

Scientific Drilling

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HOBBSOCD

MARBOB ENERGY

Field: Lusk
Site: Lea County, NM
Well: SDL Federal Com #1H
Wellpath: VH - Job #32K1109491
Survey: 11/09/09

SUR: D-31-18S-32E, 990/n & 330/W
BHL: B-31-18s-32e, 380/N & 3592/W
API #30-025-39537

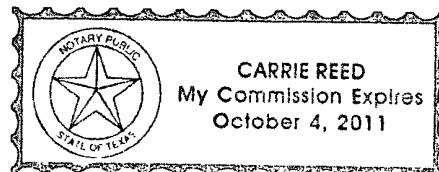
This survey is correct to the best of my knowledge
and is supported by actual field data.

Richard A. Smith Company Representative

Notorized this date 11th of December, 2009.

Carrie Reed

Notary Signature
County of Midland
State of Texas





Scientific
Drilling

Scientific Drilling International

Survey Report

Company: MARBOB ENERGY
Field: Lusk
Site: Lea County, NM
Well: SDL Federal Com #1H
Wellpath: VH - Job #32K1109491

Date: 12/04/2009 Time: 15:58:08 Page: 1
Co-ordinate(NE) Reference: Site: Lea County, NM. True North
Vertical (TVD) Reference: SITE 0 0
Section (VS) Reference: Well (0.00N.0.00E.79.48Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 11/09/09 Start Date: 11/09/2009
KSRG 0'-7588'
Company: Scientific Drilling Internatio
Tool: Keeper;Keeper Gyro Engineer: Guebara w/Gray
Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.00	0.00	359.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.19	351.92	100.00	0.01	0.16	-0.02	0.19	0.17	351.92
200.00	0.26	337.46	200.00	-0.03	0.54	-0.13	0.09	0.55	346.05
300.00	0.10	308.52	300.00	-0.14	0.80	-0.29	0.18	0.85	340.19
400.00	0.08	294.30	400.00	-0.25	0.88	-0.42	0.03	0.98	334.57
500.00	0.26	306.01	500.00	-0.47	1.05	-0.67	0.18	1.24	327.47
600.00	0.42	272.80	600.00	-0.98	1.20	-1.22	0.25	1.71	314.54
700.00	0.36	275.82	699.99	-1.64	1.25	-1.90	0.06	2.27	303.35
800.00	1.03	262.67	799.99	-2.84	1.17	-3.10	0.68	3.31	290.60
900.00	1.21	263.41	899.97	-4.79	0.93	-5.04	0.18	5.13	280.45
1000.00	1.37	252.99	999.94	-7.03	0.46	-7.23	0.28	7.25	273.63
1100.00	0.76	248.45	1099.92	-8.87	-0.13	-8.99	0.62	8.99	269.14
1200.00	0.56	231.08	1199.92	-9.95	-0.69	-9.99	0.28	10.01	266.07
1300.00	0.56	237.81	1299.91	-10.83	-1.25	-10.78	0.07	10.86	263.37
1400.00	0.45	224.20	1399.91	-11.61	-1.79	-11.47	0.16	11.61	261.11
1500.00	0.33	244.57	1499.91	-12.20	-2.20	-12.00	0.18	12.20	259.62
