	-5.88	0.19	651,591.21	706,219.58
4,600.00	2.54	10.74	4,598.03	513.03	102.98	-5.86	-5.12	0.19	651,595.70	706,220.31
4,700.00	1.92	15.68	4,697.96	612.96	106.77	-4.99	-4.23	0.65	651,599.49	706,221.17

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Pathfinder X&Y Report



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Site: Denilus Federal
Well: Denilus Federal #1 ST#1
Wellbore: ST1
Design: Plan #6

Local Co-ordinate Reference:
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MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Denilus Federal #1 ST#1
Gyro - GL @ 4085.00ft (Gyro)
Gyro - GL @ 4085.00ft (Gyro)
Grid
Minimum Curvature
Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
4,800.00	1.78	26.10	4,797.90	712.90	109.77	-3.85	-3.07	0.36	651,602.49	706,222.31
4,900.00	2.08	19.11	4,897.85	812.85	112.88	-2.58	-1.77	0.38	651,605.60	706,223.59
5,000.00	2.04	23.02	4,997.78	912.78	116.23	-1.29	-0.45	0.15	651,608.96	706,224.88
5,100.00	2.35	23.51	5,097.71	1,012.71	119.75	0.23	1.08	0.31	651,612.47	706,226.39
5,200.00	2.76	20.38	5,197.61	1,112.61	123.89	1.88	2.77	0.43	651,616.61	706,228.05
5,300.00	2.90	17.24	5,297.49	1,212.49	128.56	3.47	4.39	0.21	651,621.28	706,229.63
5,400.00	3.07	23.80	5,397.35	1,312.35	133.43	5.30	6.26	0.38	651,626.15	706,231.47
5,500.00	3.28	23.33	5,497.20	1,412.20	138.51	7.52	8.51	0.21	651,631.23	706,233.68
5,600.00	3.54	26.81	5,597.02	1,512.02	143.89	10.04	11.07	0.33	651,636.61	706,236.20
5,700.00	3.86	26.06	5,696.81	1,611.81	149.67	12.91	13.98	0.32	651,642.39	706,239.08
5,800.00	3.81	25.20	5,796.59	1,711.59	155.70	15.81	16.92	0.08	651,648.42	706,241.97
5,900.00	3.67	30.32	5,896.38	1,811.38	161.47	18.84	19.99	0.36	651,654.19	706,245.00
6,000.00	3.53	29.04	5,996.18	1,911.18	166.92	21.95	23.14	0.16	651,659.64	706,248.11
6,100.00	3.36	26.46	6,096.00	2,011.00	172.19	24.84	26.07	0.17	651,664.91	706,251.00
6,200.00	3.71	28.04	6,195.81	2,110.81	177.62	27.75	29.02	0.35	651,670.34	706,253.92
6,300.00	3.19	27.30	6,295.63	2,210.63	182.95	30.55	31.86	0.52	651,675.67	706,256.71
6,400.00	3.64	30.81	6,395.45	2,310.45	188.15	33.45	34.80	0.50	651,680.87	706,259.82
6,500.00	3.57	34.27	6,495.25	2,410.25	193.45	36.83	38.22	0.23	651,686.17	706,263.00
6,600.00	3.00	33.09	6,595.09	2,510.09	198.21	40.01	41.43	0.57	651,690.93	706,266.18
6,700.00	3.07	36.93	6,694.95	2,609.95	202.54	43.05	44.50	0.21	651,695.27	706,269.21
6,800.00	2.78	41.78	6,794.82	2,709.82	206.49	46.28	47.75	0.38	651,699.21	706,272.44
6,900.00	3.64	40.45	6,894.66	2,809.66	210.72	49.95	51.46	0.88	651,703.44	706,276.11
7,000.00	3.71	47.43	6,994.45	2,909.45	215.32	54.39	55.93	0.45	651,708.04	706,280.56
7,100.00	3.45	53.21	7,094.26	3,009.26	219.31	59.19	60.75	0.44	651,712.03	706,285.35
7,200.00	3.13	51.19	7,194.09	3,109.09	222.83	63.72	65.32	0.34	651,715.55	706,289.89
7,300.00	3.47	49.23	7,293.93	3,208.93	226.51	68.14	69.76	0.36	651,719.23	706,294.31
7,400.00	3.74	44.13	7,393.73	3,308.73	230.83	72.71	74.36	0.42	651,723.55	706,298.87

