

Results of Directional Survey

API number:	30-025-39638		
OGRID:		Operator:	COG OPERATING LLC
		Property:	PATTERSON B-52 FEDERAL # 3H

surface	ULSTR:	J	05	T 19S	R 32E
				2310 FSL	1500 FEL

BH Loc	ULSTR:	O	05	T 19S	R 32E
11080	MD	9387.5	TVD	331 FSL	1674 FEL

Top Perf/OH	ULSTR:	J	05	T 19S	R 32E
9530	MD	9337.6	TVD	1878 FSL	1692 FEL

Bot Perf/OH	ULSTR:	O	05	T 19S	R 32E
11000	MD	9384.8	TVD	411 FSL	1675 FEL

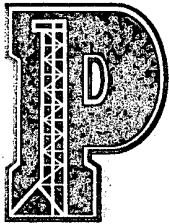
	MD	N/S	E/W	VD
	9519	-421.63	-191.96	9335.05
TOP PERFS/OH	9530	-432.33	-192.04	9337.58
	9551	-452.76	-192.20	9342.42
	10922	-1821.22	-174.72	9381.95
BOT PERFS/OH	11000	-1899.16	-174.68	9384.77
	11032	-1931.14	-174.66	9385.92

NEXT TO LAST	11032	-1931.14	-174.66	9385.92
LAST READING	11079.2	-1978.34	-174.05	9387.47
TD	11080	-1979.11	-174.04	9387.50

Surface Location	2310 FS	1500 FE
Projected BHL	331 FS	1674 FE
Location of		
Top Perfs/OH	1878 FS	1692 FE
Bottom Perfs/OH	411 FS	1675 FE

SUMMARY of Subsurface Locations

Surface Location	J-05-19S-32E	2310 FS	1500 FE	Vert. Depth
Top Perfs/OH	J-05-19S-32E	1878 FS	1692 FE	9337.58
Bottom Perfs/OH	O-05-19S-32E	411 FS	1675 FE	9384.77
Projected TD	O-05-19S-32E	331 FS	1674 FE	9387.50



PATRIOT DRILLING, LLC

SUR @ J-5-19s-32e, 2310/S & 1500/E
BHL @ O-5-19s-32e, 331/S & 1674/E
API # 30-025-39638

OPERATOR: Marbob Energy Corp.
WELL/LEASE: Patterson B-52 Federal # 3 H
COUNTY: Lea Co., New Mexico
Sec 5, T 19 S, R 32 E

**STATE OF NEW MEXICO
DEVIATION REPORT**

<u>Depth</u>	<u>Deviation</u>	<u>Depth</u>	<u>Deviation</u>
304	1/2	1,826	1
539	3/4	1,986	1 1/2
705	1/2	2,528	1/4
924	1 1/2	2,719	1/2
1,034	1 1/4	2,940	3/4
1,146	1 3/4	3,254	1 1/4
1,193	2	3,944	1
1,288	1 1/2	4,138	1/2
1,415	2	4,558	3/4
1,543	1 1/2	5,016	1 3/4
1,669	1 1/2	5,111	2 1/2

RECEIVED

JAN 05 2011
HOBBSOC

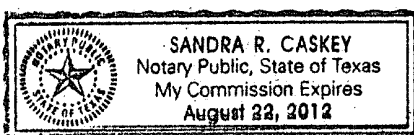
Patriot Drilling, LLC

M. Leroy Peterson, Executive Vice-
President

The foregoing instrument was acknowledged before me on this 29th day of
September, 2010 by M. Leroy Peterson, Executive Vice-President of Patriot Drilling,
LLC.

My Commission Expires: 8/22/2012

Sandra R. Caskey
Notary Public for Midland Co., Texas



SUR @ J-5-19s-32e, 2310/S & 1500/E
BHL @ O-5-19s-32e, 331/S & 1674/E
API # 30-025-39638

MARBOB ENERGY

Lusk Bone Springs
Lea County, NM
Patterson B-52 Federal #3H
VH - Job #32K0810617

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Survey: Actual

SDI Standard Survey Report

26 August, 2010

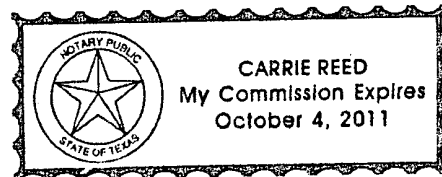
This survey is correct to the best of my knowledge and is supported by actual field data.