1600.00	0.02	278.56	1599.91	-12.50	-2.32	-12.28	0.31	12.50	259.30
1700.00	0.23	250.63	1699.91	-12.71	-2.38	-12.49	0.21	12.71	259.19
1800.00	0.26	17.77	1799.91	-12.80	-2.24	-12.61	0.44	12.81	259.95
1900.00	0.39	30.44	1899.90	-12.47	-1.73	-12.37	0.15	12.49	262.06
2000.00	0.54	66.54	1999.90	-11.79	-1.24	-11.76	0.32	11.83	263.96
2100.00	1.04	49.77	2099.89	-10.54	-0.47	-10.64	0.55	10.65	267.46
2200.00	1.30	70.36	2199.87	-8.64	0.50	-8.88	0.49	8.89	273.20
2300.00	1.13	69.25	2299.85	-6.55	1.23	-6.89	0.17	6.99	280.10
2400.00	1.14	63.51	2399.83	-4.62	2.02	-5.07	0.11	5.46	291.71
2500.00	0.89	18.54	2499.81	-3.29	3.20	-3.94	0.81	5.07	309.11
2600.00	0.94	11.05	2599.80	-2.61	4.74	-3.53	0.13	5.91	323.32
2700.00	1.07	331.93	2699.79	-2.59	6.37	-3.81	0.68	7.42	329.09
2800.00	1.75	311.83	2799.76	-3.80	8.21	-5.39	0.83	9.82	326.72
2900.00	2.05	308.71	2899.70	-5.90	10.35	-7.92	0.32	13.03	322.56
3000.00	2.81	297.01	2999.61	-9.01	12.58	-11.50	0.90	17.05	317.56
3100.00	3.20	294.02	3099.47	-13.26	14.83	-16.24	0.42	21.99	312.41
3200.00	3.30	293.15	3199.31	-17.95	17.10	-21.43	0.11	27.42	308.58
3300.00	3.33	288.77	3299.15	-22.88	19.16	-26.83	0.25	32.97	305.54
3400.00	1.93	258.71	3399.04	-27.10	19.77	-31.23	1.92	36.96	302.33
3500.00	0.80	211.70	3499.01	-29.25	18.85	-33.25	1.50	38.22	299.54
3600.00	0.78	213.83	3599.01	-30.19	17.69	-33.99	0.04	38.32	297.49
3700.00	0.97	204.53	3698.99	-31.16	16.35	-34.73	0.24	38.38	295.21
3800.00	0.80	212.48	3798.98	-32.12	14.99	-35.45	0.21	38.49	292.92
3900.00	0.66	219.99	3898.97	-33.04	13.96	-36.20	0.17	38.80	291.09
4000.00	0.63	225.07	3998.97	-33.94	13.13	-36.96	0.06	39.22	289.56
4100.00	0.71	214.39	4098.96	-34.83	12.23	-37.70	0.15	39.63	287.98
4200.00	0.54	222.80	4198.95	-35.64	11.38	-38.37	0.19	40.02	286.52
4300.00	0.70	217.42	4298.95	-36.47	10.54	-39.06	0.17	40.45	285.11
4400.00	0.62	228.19	4398.94	-37.39	9.70	-39.83	0.15	40.99	283.69
4500.00	0.61	231.93	4498.94	-38.32	9.01	-40.65	0.04	41.64	282.50
4600.00	0.65	230.26	4598.93	-39.29	8.32	-41.51	0.04	42.33	281.33
4700.00	0.47	243.85	4698.93	-40.18	7.78	-42.31	0.22	43.02	280.41
4800.00	0.35	225.15	4798.92	-40.83	7.38	-42.90	0.18	43.53	279.76



