

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)

PATHFINDER

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	661492.72	708226.16	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	5.31	67.12	8291.39	278.64	113.70	0.00	0.00	116.89	
2	8368.90	6.22	69.73	8360.00	281.96	118.09	0.37	111.89	121.10	
3	8910.89	95.00	92.80	8674.78	280.99	480.99	16.72	32.93	482.99	
4	9070.88	95.00	89.59	8660.85	277.88	850.11	2.00	-89.83	862.08	
5	11730.78	95.00	89.59	8428.93	288.52	3300.00	0.00	0.00	3302.04	#1 (BHL) Permit

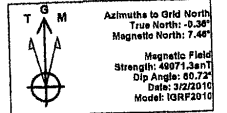
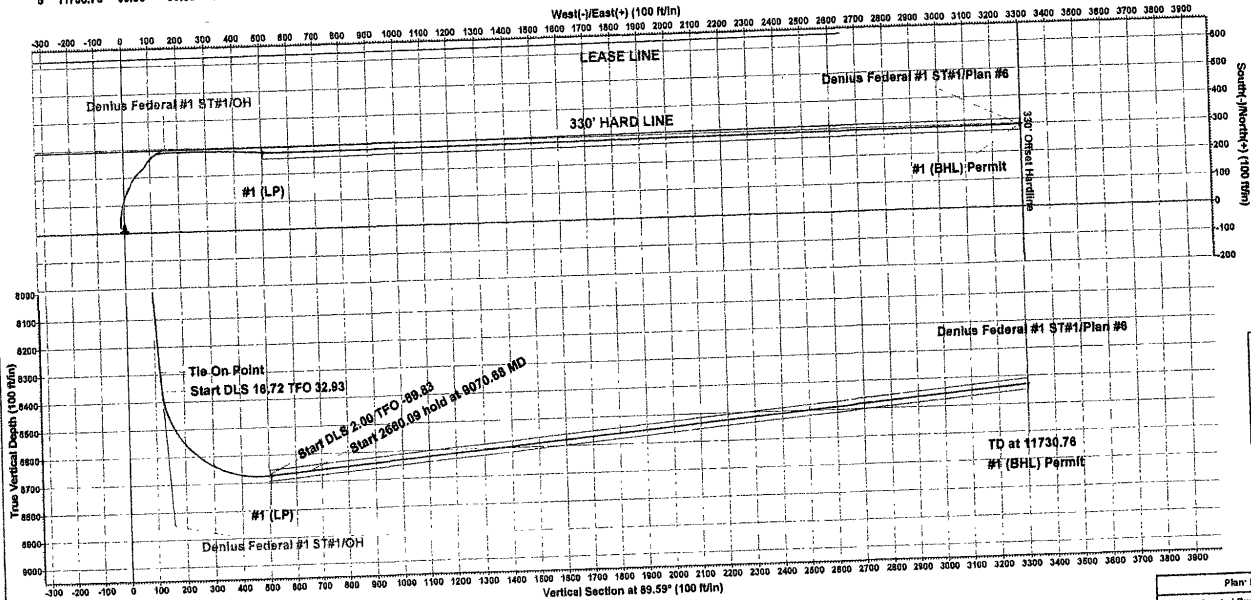
PROJECT DETAILS: Lea County, NM
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001

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	8428.93	294.52	3300.00	651769.24	708528.16	Circle (Radius: 20.00)
#1 (LP)	8677.00	276.84	503.80	651769.36	708729.98	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:	Lima Rock Resources	Local Co-ordinate Reference:	Well Denius Federal #1 ST#1
Project:	Lea County, NM	TVD Reference:	Gyro - GL @ 4085.00ft (Gyro)
Site:	Denius Federal	MD Reference:	Gyro - GL @ 4085.00ft (Gyro)
Well:	Denius Federal #1 ST#1	North Reference:	Grid
Wellbore:	ST1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #6	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:	Denius 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:	0.36 °
Position Uncertainty:	0.00 ft				