Robert

Notorized this date 24th of September, 2010.

Carrie Reed

Notary Signature
County of Midland
State of Texas



Scientific Drilling International, Inc.
SDI Standard Survey Report

Company:	MARBOB ENERGY	Local Co-ordinate Reference:	Well Patterson B-52 Federal #3H
Project:	Lusk Bone Springs	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Patterson B-52 Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0810617	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0810617	Database:	EDM-Regulatory

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

Well:	Patterson B-52 Federal #3H, Directional (Pathfinder)
Well Position	+N/-S 0.0 usft Northing: 614,605.97 usft Latitude: 32° 41' 18.416 N
	+E/-W 0.0 usft Easting: 668,931.19 usft Longitude: 103° 47' 3.286 W
Position Uncertainty	0.0 usft Wellhead Elevation: usft Ground Level: 0.0 usft

Wellbore:	VH - Job #32K0810617
Magnetics	Model Name Sample Date Declination Dip Angle Field Strength
	IGRF2000 12/31/2004 (°) (°) (nT)
	8.70 60.83 49,707

Design:	VH - Job #32K0810617				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	214.91	

Survey Program:	Date 8/25/2010
From To	Survey (Wellbore) Tool Name Description
(usft) (usft)	
100.0 4,925.0	Actual (VH - Job #32K0810617) Keeper Keeper Gyro

Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.0
100.0	0.27	22.56	100.0	0.2	0.1	22.56	0.2
200.0	0.13	53.12	200.0	0.5	0.3	28.35	0.6
300.0	0.32	51.61	300.0	0.7	0.6	37.97	0.9
400.0	0.24	99.02	400.0	0.9	1.0	48.68	1.3
500.0	0.19	115.61	500.0	0.8	1.4	60.20	1.6
600.0	0.35	147.34	600.0	0.5	1.7	74.92	1.7
700.0	0.75	172.03	700.0	-0.5	1.9	103.20	2.0
800.0	1.15	184.30	800.0	-2.1	1.9	137.17	2.9
900.0	1.26	186.10	900.0	-4.2	1.8	157.28	4.5
1,000.0	1.44	195.12	999.9	-6.5	1.3	168.59	6.6
1,100.0	1.59	198.59	1,099.9	-9.0	0.5	176.57	9.0
1,200.0	1.63	197.98	1,199.9	-11.7	-0.3	181.66	11.7
1,300.0	1.60	199.91	1,299.8	-14.4	-1.3	184.99	14.4
1,400.0	1.53	197.13	1,399.8	-17.0	-2.1	187.14	17.1
1,500.0	1.61	197.03	1,499.7	-19.6	-2.9	188.51	19.8
1,600.0	1.48	199.13	1,599.7	-22.1	-3.8	189.65	22.5

Scientific Drilling International, Inc.

SDI Standard Survey Report

Company:	MARBOB ENERGY	Local Co-ordinate Reference:	Well-Patterson B-52 Federal #3H
Project:	Lusk Bone Springs	TVD Reference:	WELL @ 0.0usft (Original Well Elev)
Site:	Lea County, NM	MD Reference:	WELL @ 0.0usft (Original Well Elev)
Well:	Patterson B-52 Federal #3H	North Reference:	Grid
Wellbore:	VH - Job #32K0810617	Survey Calculation Method:	Minimum Curvature
Design:	VH - Job #32K0810617	Database:	EDM-Regulatory

