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PATHFINDER

An Operating Unit of Smith International, Inc.

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NMOCD ARTESIA

DIRECTIONAL SURVEY REPORT

MARBOB ENERGY CORPORATION
SRO STATE UNIT COM #3H (PILOT HOLE)
EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

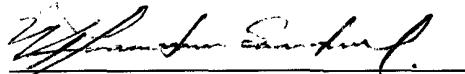
Pathfinder Energy Services, Inc.
6213 W. Interstate 20 • Midland, TX • 79706
(432) 681-6000

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JOHN OVERTON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 01/15/10 TO 01/18/10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MARBOB ENERGY CORPORATION
SRO STATE UNIT COM #3H (PILOT HOLE)
EDDY COUNTY, NM
RIG: PATRIOT 2
9. SURVEY CERTIFIED FROM: 6423 TO 9329 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 80.21 FEET ON A BEARING OF 270.41 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 9468 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 01/15/2010
Date Completed: 01/18/2010

MARBOB ENERGY
SRO STATE UNIT COM #3H - PILOT HOLE
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT #2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: MAGID IBRAHIM
JOHN OVERTON

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.2521886 N LON: 104.770562 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 566523.4000 Y: 381192.1000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.87° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 22.00' Kelly Bushing To Ground
Altitude: 3126.00' Ground To MSL

Measured Depth	9468.00	(feet)
Inclination	1.32	(deg)
Azimuth	242.34	(deg)
True Vertical Depth	9466.72	(feet)
Vertical Section	0.57	(feet)
Survey X cord	566443.19	(feet)
Survey Y cord	381192.67	(feet)
Survey Lat	32.04783218 N	(deg)
Survey Lon	104.11888559 W	(deg)
Rectangular Corr. N/S	0.57 N	(feet)
Rectangular Corr. E/W	80.21 W	(feet)
Closure Distance	80.21	(feet)
Direction of Closure	270.41	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY
SRO STATE UNIT COM #3H - PILOT HOLE
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT #2
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: MAGID IBRAHIM
JOHN OVERTON

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.252.1886 N LON: 104.7.7.0562 W
Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 566523.4000 Y: 381192.1000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.87° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 22.00' Kelly Bushing To Ground
Altitude: 3126.00' Ground To MSL

Survey Calculations by RX5 V6.02B using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
TIE IN ASSUMING VERTICAL AT 6323' MD.										
6323.00	0.00	0.00	6323.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
6423.00	2.46	234.85	6422.97	100.00	-1.24	1.24 S	1.76 W	2.15@	234.85	2.46
6505.00	1.23	247.98	6504.93	82.00	-2.58	2.58 S	4.01 W	4.77@	237.25	1.58
6598.00	1.67	261.98	6597.90	93.00	-3.14	3.14 S	6.28 W	7.02@	243.41	0.60
6692.00	2.02	264.03	6691.85	94.00	-3.51	3.51 S	9.28 W	9.92@	249.31	0.38
6785.00	2.46	285.85	6784.78	93.00	-3.13	3.13 S	12.83 W	13.21@	256.29	1.02
6880.00	1.58	292.91	6879.72	95.00	-2.06	2.06 S	16.00 W	16.13@	262.65	0.96
6974.00	2.37	290.20	6973.66	94.00	-0.89	0.89 S	19.02 W	19.04@	267.32	0.85
7069.00	0.88	262.25	7068.62	95.00	-0.31	0.31 S	21.58 W	21.59@	269.18	1.73
7155.00	1.67	259.57	7154.60	86.00	-0.62	0.62 S	23.47 W	23.48@	268.48	0.92
7257.00	2.73	253.08	7256.52	102.00	-1.60	1.60 S	27.26 W	27.30@	266.64	1.07
7351.00	0.97	329.30	7350.48	94.00	-1.57	1.57 S	29.80 W	29.85@	266.99	2.84
7447.00	1.06	322.50	7446.47	96.00	-0.16	0.16 S	30.76 W	30.76@	269.69	0.16
7541.00	1.14	278.33	7540.45	94.00	0.66	0.66 N	32.21 W	32.22@	271.17	0.88
7635.00	1.93	298.53	7634.42	94.00	1.55	1.55 N	34.53 W	34.57@	272.57	1.01
7728.00	2.11	292.90	7727.36	93.00	2.97	2.97 N	37.48 W	37.60@	274.52	0.29
7791.00	1.58	300.55	7790.32	63.00	3.86	3.86 N	39.30 W	39.49@	275.61	0.93
7823.00	1.23	307.88	7822.32	32.00	4.29	4.29 N	39.95 W	40.18@	276.13	1.23
7917.00	1.06	313.62	7916.30	94.00	5.51	5.51 N	41.38 W	41.74@	277.59	0.22
8010.00	0.79	301.92	8009.28	93.00	6.45	6.45 N	42.54 W	43.03@	278.62	0.35
8104.00	1.23	248.27	8103.27	94.00	6.41	6.41 N	44.03 W	44.50@	278.29	1.06
8198.00	1.49	254.13	8197.25	94.00	5.71	5.71 N	46.14 W	46.49@	277.05	0.31
8292.00	2.29	249.15	8291.19	94.00	4.70	4.70 N	49.07 W	49.30@	275.48	0.87
8388.00	2.02	249.11	8387.12	96.00	3.42	3.42 N	52.45 W	52.56@	273.73	0.28