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

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

Design:	Plan #6
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Audit Notes:		Phase:	PLAN	Tie On Depth:	8,300.00
Version:					
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	89.59	

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 #6	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	11,730.78	Plan #6 (ST1)	MWD	MWD - Standard	

Planned Survey											
MD (ft)	Incl (°)	Asl (ft)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Snc (ft)	Drift (°/100ft)	Northing (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	706,228.18	
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	338.98	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	-1.85	-1.82	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	0.80	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	651,498.58	706,220.73	
1,200.00	0.27	342.48	1,199.98	-2,885.04	6.23	-5.84	-5.80	0.31	651,498.95	706,220.32	
1,300.00	0.32	340.86	1,299.98	-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	0.82	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	

PathFinder
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Wellbore: ST1
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											Northing (ft)	Easting (ft)
MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)				
		338.23	2,099.91	-1,985.09	14.90	-8.91	-8.81	0.02		651,507.83	706,217.25	
2,100.00	0.75					-9.73	-9.61	0.38		651,508.88	706,216.44	
2,200.00	0.99	318.73	2,199.90	-1,885.10	16.16			0.07		651,510.20	706,215.24	
2,300.00	1.05	316.82	2,299.89	-1,785.11	17.48	-10.92	-10.80	0.02		651,511.55	706,213.97	
2,400.00	1.07	317.11	2,399.87	-1,685.13	18.83	-12.19	-12.05			651,512.94	706,212.99	
2,500.00	0.90	333.90	2,499.85	-1,585.15	20.22	-13.17	-13.03	0.33		651,514.42	706,212.36	
2,600.00	0.95	339.55	2,599.84	-1,485.16	21.70	-13.81	-13.65	0.10		651,516.22	706,211.81	
2,700.00	1.21	345.82	2,699.82	-1,385.18	23.50	-14.35	-14.19	0.29		651,518.54	706,211.43	
2,800.00	1.49	354.48	2,799.80	-1,285.20	25.82	-14.74	-14.55	0.35		651,521.33	706,211.21	
2,900.00	1.72	356.61	2,899.76	-1,185.24	28.61	-14.95	-14.75	0.24		651,524.53	706,211.01	
3,000.00	1.95	356.33	2,999.71	-1,085.29	31.80	-15.15	-14.92	0.23		651,527.95	706,210.89	
3,100.00	1.98	359.61	3,099.65	-985.35	35.23	-15.27	-15.02	0.12		651,531.44	706,210.92	
3,200.00	2.02	1.19	3,199.59	-885.41	38.72	-15.25	-14.97	0.07		651,534.90	706,211.06	
3,300.00	1.95	3.66	3,299.53	-785.47	42.18	-15.10	-14.80	0.11		651,538.26	706,211.35	
3,400.00	1.92	6.29	3,399.47	-685.53	45.54	-14.81	-14.48	0.09		651,541.76	706,211.86	
3,500.00	2.11	3.88	3,499.41	-585.59	49.04	-14.50	-14.15	0.21		651,545.64	706,212.03	
3,600.00	2.35	6.87	3,599.33	-485.67	52.92	-14.13	-13.75	0.27		651,549.95	706,212.57	
3,700.00	2.63	7.37	3,699.24	-385.78	57.23	-13.59	-13.18	0.28		651,554.85	706,213.27	
3,800.00	2.82	9.45	3,799.12	-285.88	61.93	-12.89	-12.45	0.21		651,559.59	706,214.12	
3,900.00	2.93	10.13	3,899.00	-186.00	66.87	-12.04	-11.58	0.12		651,564.70	706,215.00	
4,000.00	3.01	9.39	3,998.88	-86.14	71.98	-11.16	-10.65	0.09		651,570.07	706,215.79	
4,100.00	3.21	7.35	4,098.72	13.72	77.35	-10.37	-9.82	0.23		651,575.76	706,216.67	
4,200.00	3.40	10.15	4,198.55	113.55	83.04	-9.49	-8.90	0.25		651,581.38	706,217.79	
4,300.00	3.17	12.44	4,298.39	213.39	88.66	-8.38	-7.74	0.26		651,586.49	706,218.82	
4,400.00	2.81	10.38	4,398.25	313.25	93.77	-7.34	-6.67	0.38		651,591.21	706,219.58	
4,500.00	2.67	7.75	4,498.14	413.14	98.49	-6.58	-5.88	0.19		651,595.70	706,220.31	
4,600.00	2.54	10.74	4,598.03	513.03	102.98	-5.86	-5.12	0.19		651,599.49	706,221.17	
4,700.00	1.92	15.68	4,697.96	612.96	106.77	-4.99	-4.23	0.65				