Survey							
Measured Depth (usft)	Inclination (°)	Azimuth (°)	True Vertical Depth	North/South (usft)	East/West (usft)	Closure Azimuth (°)	Closure Distance (usft)
1,700.0	1.41	197.38	1,699.7	-24.5	-4.6	190.51	24.9
1,800.0	1.17	199.65	1,799.6	-26.7	-5.3	191.17	27.2
1,900.0	0.96	200.70	1,899.6	-28.4	-5.9	191.74	29.0
2,000.0	0.89	193.59	1,999.6	-29.9	-6.4	192.03	30.6
2,100.0	0.64	193.39	2,099.6	-31.2	-6.7	192.09	32.0
2,200.0	0.54	178.81	2,199.6	-32.3	-6.8	191.92	33.0
2,300.0	0.41	187.07	2,299.6	-33.1	-6.8	191.69	33.8
2,400.0	0.28	160.84	2,399.6	-33.7	-6.8	191.43	34.4
2,500.0	0.14	105.28	2,499.6	-33.9	-6.6	191.03	34.6
2,600.0	0.21	70.32	2,599.6	-33.9	-6.3	190.56	34.5
2,700.0	0.32	61.30	2,699.6	-33.7	-5.9	189.94	34.2
2,800.0	0.51	25.82	2,799.6	-33.2	-5.5	189.36	33.6
2,900.0	0.64	15.08	2,899.6	-32.2	-5.1	189.04	32.6
3,000.0	0.81	1.59	2,999.6	-31.0	-5.0	189.10	31.4
3,100.0	0.81	359.73	3,099.6	-29.6	-4.9	189.49	30.0
3,200.0	0.82	350.22	3,199.6	-28.2	-5.1	190.21	28.6
3,300.0	0.70	343.11	3,299.5	-26.9	-5.4	191.30	27.4
3,400.0	0.61	341.49	3,399.5	-25.8	-5.7	192.50	26.4
3,500.0	0.47	315.43	3,499.5	-25.0	-6.2	193.88	25.7
3,600.0	0.43	307.17	3,599.5	-24.5	-6.8	195.44	25.4
3,700.0	0.42	296.80	3,699.5	-24.1	-7.4	197.05	25.2
3,800.0	0.46	267.61	3,799.5	-23.9	-8.1	198.73	25.3
3,900.0	0.46	271.23	3,899.5	-23.9	-8.9	200.43	25.5
4,000.0	0.42	267.11	3,999.5	-23.9	-9.7	202.02	25.8
4,100.0	0.47	268.63	4,099.5	-24.0	-10.5	203.57	26.2
4,200.0	0.44	262.55	4,199.5	-24.0	-11.3	205.08	26.5
4,300.0	0.49	265.08	4,299.5	-24.1	-12.1	206.56	27.0
4,400.0	0.52	264.34	4,399.5	-24.2	-12.9	208.12	27.4
4,500.0	0.72	222.75	4,499.5	-24.7	-13.8	209.21	28.3
4,600.0	0.74	249.25	4,599.5	-25.4	-14.8	210.30	29.4
4,700.0	0.66	249.23	4,699.5	-25.8	-16.0	211.75	30.4
4,800.0	0.61	256.92	4,799.5	-26.2	-17.0	213.09	31.2
4,900.0	0.61	271.66	4,899.5	-26.3	-18.1	214.57	31.9
4,925.0	0.59	253.96	4,924.5	-26.3	-18.4	214.91	32.1



Project: Lusk Bone Springs
Lea County, NM
Well: Patterson B-52 Federal #3H
Wellbore: VH - Job #32K0810617
Design: VH - Job #32K0810617