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY
SRO STATE UNIT COM #3H - PILOT HOLE
EDDY COUNTY, NEW MEXICO
RIG:PATRIOT #2

Page 02/02

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
8481.00	1.76	263.26	8480.08	93.00	2.67	2.67 N	55.40 W	55.46@	272.76	0.57
8577.00	1.85	283.15	8576.03	96.00	2.85	2.85 N	58.37 W	58.44@	272.79	0.66
8671.00	1.93	290.48	8669.98	94.00	3.74	3.74 N	61.33 W	61.44@	273.49	0.27
8765.00	1.49	286.54	8763.94	94.00	4.65	4.65 N	63.98 W	64.15@	274.15	0.48
8860.00	1.49	275.59	8858.90	95.00	5.12	5.12 N	66.40 W	66.59@	274.41	0.30
8953.00	1.49	267.50	8951.87	93.00	5.18	5.18 N	68.81 W	69.00@	274.31	0.23
9048.00	1.41	255.53	9046.84	95.00	4.84	4.84 N	71.17 W	71.34@	273.89	0.33
9141.00	1.32	249.36	9139.82	93.00	4.17	4.17 N	73.29 W	73.40@	273.26	0.19
9235.00	1.49	239.77	9233.79	94.00	3.18	3.18 N	75.35 W	75.42@	272.41	0.31
9329.00	1.32	242.34	9327.76	94.00	2.06	2.06 N	77.37 W	77.40@	271.52	0.19
STRAIGHT LINE PROJECTION TO BIT AT 9468'MD.										
9468.00	1.32	242.34	9466.72	139.00	0.57	0.57 N	80.21 W	80.21@	270.41	0.00



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	Marbob Energy		
LEASE / WELL No.:	SRO STATE UNIT COM	#3H	
WELL LOCATION:	Wildcat Hay Hollow, Bone Spring		
COUNTY / STATE / COUNTRY:	Eddy	NM	USA
RIG:	Patriot #2		
API WELL No:	30-015-37422		
JOB No:	101009684-WT-WT		
P.O. / AFE No.	N/A		
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.88°	LWD Calculated:	7.87°
		Agreed Upon:	7.87°
X =	566523.400000	Feet	Y = 381192.100000
			Feet
SITE LATITUDE:	32° 2' 52.19" N	SITE LONGITUDE:	104° 7' 7.06" W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐ ZONE:		
PROPOSED DRIFT DIRECTION:	269.56°		
KELLY BUSHING ELEVATION:	22'		
ALTITUDE:	3126	Feet	WATER DEPTH: N/A
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	6000		
DRIFT ANGLE:	1.47		
DRIFT DIRECTION:	203.5		
TRUE VERTICAL DEPTH:	5999.32		
VERTICAL SECTION:	-6.09		
RECTANGULAR COORDINATE (N / S) :	-9.86		
RECTANGULAR COORDINATE (E / W) :	6.17		
CLOSURE DISTANCE / DIRECTION:	0'	0°	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):			
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	6104	TOTAL DEPTH:	11560'
KICKOFF ANGLE:	0°	MAX ANGLE:	90°