PathFinder
Pathfinder X&Y Report



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

Local Co-ordinate Reference:
TVD Reference:
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
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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	28.10	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	651,608.98	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	5,197.81	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	28.06	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	3.87	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	0.18	651,659.84	706,248.11		
6,100.00	3.36	28.46	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	706,259.62		
6,500.00	3.67	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	0.86	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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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)	Blksg (°/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	651,737.08	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	260.78	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	119.62	121.64	16.72	651,774.94	706,345.78
8,400.00	9.99	78.23	8,390.82	4,305.82	283.30	122.93	124.95	16.72	651,776.02	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	30.60	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	55.61	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	706,514.69
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 @ 4085.00ft (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)	
8,800.00	78.48	91.87	8,666.58	4,581.58	285.47	380.98	383.01	16.72	651,778.19	708,607.14	
8,825.00	80.66	92.08	8,671.54	4,586.54	284.63	405.46	407.49	16.72	651,777.35	708,631.62	
8,850.00	84.83	92.30	8,674.89	4,589.89	283.68	430.24	432.28	16.72	651,776.40	708,656.40	
8,875.00	89.01	92.50	8,676.04	4,591.04	282.83	455.17	457.18	16.72	651,775.35	708,681.34	
8,900.00	93.18	92.71	8,675.56	4,590.56	281.50	480.14	482.14	16.72	651,774.22	708,706.30	
8,910.89	95.00	92.80	8,674.76	4,589.78	280.98	490.99	492.99	16.72	651,773.70	708,717.15	
8,923.60	95.00	92.54	8,673.68	4,588.68	280.39	503.63	505.63	2.00	651,773.11	708,729.80	
#1 (LP)											
9,000.00	95.00	91.01	8,667.01	4,582.01	278.02	579.70	581.88	2.00	651,770.74	708,805.87	
9,070.88	95.00	89.59	8,660.85	4,575.85	277.85	650.11	652.08	2.00	651,770.37	708,876.27	
9,100.00	95.00	89.59	8,658.30	4,573.30	277.86	679.32	681.29	0.00	651,770.58	708,905.48	
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: Denilus Federal
Well: Denilus Federal #1 ST#1
Wellbore Design: ST1
Plan #6

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

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

Planned Survey

MD (ft)	Incl (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	EW (ft)	V. Sec (ft)	DLag (%/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	8,498.31	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	8,492.64	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	709,395.90
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	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 #6	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	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
- hit/miss target									
- Shape									
- Circle (radius 20.00)									
#1 (LP)	0.00	0.00	8,677.00	276.64	503.80	651,769.36	708,729.96	32° 47' 23.99124 N	03° 39' 38.25361 W
- plan misses target center by 5.01ft at 8923.60ft MD (8673.68 TVD, 280.39 N, 503.63 E)									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)		Name	Casing Diameter (")	Hole Diameter (")
4,763.89	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: _____
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Lime Rock Resources

Project: Lea County, NM
Site: Denius Federal
Well: Denius Federal #1 ST#1
Wellbore: ST1
Plan: Plan #8 (Denius Federal #1 ST#1/ST1)