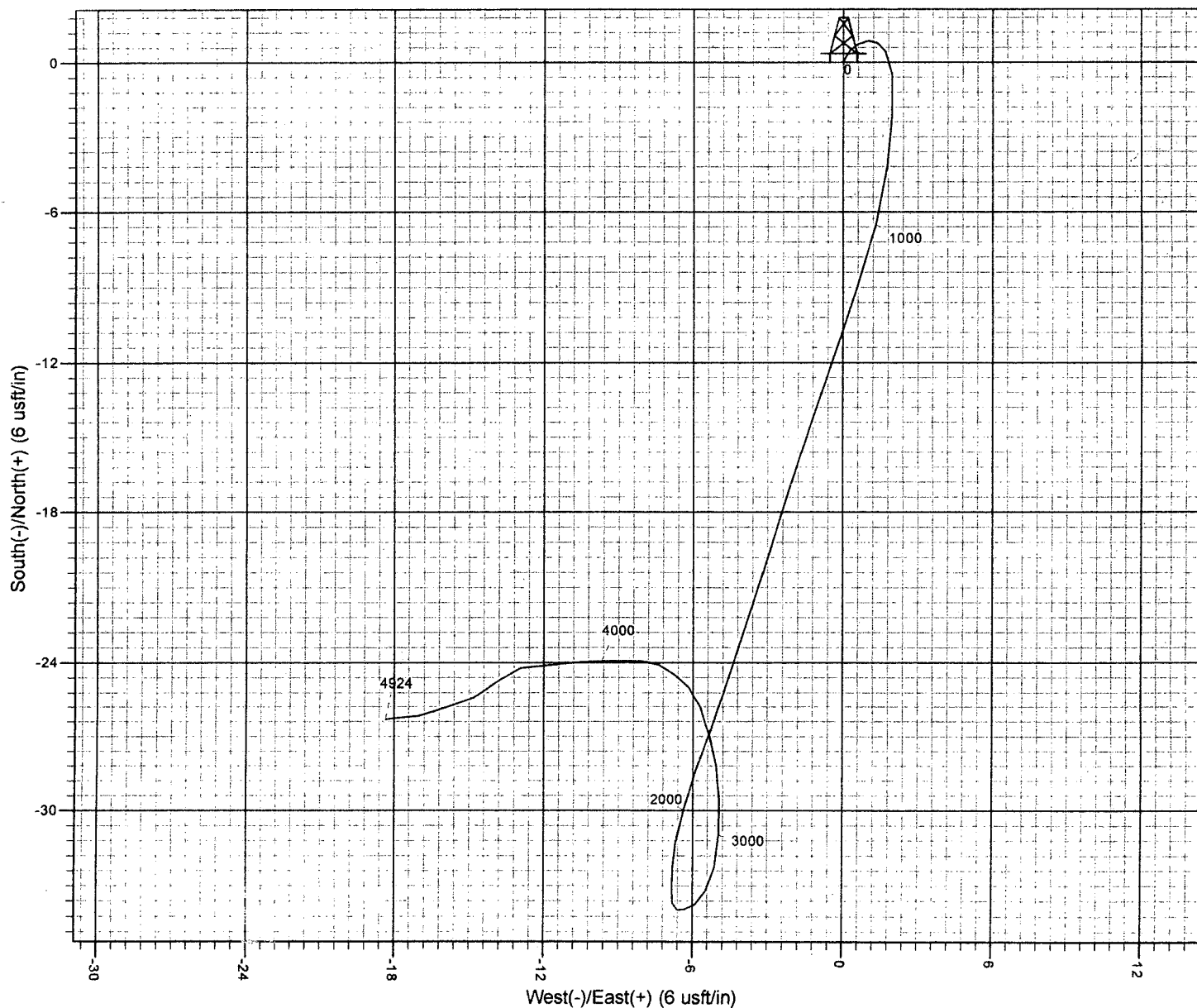


Azimuths to Grid North
True North: -0.30°
Magnetic North: 8.40°

Magnetic Field
Strength: 49706.6snT
Dip Angle: 60.83°
Date: 12/31/2004
Model: IGRF2000

WELL DETAILS: Patterson B-52 Federal #3H
WELL @ 0.0usft (Original Well Elev)
Ground Level: 0.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	614605.97	668931.19	32° 41' 18.416 N	103° 47' 3.286 W	



PROJECT DETAILS: Lusk Bone Springs
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

SITE DETAILS: Lea County, NM
Site Centre Latitude: 32° 41' 16.800 N
Longitude: 103° 47' 2.400 W
Positional Uncertainty: 0.0
Convergence: 0.30
Local North: Grid