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Local Co-ordinate Reference:
TVD Reference: Gyro - GL @ 4085.00ft (Gyro)
MD Reference: Gyro - GL @ 4085.00ft (Gyro)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Smith Database

Planned Survey										
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (%100ft)	Northing (ft)	Easting (ft)
7,500.00	3.19	40.58	7,493.55	3,408.55	235.28	76.79	78.47	0.59	651,728.00	706,302.95
7,600.00	3.17	36.16	7,593.39	3,508.39	239.63	80.23	81.94	0.25	651,732.35	706,306.39
7,700.00	3.31	30.81	7,693.23	3,608.23	244.34	83.34	85.08	0.33	651,737.06	706,309.50
7,800.00	3.51	29.55	7,793.06	3,708.06	249.48	86.33	88.11	0.21	651,742.20	706,312.49
7,900.00	3.85	34.93	7,892.85	3,807.85	254.90	89.76	91.58	0.48	651,747.62	706,315.92
8,000.00	4.38	35.51	7,992.59	3,907.59	260.76	93.90	95.76	0.53	651,753.48	706,320.06
8,100.00	5.46	46.66	8,092.22	4,007.22	267.13	99.58	101.49	1.44	651,759.85	706,325.74
8,200.00	5.09	49.82	8,191.80	4,106.80	273.26	106.43	108.38	0.47	651,765.98	706,332.59
8,300.00	5.31	57.12	8,291.39	4,206.39	278.64	113.70	115.69	0.70	651,771.36	706,339.86
8,368.90	5.22	59.73	8,360.00	4,275.00	281.95	119.09	121.10	0.37	651,774.67	706,345.25
8,375.00	6.10	64.95	8,366.07	4,281.07	282.22	119.82	121.64	16.72	651,774.94	706,345.78
8,400.00	9.99	76.23	8,390.82	4,305.82	283.30	122.93	124.95	16.72	651,778.02	706,349.09
8,425.00	14.05	81.14	8,415.27	4,330.27	284.29	128.04	130.07	16.72	651,777.01	706,354.20
8,450.00	18.16	83.87	8,439.28	4,354.28	285.17	134.91	136.95	16.72	651,777.89	706,361.08
8,475.00	22.30	85.62	8,462.73	4,377.73	285.95	143.52	145.56	16.72	651,778.67	706,369.68
8,500.00	26.45	86.84	8,485.50	4,400.50	286.62	153.81	155.86	16.72	651,779.34	706,379.97
8,525.00	30.80	87.75	8,507.46	4,422.46	287.18	165.73	167.78	16.72	651,779.90	706,391.90
8,550.00	34.77	88.46	8,528.50	4,443.50	287.62	179.22	181.28	16.72	651,780.34	706,405.39
8,575.00	38.93	89.04	8,548.50	4,463.50	287.94	194.21	196.26	16.72	651,780.66	706,420.37
8,600.00	43.10	89.52	8,567.36	4,482.36	288.15	210.61	212.67	16.72	651,780.87	706,436.77
8,625.00	47.27	89.93	8,584.98	4,499.98	288.23	228.34	230.40	16.72	651,780.95	706,454.50
8,650.00	51.44	90.29	8,601.26	4,516.26	288.19	247.31	249.36	16.72	651,780.91	706,473.47
8,675.00	55.81	90.61	8,616.11	4,531.11	288.03	267.40	269.46	16.72	651,780.75	706,493.57
8,700.00	59.79	90.90	8,629.47	4,544.47	287.75	288.53	290.58	16.72	651,780.47	706,514.89
8,725.00	63.96	91.17	8,641.25	4,556.25	287.35	310.57	312.62	16.72	651,780.07	706,536.73
8,750.00	68.13	91.41	8,651.40	4,566.40	286.84	333.40	335.45	16.72	651,779.56	706,559.57
8,775.00	72.31	91.65	8,659.86	4,574.86	286.21	356.92	358.95	16.72	651,778.93	706,583.08

