



An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

MARBOB ENERGY CORPORATION

NOOSE FEDERAL 6

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

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

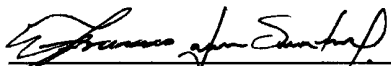
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) RAFAEL DONARUMMA
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 09/26/09 TO 10/02/09
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
NOOSE FEDERAL 6
EDDY COUNTY, NM
RIG: TEACO 1

9. SURVEY CERTIFIED FROM: 2225 TO 4330 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 1979.82 FEET ON A BEARING OF 359.86 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 4376 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: 09/26/2009
Date Completed: 10/02/2009

MARBOB ENERGY CORPORATION
NOOSE FEDERAL #6 ST01
EDDY COUNTY, NEW MEXICO
Rig:TEACO #1
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:DONARUMMA
CANO

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.36.37.7987 N LON:104.27.43.7242 W
SRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 460335.7000 Y: 585835.3000
North Aligned To:GRID NORTH
Total Magnetic Correction: 8.28° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 13.50' Kelly Bushing To Ground
Altitude:3509.00' Ground To MSL

Measured Depth	4376.00	(feet)
Inclination	90.04	(deg)
Azimuth	0.69	(deg)
True Vertical Depth	2650.29	(feet)
Vertical Section	1979.82	(feet)
Survey X cord	460330.75	(feet)
Survey Y cord	587815.12	(feet)
Survey Lat	32.61594177 N	(deg)
Survey Lon	104.46216949 W	(deg)
Rectangular Corr. N/S	1979.82 N	(feet)
Rectangular Corr. E/W	4.95 W	(feet)
Closure Distance	1979.82	(feet)
Direction of Closure	359.86	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY CORPORATION

NOOSE FEDERAL #6 ST01

EDDY COUNTY, NEW MEXICO

Rig:TEACO #1

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: DONARUMMA

CANO

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.36.37.7987 N LON:104.27.43.7242 W

Reference:NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 460335.7000 Y: 585835.3000

North Aligned To:GRID NORTH

Total Magnetic Correction: 8.28° EAST TO GRID

Vertical Section Plane: 0.00

Survey Vert. Reference: 13.50' Kelly Bushing To Ground

Altitude:3509.00' Ground To MSL

Survey Calculations by RX5 V5.11i 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 TO SCIENTIFIC GYRO @ 2180'MD.										
2180.00	0.75	335.34	2179.84	0.00	22.29	22.29 N	6.87 E	23.32@ 17.13	0.00	
THE FOLLOWING ARE PATHFINDER SURVEYS.										
2225.00	14.07	9.28	2224.37	45.00	27.98	27.98 N	7.63 E	29.00@ 15.26	29.90	
2256.00	18.64	10.87	2254.11	31.00	36.57	36.57 N	9.18 E	37.70@ 14.08	14.81	
2287.00	22.42	10.04	2283.13	31.00	47.26	47.26 N	11.14 E	48.56@ 13.26	12.23	
2318.00	25.59	9.91	2311.45	31.00	59.68	59.68 N	13.32 E	61.15@ 12.59	10.23	
2349.00	27.35	9.16	2339.20	31.00	73.31	73.31 N	15.61 E	74.95@ 12.02	5.78	
2380.00	29.46	9.59	2366.46	31.00	87.86	87.86 N	18.01 E	89.68@ 11.59	6.84	
2411.00	32.45	9.66	2393.04	31.00	103.57	103.57 N	20.68 E	105.62@ 11.29	9.65	
2442.00	36.49	7.68	2418.60	31.00	120.92	120.92 N	23.31 E	123.14@ 10.91	13.52	
2473.00	39.75	5.37	2442.98	31.00	139.92	139.92 N	25.47 E	142.22@ 10.32	11.48	
2504.00	42.65	2.40	2466.31	31.00	160.29	160.29 N	26.84 E	162.52@ 9.50	11.28	
2535.00	44.93	0.18	2488.69	31.00	181.73	181.73 N	27.31 E	183.77@ 8.55	8.87	
2566.00	48.28	358.75	2509.98	31.00	204.25	204.25 N	27.09 E	206.04@ 7.56	11.31	
2597.00	51.70	358.59	2529.91	31.00	227.99	227.99 N	26.54 E	229.53@ 6.64	11.04	
2628.00	55.57	358.99	2548.29	31.00	252.94	252.94 N	26.02 E	254.28@ 5.87	12.53	
2659.00	59.00	358.80	2565.04	31.00	279.01	279.01 N	25.51 E	280.18@ 5.22	11.08	
2691.00	62.26	358.67	2580.73	32.00	306.89	306.89 N	24.90 E	307.90@ 4.64	10.19	
2722.00	65.33	358.50	2594.42	31.00	334.69	334.69 N	24.21 E	335.57@ 4.14	9.92	
2753.00	68.59	358.60	2606.55	31.00	363.21	363.21 N	23.49 E	363.97@ 3.70	10.52	
2784.00	71.84	359.27	2617.04	31.00	392.37	392.37 N	22.95 E	393.04@ 3.35	10.68	
2815.00	74.04	359.32	2626.13	31.00	422.00	422.00 N	22.58 E	422.60@ 3.06	7.10	
2846.00	75.80	359.09	2634.20	31.00	451.93	451.93 N	22.17 E	452.47@ 2.81	5.72	