PES Engineers: John Overton

**Signature of both field engineers required if applicable

Directional Driller: Jim Snoddy

DATE: 15-Jan-2010

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
SRO STATE COM #3H
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT 2

Thu Jan 14 17:30:32 2010

Coordinates

Latitude: 32.047830 N (32 deg. 2 min. 52.1886 sec.)
Longitude: 104.118627 W (-104 deg. 7 min. 7.0562 sec.)
Elevation: 3148.00 feet.
Calculation Date: Dec/31/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 59.9791 degrees
Total Magnetic Field: 0.48626 gauss
Magnetic Declination: 7.982883 degrees
Horizontal Intensity: 0.243286 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.982883 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 566523.4000 feet
Y: 381192.1000 feet
True to Grid: (convergence) -0.113930 degrees
Magnetic to Grid: 7.868954 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.868954 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

Field

MARBOB ENERGY
SRO STATE UBIT COM 3H
WILDCAT HAY HOLLOW; BONE SPRING
Rig: PATRIOT #2

Fri Jan 15 12:02:26 2010

Coordinates

Latitude: 32.047830 N (32 deg. 2 min. 52.1886 sec.)
Longitude: 104.118627 W (-104 deg. 7 min. 7.0562 sec.)
Elevation: 3148.00 feet.
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address MARBOB ENERGY CORP PO BOX 227 ARTESIA, NM 882110227		2. OGRID Number 14049
		3. API Number 30-015-37422
4. Property Code 37898	5. Property Name SRO STATE UNIT COM	6. Well No. 101H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
A	18	26S	28E	A	660	N	330	E	EDDY

8. Pool Information

HAY HOLLOW, BONE SPRING	30215
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Additional Well Information

9. Work Type New Well	10. Well Type OIL	11. Cable/ Rotary	12. Lease Type State	13. Ground Level Elevation 3126
14. Multiple N	15. Proposed Depth 6600	16. Formation Bone Spring	17. Contractor	18. Spud Date 12/27/2009
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water
Pit: Linear Synthetic ☐ mls thick Clay ☐ Pit Volume: bbls Drilling Method: Fresh Water ☒ Brine ☐ Diesel/Oil-based ☐ Gas/Air ☐ Closed Loop System ☐				

19. Proposed Casing and Cement Program

Type	Hole Size	Casing Type	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13 375	48	325	325	0
Intl	12.25	9 625	36	2300	800	0
Prod	7.875	5.5	17	11500	900	2000

Casing/Cement Program: Additional Comments

DRILL 17 1/2 HOLE WITH FRESH WATER TO 325'. RUN 13 3/8 48# H-40 CASING AND CEMENT TO SURFACE. DRILL 12 1/4" HOLE WITH BRINE WATER TO 2300' RUN 9 5/8 36# J-55 AND CEMENT TO SURFACE. DRILL 7 7/8" HOLE WITH CUT BRINE TO 9200', RUN ELECTRONIC LOGS THEN PLUG WELL BACK AND DRILL HORIZONTAL @ TVD 6600' TO NEW BHL. RUN 7000' OF 5 1/2" 17# N-80 AND CEMENT TO 2000'.

Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	3000	3000	CAMERON

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

I further certify that the drilling pit will be constructed according to NMOC guidelines ☐ a general permit ☐ or an (attached) alternative OCD-approved plan ☐.

Printed Name: Electronically filed by Diana Briges

Title: Production Manager

Email Address: production@marbob.com

Date: 12/3/2009

Phone: 575-748-3303

OIL CONSERVATION DIVISION

Approved By: Jacqueta Reeves

Title: District Geologist

Approved Date: 12/15/2009

Expiration Date: 12/15/2011