Marbob

Lea County

Patterson B-52 Federal

#3

OH

SUR @ J-5-19s-32e, 2310/S & 1500/E
BHL @ O-5-19s-32e, 331/S & 1674/E
API # 30-025-39638

Survey: MWD #1

Pathfinder X & Y Survey Report

02 September, 2010



A Schlumberger Company



Pathfinder

Pathfinder X & Y Survey Report

PATHFINDER
A Schlumberger Company

Company: Marbob
Project: Lea County
Site: Patterson B-52 Federal
Well: #3
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
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	Patterson B-52 Federal
Site Position:	
From:	Map
Position Uncertainty:	0.00 ft
Northing:	614,605.870 ft
Easting:	668,931.100 ft
Slot Radius:	"
Latitude:	32° 41' 18.415 N
Longitude:	103° 47' 3.287 W
Grid Convergence:	0.30 °

Well	#3					
Well Position	+N/-S	0.00 ft	Northing:	614,605.700 ft	Latitude:	32° 41' 18.414 N
	+E/-W	0.00 ft	Easting:	668,931.100 ft	Longitude:	103° 47' 3.287 W
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	3,661.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	07/29/2010	7.81	60.62	48,991

Design	OH			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	185.08



Pathfinder

Pathfinder X & Y Survey Report

PATHFINDER
A Schlumberger Company

Company: Marbob
Project: Lea County
Site: Patterson B-52 Federal
Well: #3
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey Program Date 09/02/2010

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	4,900.00	GYRO (OH)	MWD	MWD - Standard
5,016.00	11,080.00	MWD #1 (OH)	MWD	MWD - Standard

Survey

MD (ft)	Inc (")	Azi (")	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
4,900.00	0.61	271.66	4,899.48	1,221.48	-26.26	-18.09	27.76	0.00	614,579.44	668,913.01
5,016.00	1.67	276.41	5,015.45	1,337.45	-26.06	-20.39	27.76	0.92	614,579.64	668,910.71
5,111.00	2.55	270.14	5,110.39	1,432.39	-25.90	-23.88	27.91	0.96	614,579.80	668,907.22
5,206.00	3.69	268.82	5,205.24	1,527.24	-25.95	-29.05	28.42	1.20	614,579.75	668,902.05
5,333.00	4.48	265.13	5,331.92	1,653.92	-26.46	-38.08	29.73	0.66	614,579.24	668,893.02
5,491.00	4.92	265.74	5,489.39	1,811.39	-27.49	-50.98	31.89	0.28	614,578.21	668,880.12
5,586.00	4.40	267.50	5,584.08	1,906.08	-27.95	-58.69	33.03	0.57	614,577.75	668,872.41
5,682.00	4.84	268.73	5,679.76	2,001.76	-28.20	-66.41	33.97	0.47	614,577.50	668,864.69
5,777.00	5.54	274.44	5,774.37	2,096.37	-27.93	-74.99	34.46	0.91	614,577.77	668,856.11
5,872.00	5.36	274.36	5,868.94	2,190.94	-27.24	-83.99	34.57	0.19	614,578.46	668,847.11
5,967.00	5.10	274.71	5,963.55	2,285.55	-26.56	-92.62	34.65	0.28	614,579.14	668,838.48
6,062.00	5.01	273.92	6,058.18	2,380.18	-25.92	-100.97	34.76	0.12	614,579.78	668,830.13
6,157.00	5.01	273.04	6,152.82	2,474.82	-25.42	-109.25	35.00	0.08	614,580.28	668,821.85
6,252.00	5.01	274.53	6,247.45	2,569.45	-24.87	-117.53	35.18	0.14	614,580.83	668,813.57
6,379.00	4.84	273.04	6,373.98	2,695.98	-24.15	-128.40	35.43	0.17	614,581.55	668,802.70
6,474.00	5.01	272.86	6,468.63	2,790.63	-23.73	-136.55	35.73	0.18	614,581.97	668,794.55
6,570.00	4.92	273.92	6,564.27	2,886.27	-23.24	-144.84	35.98	0.13	614,582.46	668,786.26
6,665.00	4.84	274.00	6,658.93	2,980.93	-22.68	-152.91	36.13	0.08	614,583.02	668,778.19
6,760.00	4.57	273.04	6,753.61	3,075.61	-22.20	-160.68	36.34	0.30	614,583.50	668,770.42
6,855.00	4.66	272.51	6,848.30	3,170.30	-21.83	-168.32	36.65	0.10	614,583.87	668,762.78
6,951.00	4.48	274.62	6,944.00	3,266.00	-21.36	-175.95	36.86	0.26	614,584.34	668,755.15