PathFinder
Pathfinder X&Y Report



Company: Lime Rock Resources
Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Design: Plan #6

Local Co-ordinate Reference: Well Denius Federal #1 ST#1
TVD Reference: Gyro - GL @ 4085.00R (Gyro)
MD Reference: Gyro - GL @ 4085.00R (Gyro)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLag (%/100ft)	Northing (ft)	Easting (ft)
8,800.00	76.48	91.87	8,666.58	4,581.58	285.47	380.98	383.01	16.72	651,778.19	706,807.14
8,825.00	80.66	92.08	8,671.54	4,586.54	284.63	405.46	407.49	16.72	651,777.35	706,831.62
8,850.00	84.83	92.30	8,674.69	4,589.69	283.68	430.24	432.28	16.72	651,776.40	706,856.40
8,875.00	89.01	92.50	8,676.04	4,591.04	282.63	455.17	457.18	16.72	651,775.35	706,881.34
8,900.00	93.18	92.71	8,675.56	4,590.56	281.50	480.14	482.14	16.72	651,774.22	706,906.30
8,910.89	95.00	92.80	8,674.78	4,589.78	280.98	490.99	492.99	16.72	651,773.70	706,917.15
8,923.60	95.00	92.54	8,673.68	4,588.68	280.39	503.63	505.63	2.00	651,773.11	706,929.80
#1 (LP)										
9,000.00	95.00	91.01	8,667.01	4,582.01	278.02	579.70	581.68	2.00	651,770.74	706,805.87
9,070.68	95.00	89.59	8,660.85	4,575.85	277.65	650.11	652.08	2.00	651,770.37	706,876.27
9,100.00	95.00	89.59	8,658.30	4,573.30	277.86	679.32	681.29	0.00	651,770.58	706,905.48
9,200.00	95.00	89.59	8,649.58	4,564.58	278.57	778.94	780.91	0.00	651,771.29	707,005.10
9,300.00	95.00	89.59	8,640.86	4,555.86	279.28	878.55	880.53	0.00	651,772.00	707,104.72
9,400.00	95.00	89.59	8,632.14	4,547.14	279.99	978.17	980.15	0.00	651,772.71	707,204.33
9,500.00	95.00	89.59	8,623.42	4,538.42	280.70	1,077.79	1,079.77	0.00	651,773.42	707,303.95
9,600.00	95.00	89.59	8,614.70	4,529.70	281.41	1,177.40	1,179.39	0.00	651,774.13	707,403.57
9,700.00	95.00	89.59	8,605.98	4,520.98	282.12	1,277.02	1,279.01	0.00	651,774.84	707,503.18
9,800.00	95.00	89.59	8,597.27	4,512.27	282.83	1,376.64	1,378.63	0.00	651,775.55	707,602.80
9,900.00	95.00	89.59	8,588.55	4,503.55	283.54	1,476.25	1,478.24	0.00	651,776.26	707,702.42
10,000.00	95.00	89.59	8,579.83	4,494.83	284.24	1,575.87	1,577.86	0.00	651,776.97	707,802.03
10,100.00	95.00	89.59	8,571.11	4,486.11	284.95	1,675.49	1,677.48	0.00	651,777.67	707,901.65
10,200.00	95.00	89.59	8,562.39	4,477.39	285.66	1,775.10	1,777.10	0.00	651,778.38	708,001.27
10,300.00	95.00	89.59	8,553.67	4,468.67	286.37	1,874.72	1,876.72	0.00	651,779.09	708,100.88
10,400.00	95.00	89.59	8,544.95	4,459.95	287.08	1,974.34	1,976.34	0.00	651,779.80	708,200.50
10,500.00	95.00	89.59	8,536.24	4,451.24	287.79	2,073.95	2,075.96	0.00	651,780.51	708,300.12
10,600.00	95.00	89.59	8,527.52	4,442.52	288.50	2,173.57	2,175.58	0.00	651,781.22	708,399.73
10,700.00	95.00	89.59	8,518.80	4,433.80	289.21	2,273.19	2,275.20	0.00	651,781.93	708,499.35