PATHFINDER

WELL DETAILS: Denius Federal #1 ST#1

Ground Elevation: 4088.00
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	708228.16	32° 47' 21.28660 N 103° 39' 44.17660 W		

SECTION DETAILS

Sec	MD	Inc	Adi	TVD	+N-S	+E-W	DLeg	TFace	VSec	Target
1	8390.00	5.31	57.12	8281.39	278.54	113.70	0.00	0.00	116.59	
2	8388.90	5.22	59.73	8380.00	281.96	118.09	0.37	111.89	121.10	
3	8910.89	95.00	92.80	8074.78	280.98	490.99	18.72	32.93	482.99	
4	9070.88	95.00	89.59	8980.85	277.85	680.11	2.00	-86.83	682.08	
5	11730.76	95.00	89.59	8428.93	296.52	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

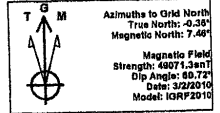
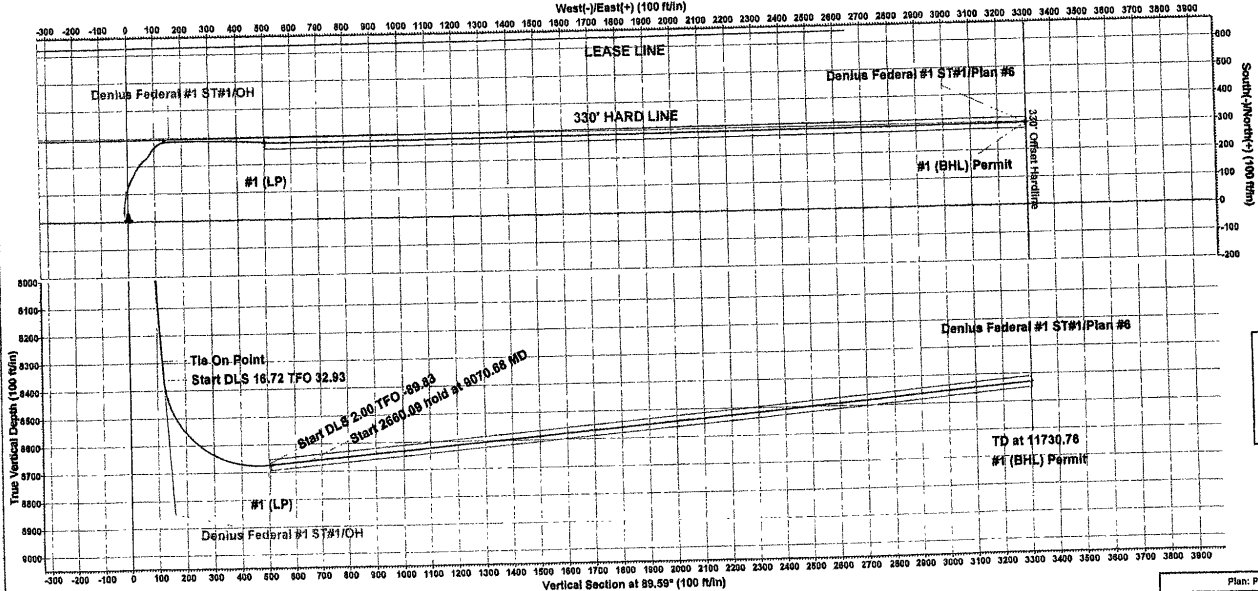
COMPANY DETAILS: Lime Rock Resources

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	8428.93	296.52	3300.00	661789.24	709528.16	Circle (Radius: 20.00)
#1 (LP)	8677.00	276.84	503.80	661789.38	708728.98	Point



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

Plan: Plan #8 (Denius Federal #1 ST#1/ST1)

Created By: John Walker Date: 17:33, March 22 2010