Pathfinder

Pathfinder X & Y Survey Report

PATHFINDER
A Schlumberger Company

Company: Marbob
Project: Lea County
Site: Patterson B-52 Federal
Well: #3
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
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)
7,046.00	4.66	273.83	7,038.69	3,360.69	-20.80	-183.50	36.97	0.20	614,584.90	668,747.60
7,096.83	5.01	273.55	7,089.34	3,411.34	-20.53	-187.77	37.07	0.69	614,585.17	668,743.33
B-52(Orthodox Pt)										
7,110.00	5.10	273.48	7,102.46	3,424.46	-20.46	-188.93	37.11	0.69	614,585.24	668,742.17
7,237.00	2.29	273.83	7,229.18	3,551.18	-19.95	-197.10	37.32	2.21	614,585.75	668,734.00
7,300.00	0.88	275.85	7,292.16	3,614.16	-19.81	-198.84	37.34	2.24	614,585.89	668,732.26
7,396.00	0.18	327.09	7,388.15	3,710.15	-19.61	-199.65	37.21	0.81	614,586.09	668,731.45
7,491.00	0.88	269.79	7,483.15	3,805.15	-19.49	-200.46	37.16	0.84	614,586.21	668,730.64
7,587.00	1.49	242.63	7,579.13	3,901.13	-20.06	-202.31	37.90	0.85	614,585.64	668,728.79
7,682.00	0.79	250.19	7,674.11	3,996.11	-20.85	-204.02	38.84	0.75	614,584.85	668,727.08
7,777.00	0.44	154.30	7,769.11	4,091.11	-21.40	-204.48	39.43	0.99	614,584.30	668,726.62
7,873.00	1.23	237.62	7,865.10	4,187.10	-22.29	-205.19	40.37	1.31	614,583.41	668,725.91
7,967.00	1.67	261.52	7,959.07	4,281.07	-23.03	-207.40	41.30	0.79	614,582.67	668,723.70
8,063.00	0.70	283.85	8,055.05	4,377.05	-23.10	-209.35	41.54	1.10	614,582.60	668,721.75
8,158.00	0.88	13.23	8,150.04	4,472.04	-22.25	-209.75	40.73	1.18	614,583.45	668,721.35
8,254.00	0.97	17.28	8,246.03	4,568.03	-20.75	-209.34	39.21	0.12	614,584.95	668,721.76
8,349.00	0.44	270.75	8,341.02	4,663.02	-19.98	-209.46	38.45	1.24	614,585.72	668,721.64
8,444.00	0.53	212.39	8,436.02	4,758.02	-20.35	-210.06	38.87	0.50	614,585.35	668,721.04
8,542.00	0.53	125.03	8,534.02	4,856.02	-20.99	-209.93	39.50	0.75	614,584.71	668,721.17
8,635.00	1.23	117.82	8,627.01	4,949.01	-21.70	-208.70	40.10	0.76	614,584.00	668,722.40
8,730.00	1.14	119.58	8,721.99	5,043.99	-22.65	-206.98	40.88	0.10	614,583.05	668,724.12
8,757.00	1.08	108.80	8,748.98	5,070.98	-22.86	-206.50	41.06	0.80	614,582.84	668,724.60
8,789.00	1.14	114.13	8,780.98	5,102.98	-23.09	-205.93	41.23	0.37	614,582.61	668,725.17
8,821.00	3.17	158.43	8,812.95	5,134.95	-24.04	-205.31	42.13	7.77	614,581.66	668,725.79
8,853.00	7.39	164.58	8,844.81	5,166.81	-26.85	-204.44	44.85	13.29	614,578.85	668,726.66
8,885.00	10.82	162.47	8,876.40	5,198.40	-31.70	-202.98	49.55	10.77	614,574.00	668,728.12
8,916.00	13.01	165.11	8,906.73	5,228.73	-37.85	-201.21	55.51	7.28	614,567.85	668,729.89