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY CORPORATION
NOOSE FEDERAL #6 ST01
EDDY COUNTY, NEW MEXICO
RIG:TEACO #1

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)
2877.00	78.17	358.73	2641.18	31.00	482.12	482.12 N	21.59 E	482.61@	2.56	7.73
2908.00	81.16	358.46	2646.74	31.00	512.61	512.61 N	20.84 E	513.03@	2.33	9.68
2939.00	85.03	358.54	2650.47	31.00	543.37	543.37 N	20.04 E	543.74@	2.11	12.49
2970.00	88.55	359.20	2652.20	31.00	574.31	574.31 N	19.43 E	574.64@	1.94	11.55
3001.00	89.96	358.71	2652.61	31.00	605.30	605.30 N	18.86 E	605.59@	1.78	4.81
3064.00	90.13	358.51	2652.56	63.00	668.28	668.28 N	17.34 E	668.51@	1.49	0.42
3127.00	90.04	358.47	2652.46	63.00	731.26	731.26 N	15.68 E	731.43@	1.23	0.16
3223.00	90.13	358.35	2652.32	96.00	827.22	827.22 N	13.01 E	827.32@	0.90	0.16
3318.00	90.04	358.46	2652.18	95.00	922.18	922.18 N	10.37 E	922.24@	0.64	0.15
3413.00	89.96	358.55	2652.18	95.00	1017.15	1017.15 N	7.89 E	1017.18@	0.44	0.13
3507.00	90.31	358.03	2651.96	94.00	1111.11	1111.11 N	5.08 E	1111.12@	0.26	0.67
3603.00	90.48	357.82	2651.30	96.00	1207.04	1207.04 N	1.61 E	1207.05@	0.08	0.28
3697.00	90.92	357.36	2650.15	94.00	1300.95	1300.95 N	2.34 W	1300.96@	359.90	0.68
3792.00	90.40	358.34	2649.05	95.00	1395.88	1395.88 N	5.91 W	1395.89@	359.76	1.17
3886.00	89.87	359.60	2648.83	94.00	1489.86	1489.86 N	7.60 W	1489.88@	359.71	1.45
3981.00	90.22	359.06	2648.76	95.00	1584.85	1584.85 N	8.71 W	1584.88@	359.69	0.68
4077.00	89.52	0.55	2648.98	96.00	1680.85	1680.85 N	9.04 W	1680.87@	359.69	1.71
4172.00	89.52	1.10	2649.77	95.00	1775.84	1775.84 N	7.67 W	1775.85@	359.75	0.58
4267.00	89.87	0.63	2650.28	95.00	1870.82	1870.82 N	6.23 W	1870.83@	359.81	0.62
4330.00	90.04	0.69	2650.33	63.00	1933.82	1933.82 N	5.51 W	1933.83@	359.84	0.29
STRAIGHT LINE PROJECTION TO THE BIT @ 4376'MD.										
4376.00	90.04	0.69	2650.29	46.00	1979.82	1979.82 N	4.95 W	1979.82@	359.86	0.00



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MARBOB ENERGY CORPORATION		
LEASE / WELL No.:	NOOSE FEDERAL	#6 ST1	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY COUNTY	NM	USA
RIG:	TEACO #1		
API WELL No:	30-015-37163		
JOB No:	101009010-WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	8.29	LWD Calculated:	8.283
		Agreed Upon:	8.28
X =	460335.700000	Feet	Y = 585835.300000
			Feet
SITE LATITUDE:	32.6105 N	SITE LONGITUDE:	104.462146 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NM EAST
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	13.5		
ALTITUDE:	3509	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	2180
DRIFT ANGLE:	0.75
DRIFT DIRECTION:	335.34
TRUE VERTICAL DEPTH:	2179.84
VERTICAL SECTION:	22.31
RECTANGULAR COORDINATE (N / S) :	22.29
RECTANGULAR COORDINATE (E / W) :	6.87
CLOSURE DISTANCE / DIRECTION:	
SURVEY CALCULATION METHOD:	AA ☐ MC ☒ RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC GYRO
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO

WELL PLAN

KICKOFF DEPTH:	2180	TOTAL DEPTH:	4376
KICKOFF ANGLE:	0.75	MAX ANGLE:	90

PES Engineers: DONARUMMA
CANO

**Signature of both field engineers required if applicable

Directional Driller: DONALD H.

DATE: 29-Sep-2009

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
NOOSE FEDERAL #6
EDDY COUNTY, NEWMEXICO
Rig:TEACO 1

Thu Sep 24 17:33:01 2009

Coordinates

Latitude: 32.610500 N (32 deg. 36 min. 37.7987 sec.)
Longitude: 104.462146 W (-104 deg. 27 min. 43.7242 sec.)
Elevation: 3509.00 feet.
Calculation Date: Sep/24/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.4467 degrees
Total Magnetic Field: 0.48949 gauss
Magnetic Declination: 8.214202 degrees
Horizontal Intensity: 0.241433 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.214202 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 460335.7000 feet
Y: 585835.3000 feet
True to Grid: (convergence) 0.069420 degrees
Magnetic to Grid: 8.283622 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.283622 Degr.