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Survey Report

Company: MARBOB ENERGY
Field: Lusk
Site: Lea County, NM
Well: SDL Federal Com #1H
Wellpath: VH - Job #32K1109491

Date: 12/04/2009 Time: 15:58:08 Page: 2
Co-ordinate(NE) Reference: Site: Lea County, NM, True North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,79.48Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

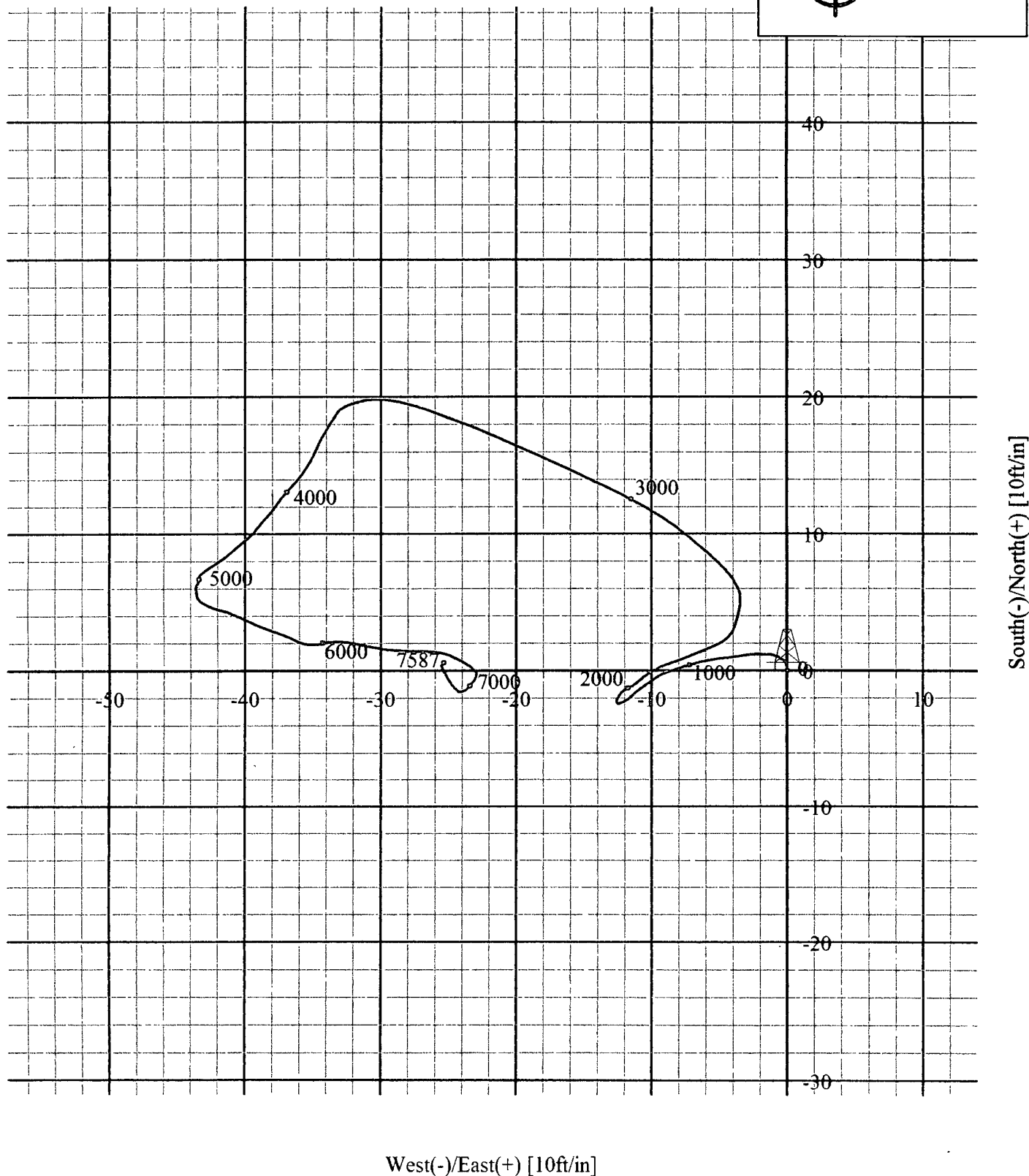
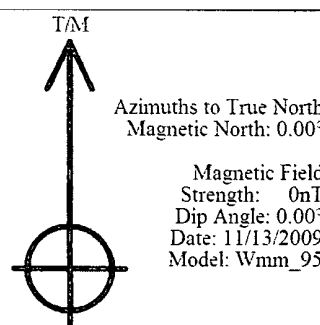
Survey