Pathfinder

Pathfinder X & Y Survey Report



A Schlumberger Company

Company: Marbob
Project: Lea County
Site: Patterson B-52 Federal
Well: #3
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
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)
8,948.00	16.62	169.94	8,937.66	5,259.66	-45.84	-199.49	63.32	11.91	614,559.86	668,731.61
8,980.00	20.58	178.29	8,967.99	5,289.99	-55.97	-198.52	73.33	14.88	614,549.73	668,732.58
9,012.00	22.42	179.70	8,997.76	5,319.76	-67.69	-198.32	84.99	5.97	614,538.01	668,732.78
9,043.00	22.77	178.99	9,026.39	5,348.39	-79.60	-198.18	96.84	1.43	614,526.10	668,732.92
9,075.00	26.82	177.59	9,055.43	5,377.43	-93.01	-197.77	110.16	12.79	614,512.69	668,733.33
9,107.00	30.69	176.27	9,083.48	5,405.48	-108.38	-196.93	125.39	12.25	614,497.32	668,734.17
9,139.00	32.92	176.97	9,110.68	5,432.68	-125.21	-195.94	142.07	6.97	614,480.49	668,735.16
9,171.00	35.61	178.20	9,137.13	5,459.13	-143.20	-195.19	159.92	8.77	614,462.50	668,735.91
9,202.00	39.83	178.73	9,161.64	5,483.64	-162.16	-194.69	178.76	13.65	614,443.54	668,736.41
9,233.00	43.53	177.76	9,184.79	5,506.79	-182.76	-194.05	199.22	12.12	614,422.94	668,737.05
9,265.00	45.55	176.36	9,207.60	5,529.60	-205.17	-192.89	221.44	7.02	614,400.53	668,738.21
9,297.00	48.45	176.45	9,229.42	5,551.42	-228.52	-191.43	244.58	9.06	614,377.18	668,739.67
9,329.00	52.67	177.59	9,249.74	5,571.74	-253.20	-190.15	269.04	13.47	614,352.50	668,740.95
9,360.00	56.10	179.43	9,267.79	5,589.79	-278.38	-189.50	294.07	12.07	614,327.32	668,741.60
9,392.00	58.74	181.02	9,285.03	5,607.03	-305.35	-189.61	320.94	9.25	614,300.35	668,741.49
9,424.00	62.96	181.83	9,300.61	5,622.61	-333.28	-190.31	348.82	13.37	614,272.42	668,740.79
9,456.00	67.01	181.19	9,314.14	5,636.14	-362.26	-191.07	377.76	12.79	614,243.44	668,740.03
9,487.00	70.35	180.84	9,325.41	5,647.41	-391.13	-191.58	406.56	10.83	614,214.57	668,739.52
9,519.00	74.57	180.58	9,335.05	5,657.05	-421.63	-191.96	436.97	13.21	614,184.07	668,739.14
9,551.00	78.79	180.31	9,342.42	5,664.42	-452.76	-192.20	468.00	13.21	614,152.94	668,738.90
9,583.00	80.90	180.49	9,348.06	5,670.06	-484.26	-192.42	499.40	6.62	614,121.44	668,738.68
9,615.00	82.75	180.58	9,352.61	5,674.61	-515.93	-192.72	530.97	5.79	614,089.77	668,738.38
9,646.00	84.50	180.49	9,356.05	5,678.05	-546.74	-193.01	561.68	5.65	614,058.96	668,738.09
9,678.00	84.59	180.40	9,359.10	5,681.10	-578.59	-193.25	593.43	0.40	614,027.11	668,737.85
9,710.00	84.59	180.67	9,362.11	5,684.11	-610.45	-193.55	625.19	0.84	613,995.25	668,737.55
9,741.00	84.15	180.49	9,365.15	5,687.15	-641.30	-193.86	655.94	1.53	613,964.40	668,737.24
9,773.00	85.56	180.84	9,368.02	5,690.02	-673.16	-194.23	687.72	4.54	613,932.54	668,736.87