PathFinder
Pathfinder X&Y Report



Company: Lime Rock Resources
Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Design: Plan #6

Local Co-ordinate Reference: Well Denius Federal #1 ST#1
TVD Reference: Gyro - GL @ 4085.00ft (Gyro)
MD Reference: Gyro - GL @ 4085.00ft (Gyro)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Smith Database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
10,800.00	95.00	89.59	8,510.08	4,425.08	289.92	2,372.80	2,374.82	0.00	651,782.64	708,598.97
10,900.00	95.00	89.59	8,501.36	4,416.36	290.63	2,472.42	2,474.44	0.00	651,783.35	708,698.58
10,923.50	95.00	89.59	8,499.31	4,414.31	290.79	2,495.83	2,497.84	0.00	651,783.51	708,721.99
#1 (BHL)										
11,000.00	95.00	89.59	8,482.64	4,407.64	291.34	2,572.04	2,574.06	0.00	651,784.06	708,798.20
11,100.00	95.00	89.59	8,483.92	4,398.92	292.05	2,671.65	2,673.68	0.00	651,784.77	708,897.82
11,200.00	95.00	89.59	8,475.21	4,390.21	292.76	2,771.27	2,773.29	0.00	651,785.48	708,997.43
11,300.00	95.00	89.59	8,466.49	4,381.49	293.46	2,870.89	2,872.91	0.00	651,786.19	709,097.05
11,400.00	95.00	89.59	8,457.77	4,372.77	294.17	2,970.50	2,972.53	0.00	651,786.89	709,196.67
11,500.00	95.00	89.59	8,449.05	4,364.05	294.88	3,070.12	3,072.15	0.00	651,787.60	709,296.28
11,600.00	95.00	89.59	8,440.33	4,355.33	295.59	3,169.74	3,171.77	0.00	651,788.31	709,395.80
11,700.00	95.00	89.59	8,431.61	4,346.61	296.30	3,269.35	3,271.39	0.00	651,789.02	709,495.52
11,730.76	95.00	89.59	8,428.93	4,343.93	296.52	3,300.00	3,302.04	0.00	651,789.24	709,526.16
#1 (BHL) Permit										

PathFinder
Pathfinder X&Y Report



Company: Lime Rock Resources
Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Design: Plan #6

Local Co-ordinate Reference: Well Denius Federal #1 ST#1
TVD Reference: Gyro - GL @ 4085.00ft (Gyro)
MD Reference: Gyro - GL @ 4085.00ft (Gyro)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Smith Database

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
#1 (BHL) Permit - hit/miss target - Circle (radius 20.00)	85.00	89.59	8,428.93	296.52	3,300.00	651,789.24	709,526.16	32° 47' 24.01082 N	103° 39' 5.49790 W
#1 (LP) - plan misses target center by 5.01ft at 8923.60ft MD (8673.68 TVD, 280.39 N, 503.63 E) - Point	0.00	0.00	8,677.00	276.64	503.80	651,769.36	706,729.96	32° 47' 23.99124 N	03° 39' 38.25361 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
4,763.99	4,761.91	8 5/8"	8	12-1/4
406.00	405.99	13 3/8"	13-3/8	17-1/2

Checked By: _____ Approved By: _____ Date: _____

Lime Rock Resources

Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Plan: Plan #6 (Denius Federal #1 ST#1/ST1)



WELL DETAILS: Denius Federal #1 ST#1

Ground Elevation: 4085.00
RKB Elevation: Gyro - GL @ 4085.00ft (Gyro)
Rig Name: Gyro

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	661482.72	706226.16	32° 47' 21.28580 N 103° 39' 44.17660 W		