MD ft	Incl deg	Azim deg	TVD ft	V/S ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.00	0.16	249.21	4898.92	-41.22	7.11	-43.24	0.21	43.83	279.34
5000.00	0.40	185.13	4998.92	-41.45	6.72	-43.41	0.36	43.92	278.80
5100.00	0.12	236.42	5098.92	-41.64	6.31	-43.52	0.34	43.98	278.25
5200.00	0.42	177.04	5198.92	-41.79	5.89	-43.59	0.37	43.99	277.69
5300.00	0.28	150.93	5298.92	-41.76	5.31	-43.46	0.21	43.78	276.96
5400.00	0.63	117.79	5398.91	-41.25	4.84	-42.85	0.42	43.12	276.44
5500.00	0.58	101.08	5498.91	-40.34	4.48	-41.87	0.18	42.11	276.11
5600.00	0.84	114.66	5598.90	-39.28	4.08	-40.70	0.31	40.91	275.73
5700.00	0.88	114.81	5698.89	-38.05	3.45	-39.34	0.04	39.49	275.02
5800.00	1.07	108.95	5798.87	-36.61	2.83	-37.76	0.21	37.87	274.28
5900.00	0.99	115.29	5898.86	-35.10	2.16	-36.10	0.14	36.16	273.42
6000.00	1.18	76.54	5998.84	-33.37	2.03	-34.31	0.74	34.37	273.38
6100.00	1.03	100.10	6098.82	-31.50	2.11	-32.43	0.47	32.50	273.72
6200.00	1.13	101.75	6198.81	-29.74	1.75	-30.58	0.10	30.63	273.28
6300.00	1.13	92.96	6298.79	-27.87	1.50	-28.63	0.17	28.67	273.00
6400.00	1.22	90.73	6398.77	-25.87	1.43	-26.58	0.10	26.62	273.09
6500.00	0.86	114.19	6498.75	-24.21	1.11	-24.83	0.55	24.85	272.57
6600.00	0.64	121.16	6598.74	-23.18	0.52	-23.67	0.24	23.67	271.25
6700.00	0.26	141.49	6698.74	-22.65	0.05	-23.05	0.41	23.05	270.12
6800.00	0.24	189.55	6798.74	-22.62	-0.33	-22.94	0.20	22.94	269.16
6900.00	0.19	221.97	6898.74	-22.82	-0.66	-23.09	0.13	23.10	268.35
7000.00	0.43	220.08	6998.73	-23.24	-1.07	-23.44	0.24	23.46	267.38
7100.00	0.30	244.72	7098.73	-23.78	-1.47	-23.92	0.20	23.96	266.47
7200.00	0.09	306.15	7198.73	-24.09	-1.54	-24.22	0.27	24.27	266.36
7300.00	0.35	314.10	7298.73	-24.32	-1.28	-24.50	0.26	24.53	267.01
7400.00	0.70	327.11	7398.73	-24.73	-0.55	-25.05	0.37	25.06	268.73
7500.00	0.54	338.36	7498.72	-25.06	0.40	-25.56	0.20	25.56	270.89
7588.00	0.49	115.57	7586.72	-24.83	0.62	-25.37	1.09	25.38	271.40



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Field: Lusk
Site: Lea County, NM
Well: SDL Federal Com #1H
Wellpath: VH - Job #32K1109491
Survey: 11/09/09





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Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Marbob
Project: Lea County
Site: SDL Federal Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3688.00ft (Original Well Elev)
MD Reference: WELL @ 3688.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

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

Site SDL Federal Com

Site Position: Northing: 621,851.500 ft Latitude: 32° 42' 30.552 N
From: Map Easting: 660,114.300 ft Longitude: 103° 48' 46.035 W
Position Uncertainty: 0.00 ft Slot Radius: " Grid Convergence: 0.28 °

Well #1H

Well Position +N/-S 0.00 ft Northing: 621,851.500 ft Latitude: 32° 42' 30.552 N
+E/-W 0.00 ft Easting: 660,114.300 ft Longitude: 103° 48' 46.035 W
Position Uncertainty 0.00 ft Wellhead Elevation: ft Ground Level: 3,674.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	06/18/2009	7.96	60.66	49,135

Design OH

Audit Notes:

Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	79.48

Survey Program Date 11/18/2009

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
7,718.00	11,436.00	MWD #1 (OH)	MWD	MWD - Standard



Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Marbob
 Project: Lea County
 Site: SDL Federal Com
 Well: #1H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #1H
 TVD Reference: WELL @ 3688.00ft (Original Well Elev)
 MD Reference: WELL @ 3688.00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,588.00	0.49	115.57	7,586.72	3,898.72	0.62	-25.37	-24.83	0.00	621,852.12	660,088.93
7,718.00	0.26	235.31	7,716.72	4,028.72	0.21	-25.11	-24.65	0.51	621,851.71	660,089.19
7,782.00	0.44	69.60	7,780.72	4,092.72	0.21	-25.00	-24.54	1.09	621,851.71	660,089.30
7,814.00	2.64	56.53	7,812.70	4,124.70	0.66	-24.27	-23.74	6.92	621,852.16	660,090.03
7,846.00	6.42	67.37	7,844.60	4,156.60	1.76	-22.00	-21.31	12.06	621,853.26	660,092.30
7,877.00	9.85	72.95	7,875.28	4,187.28	3.20	-17.87	-16.98	11.34	621,854.70	660,096.43
7,909.00	13.19	74.88	7,906.63	4,218.63	4.96	-11.72	-10.62	10.51	621,856.46	660,102.58
7,941.00	16.44	74.56	7,937.57	4,249.57	7.12	-3.83	-2.47	10.16	621,858.62	660,110.47
7,973.00	19.61	74.78	7,967.99	4,279.99	9.73	5.72	7.40	9.91	621,861.23	660,120.02
8,005.00	22.86	73.50	7,997.81	4,309.81	12.91	16.86	18.93	10.26	621,864.41	660,131.16
8,036.00	25.76	72.95	8,026.06	4,338.06	16.60	29.08	31.62	9.38	621,868.10	660,143.38
8,068.00	28.84	73.69	8,054.50	4,366.50	20.80	43.13	46.21	9.68	621,872.30	660,157.43
8,100.00	32.45	74.31	8,082.02	4,394.02	25.29	58.81	62.44	11.32	621,876.79	660,173.11
8,132.00	35.79	74.45	8,108.51	4,420.51	30.13	76.10	80.32	10.44	621,881.63	660,190.40
8,163.00	39.75	74.60	8,133.01	4,445.01	35.19	94.39	99.23	12.78	621,886.69	660,208.69
8,195.00	43.18	72.89	8,156.99	4,468.99	41.13	114.73	120.31	11.29	621,892.63	660,229.03
8,226.00	46.96	72.40	8,178.88	4,490.88	47.68	135.67	142.09	12.24	621,899.18	660,249.97
8,258.00	50.83	72.37	8,199.91	4,511.91	54.97	158.65	166.02	12.09	621,906.47	660,272.95
8,292.00	54.26	72.79	8,220.58	4,532.58	63.05	184.40	192.81	10.14	621,914.55	660,298.70
8,322.00	57.68	72.54	8,237.37	4,549.37	70.46	208.13	217.49	11.42	621,921.96	660,322.43
8,354.00	62.52	73.79	8,253.32	4,565.32	78.48	234.67	245.06	15.50	621,929.98	660,348.97
8,386.00	68.06	77.91	8,266.69	4,578.69	85.56	262.85	274.05	20.89	621,937.06	660,377.15
8,417.00	74.30	82.38	8,276.69	4,588.69	90.56	291.74	303.37	24.31	621,942.06	660,406.04
8,449.00	80.90	84.73	8,283.56	4,595.56	94.06	322.77	334.52	21.84	621,945.56	660,437.07
8,481.00	85.38	85.13	8,287.38	4,599.38	96.86	354.41	366.14	14.05	621,948.36	660,468.71
8,513.00	88.37	85.26	8,289.13	4,601.13	99.54	386.25	397.93	9.35	621,951.04	660,500.55
8,545.00	88.64	85.20	8,289.96	4,601.96	102.20	418.13	429.76	0.86	621,953.70	660,532.43



Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Marbob
Project: Lea County
Site: SDL Federal Com
Well: #1H
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #1H
TVD Reference: WELL @ 3688.00ft (Original Well Elev)
MD Reference: WELL @ 3688.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,576.00	88 55	85.27	8,290.72	4,602.72	104.77	449.01	460 59	0.37	621,956.27	660,563.31
8,665.00	89 96	84 25	8,291.88	4,603.88	112 90	537.63	549.20	1 96	621,964.40	660,651.93
8,760 00	91 01	82.79	8,291.08	4,603.08	123 62	632.01	643 96	1.89	621,975 12	660,746.31
8,856.00	91 19	82 24	8,289.23	4,601.23	136 12	727.18	739 81	0.60	621,987.62	660,841 48
8,951 00	91 36	82.15	8,287.12	4,599.12	149.02	821.27	834.68	0.20	622,000.52	660,935.57
9,047.00	90 31	80 37	8,285.72	4,597.72	163 61	916.14	930 62	2.15	622,015 11	661,030.44
9,142.00	90 48	80.14	8,285.07	4,597.07	179.69	1,009.77	1,025.60	0.30	622,031 19	661,124 07
9,238.00	88.81	79.03	8,285.66	4,597.66	197 04	1,104.18	1,121 60	2.09	622,048.54	661,218 48
9,333.00	89.34	78.69	8,287.19	4,599.19	215.39	1,197 38	1,216.58	0 66	622,066.89	661,311 68
9,429.00	87 67	77.41	8,289.70	4,601.70	235 26	1,291.26	1,312.51	2.19	622,086.76	661,405 56
9,524.00	87 67	76 43	8,293.56	4,605.56	256.74	1,383.72	1,407.34	1.03	622,108.24	661,498 02
9,618.00	88.11	77 42	8,297.02	4,609.02	277 99	1,475.22	1,501.18	1.15	622,129 49	661,589 52
9,714.00	89 78	78.02	8,298.79	4,610.79	298 41	1,569.00	1,597.11	1.85	622,149.91	661,683 30
9,809.00	90 57	77.53	8,298.50	4,610.50	318 52	1,661.85	1,692.07	0.98	622,170.02	661,776 15
9,904.00	90 57	78 49	8,297.55	4,609.55	338.26	1,754.77	1,787.03	1.01	622,189 76	661,869.07
10,000 00	89 34	78 57	8,297.63	4,609.63	357 35	1,848.85	1,883.02	1.28	622,208 85	661,963 15
10,097 00	88 20	79 43	8,299.71	4,611.71	375.85	1,944 04	1,979 99	1.47	622,227.35	662,058.34
10,192 00	89 60	79.89	8,301.54	4,613.54	392 90	2,037.48	2,074 97	1 55	622,244.40	662,151.78
10,287 00	88 64	79 79	8,302.99	4,614.99	409 65	2,130.98	2,169.95	1.02	622,261.15	662,245.28
10,383.00	87 93	81.06	8,305 87	4,617.87	425 62	2,225.60	2,265 90	1.52	622,277.12	662,339 90
10,477 00	89 69	81.24	8,307.82	4,619.82	440 07	2,318.45	2,359.83	1.88	622,291.57	662,432 75
10,574 00	90 48	82 33	8,307.68	4,619.68	453 93	2,414.46	2,456.75	1.39	622,305 43	662,528.76
10,667 00	89 08	81.20	8,308.03	4,620.03	467 25	2,506.49	2,549 67	1.93	622,318.75	662,620 79
10,762 00	89 25	80 62	8,309.42	4,621.42	482.26	2,600.29	2,644.63	0.64	622,333.76	662,714 59
10,858 00	89 43	80.43	8,310.52	4,622.52	498 06	2,694 97	2,740 61	0 27	622,349 56	662,809.27
10,954 00	89 69	80 15	8,311.26	4,623.26	514 25	2,789.59	2,836 60	0 40	622,365.75	662,903 89
11,049 00	90 31	79 63	8,311 26	4,623.26	530 93	2,883.12	2,931.59	0.85	622,382.43	662,997 42



Pathfinder Energy Services

Pathfinder X & Y Survey Report



Company: Marbob
 Project: Lea County
 Site: SDL Federal Com
 Well: #1H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #1H
 TVD Reference: WELL @ 3688.00ft (Original Well Elev)
 MD Reference: WELL @ 3688.00ft (Original Well Elev)
 North Reference: Grd
 Survey Calculation Method: Minimum Curvature
 Database: Midland Database

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
11,145.00	90.66	79.13	8,310.45	4,622.45	548.62	2,977.47	3,027.59	0.64	622,400.12	663,091.77
11,241.00	89.60	77.93	8,310.23	4,622.23	567.71	3,071.55	3,123.57	1.67	622,419.21	663,185.85
11,335.00	88.37	77.41	8,311.89	4,623.89	587.78	3,163.37	3,217.51	1.42	622,439.28	663,277.67
11,355.00	88.11	77.01	8,312.51	4,624.51	592.21	3,182.86	3,237.48	2.38	622,443.71	663,297.16
11,436.00	88.11	77.01	8,315.18	4,627.18	610.40	3,261.74	3,318.36	0.00	622,461.90	663,376.04

Proj TO TD -11436.00°MD,88.11°INC,77.01°AZI, 8315.18°TVD, 3318.36°VS, 610.40°N, 3261.74°E

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
PBHL OH(#1H)	0.00	0.00	8,287.00	619.20	3,334.30	622,470.700	663,448.600	32° 42' 36.516 N	103° 48' 6.976 W
- survey misses by 78.33ft at 11436.00ft MD (8315.18 TVD, 610.40 N, 3261.74 E)									
- Point									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,436.00	8,315.18	610.40	3,261.74	Proj TO TD -11436.00°MD,88.11°INC,77.01°AZI, 8315.18°TVD, 3318.36°VS, 610.40°N, 3261.74°E

Checked By: _____ Approved By: _____ Date: _____

Surf: 990' FNL, 330' FNL
 EOL: 380' FNL, 1688' FEL