Pathfinder

Pathfinder X & Y Survey Report



A Schlumberger Company

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Well: #3
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Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
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)
9,805.00	86.79	180.67	9,370.16	5,692.16	-705.09	-194.65	719.56	3.88	613,900.61	668,736.45
9,837.00	88.02	180.84	9,371.61	5,693.61	-737.05	-195.08	751.43	3.88	613,868.65	668,736.02
9,869.00	88.11	180.46	9,372.69	5,694.69	-769.03	-195.44	783.32	1.22	613,836.67	668,735.66
9,937.00	89.69	180.81	9,373.99	5,695.99	-837.01	-196.19	851.10	2.38	613,768.69	668,734.91
10,032.00	89.60	180.05	9,374.58	5,696.58	-932.01	-196.91	945.78	0.81	613,673.69	668,734.19
10,127.00	90.84	179.70	9,374.22	5,696.22	-1,027.01	-196.70	1,040.39	1.36	613,578.69	668,734.40
10,254.00	88.99	179.08	9,374.40	5,696.40	-1,153.99	-195.35	1,166.76	1.54	613,451.71	668,735.75
10,350.00	89.34	177.59	9,375.80	5,697.80	-1,249.94	-192.56	1,262.08	1.59	613,355.76	668,738.54
10,445.00	89.52	176.26	9,376.75	5,698.75	-1,344.79	-187.46	1,356.11	1.41	613,260.91	668,743.64
10,540.00	90.57	175.22	9,376.67	5,698.67	-1,439.53	-180.40	1,449.85	1.56	613,166.17	668,750.70
10,636.00	90.40	177.94	9,375.86	5,697.86	-1,535.35	-174.68	1,544.78	2.84	613,070.35	668,756.42
10,731.00	89.43	180.14	9,376.00	5,698.00	-1,630.33	-173.09	1,639.25	2.53	612,975.37	668,758.01
10,795.00	88.11	180.49	9,377.38	5,699.38	-1,694.31	-173.44	1,703.01	2.13	612,911.39	668,757.66
10,922.00	87.76	180.67	9,381.95	5,703.95	-1,821.22	-174.72	1,829.54	0.31	612,784.48	668,756.38
11,032.00	88.11	179.26	9,385.92	5,707.92	-1,931.14	-174.66	1,939.02	1.32	612,674.56	668,756.44
11,079.23	88.11	179.26	9,387.47	5,709.47	-1,978.34	-174.05	1,985.98	0.00	612,627.36	668,757.05
PBHL 3										
11,080.00	88.11	179.26	9,387.50	5,709.50	-1,979.11	-174.04	1,986.75	0.00	612,626.59	668,757.06

BHL-11080.00'MD,88.11°INC,179.26°AZI, 9387.50'TVD, 1986.75°VS, -179.11°N, -174.04°E

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
B-52(Orthodox Pt)	0.00	0.00	7,090.00	-20.00	-180.00	614,585.700	668,751.100	32° 41' 18.225 N	103° 47' 5.394 W
- survey misses target center by 7.82ft at 7096.83ft MD (7089.34 TVD, -20.53 N, -187.77 E)									
- Point									

Survey: 2310' FGL, 1500' FEL
EOL: 331' EOL 1274' FEL



Pathfinder

Pathfinder X & Y Survey Report



A Schlumberger Company

Company: Marbob
Project: Lea County
Site: Patterson B-52 Federal
Well: #3
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well #3
TVD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
MD Reference: Well#2 @ 3678.00ft (17' KB Correction Patriot #6)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Midland Database

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,080.00	9,387.50	-1,979.11	-174.04	BHL-11080.00'MD,88.11°INC,179.26°AZI, 9387.50'TVD, 1986.75°VS, -

Checked By: _____ Approved By: _____ Date: _____