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	8300.00	6.31	87.12	8291.39	275.64	115.70	0.00	0.00	115.69	
2	8388.90	6.22	85.73	8380.00	291.95	118.09	0.37	111.89	121.10	
3	8910.89	95.00	92.80	8674.78	280.98	490.99	18.72	32.93	482.99	
4	9070.68	95.00	89.59	8980.85	277.85	660.11	2.00	-89.83	662.08	
6	11730.76	96.00	89.59	8428.83	296.62	3300.00	0.00	0.00	3302.04	#1 (BHL) Permit

PROJECT DETAILS: Lea County, NM

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1886
Zone: New Mexico East 3001

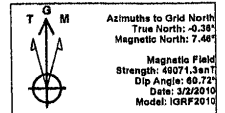
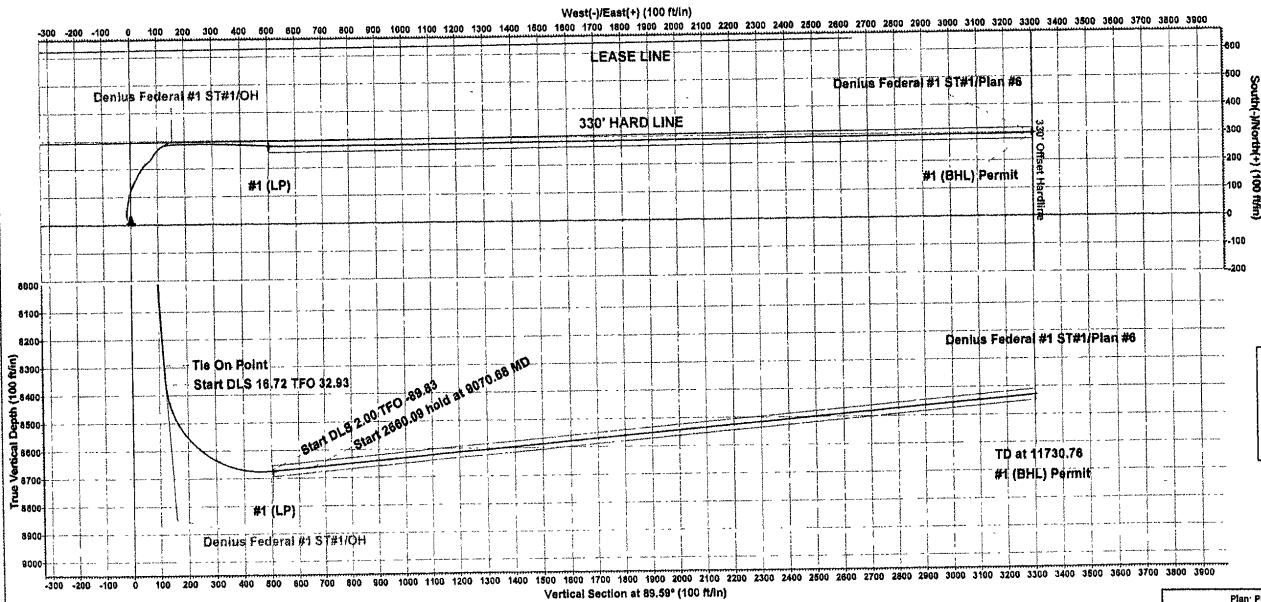
COMPANY DETAILS: Lime Rock Resources

Calculation Method: Minimum Curvature
Error System: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Warning Method: Error Ratio

System Datum: Mean Sea Level
Local North: Grid

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N-S	+E-W	Northing	Easting	Shape
#1 (BHL) Permit	8428.83	296.62	3300.00	661789.24	709626.16	Circle (Radius: 20.00)
#1 (LP)	8677.00	276.84	603.80	661789.36	708728.96	Point



Note:
All Lease Lines and Hard Lines are estimates only,
and are subject to customer approval.

Plan: Plan #6 (Denius Federal #1 ST#1/ST1)
Created By: John Walker Date: 17:33, March 22 2010