

An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

30-015-37466

**MARBOB ENERGY CORPORATION
CRAIG STATE COM #1H (PILOT HOLE)
EDDY COUNTY, NEW MEXICO**

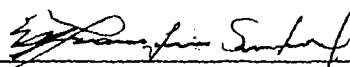
PREPARED BY: FRANCISCO SINISTERRA

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) MATT SHIPP
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 01/31/10 TO 02/01/10
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
CRAIG STATE COM #1H PILOT HOLE
EDDY COUNTY, NM
RIG: PATRIOT 6
9. SURVEY CERTIFIED FROM: 1165 TO 1847 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 17.77 FEET ON A BEARING OF 178.33 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 1898 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: 01/31/2010
Date Completed: 02/01/2010

MARBOB ENERGY
CRAIG STATE COM #1H
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT #6
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: M. SHIPP

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.4.47.7449 N LON: 104.15.13.0175 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 524690.5000 Y: 392811.4000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 16.50' Kelly Bushing To Ground
Altitude: 3345.00' Ground To MSL

Measured Depth	1898.00	(feet)
Inclination	2.90	(deg)
Azimuth	111.03	(deg)
True Vertical Depth	1897.21	(feet)
Vertical Section	-17.76	(feet)
Survey X cord	524947.05	(feet)
Survey Y cord	388374.45	(feet)
Survey Lat	32.06773117 N	(deg)
Survey Lon	104.25279837 W	(deg)
Rectangular Corr. N/S	17.76 S	(feet)
Rectangular Corr. E/W	0.52 E	(feet)
Closure Distance	17.77	(feet)
Direction of Closure	178.33	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Page 01/01
Tie-in Date: 01/31/2010
Date Completed: 02/01/2010

MARBOB ENERGY
CRAIG STATE COM #1H
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT #6
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: M. SHIPP

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.4.47.7449 N LON: 104.15.13.0175 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 524690.5000 Y: 392811.4000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 16.50' Kelly Bushing To Ground
Altitude: 3345.00' 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)
ASSUME STRAIGHT HOLE @ 1051' MD										
1051.00	0.00	0.00	1051.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS										
1165.00	2.64	259.56	1164.96	114.00	-0.48	0.48 S	2.58 W	2.63@	259.56	2.32
1229.00	3.34	255.91	1228.87	64.00	-1.20	1.20 S	5.84 W	5.96@	258.42	1.13
1292.00	2.55	249.88	1291.79	63.00	-2.13	2.13 S	8.94 W	9.19@	256.62	1.34
1356.00	1.76	233.50	1355.74	64.00	-3.20	3.20 S	11.06 W	11.52@	253.87	1.55
1419.00	1.76	205.62	1418.71	63.00	-4.65	4.65 S	12.26 W	13.11@	249.24	1.35
1483.00	1.58	190.63	1482.69	64.00	-6.40	6.40 S	12.85 W	14.35@	243.51	0.74
1546.00	2.11	179.94	1545.66	63.00	-8.41	8.41 S	13.01 W	15.49@	237.10	1.00
1610.00	2.02	153.40	1609.62	64.00	-10.60	10.60 S	12.50 W	16.39@	229.70	1.49
1673.00	2.81	129.43	1672.56	63.00	-12.58	12.58 S	10.81 W	16.58@	220.68	2.01
1737.00	3.61	117.63	1736.46	64.00	-14.51	14.51 S	7.81 W	16.48@	208.31	1.62
1801.00	3.34	107.74	1800.34	64.00	-16.01	16.01 S	4.25 W	16.56@	194.87	1.03
1847.00	2.90	111.03	1846.27	46.00	-16.83	16.83 S	1.89 W	16.94@	186.40	1.03
STRAIGHT-LINE PROJECTION TO BIT @ 1898' MD.										
1898.00										



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MARBOB ENERGY		
LEASE / WELL No.:	CRAIG STATE COM	#1H	
WELL LOCATION:	WILDCAT; BONE SPRING		
COUNTY / STATE / COUNTRY:	EDDY	NEW MEXICO	USA
RIG:	PATRIOT #6		
API WELL No:	30-015-37466		
JOB No:	101009771-WT-WT		
P.O. / AFE No.:			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	8	LWD Calculated:	8.04392
		Agreed Upon:	8
X =	52946.526600	Feet	Y = 388392.211900
			Feet
SITE LATITUDE:	32.067780N	SITE LONGITUDE:	104.252800W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐ ZONE: NEW MEXICO EAST		
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	3361.5		
ALTITUDE:	3345	Feet	WATER DEPTH: Feet

TIE-IN SURVEY

MEASURED DEPTH:	0 1051		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	0 1051		
VERTICAL SECTION:	0		
RECTANGULAR COORDINATE (N / S):	0		
RECTANGULAR COORDINATE (E / W):	0		
CLOSURE DISTANCE / DIRECTION:	0	0	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	N/A ASSUMED		
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO		

WELL PLAN

KICKOFF DEPTH:	1100	TOTAL DEPTH:	1900
KICKOFF ANGLE:	2.64	MAX ANGLE:	0

PES Engineers:

**Signature of both field engineers required if applicable

Directional Driller:

DATE: 11/31/10

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
CRAIG STATE COM #1H
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT 6

Fri Feb 05 15:33:50 2010

Coordinates

Latitude: 32.079929 N (32 deg. 4 min. 47.7449 sec.)
Longitude: 104.253616 W (-104 deg. 15 min. 13.0175 sec.)
Elevation: 3361.50 feet.
Calculation Date: Feb/05/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 59.9637 degrees
Total Magnetic Field: 0.48587 gauss
Magnetic Declination: 8.047643 degrees
Horizontal Intensity: 0.243200 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.047643 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 524690.5000 feet
Y: 392811.4000 feet
True to Grid: (convergence) -0.042338 degrees
Magnetic to Grid: 8.005305 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.005305 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
CRAIG STATE COM # 1H
WILDCAT; BONE SPRING

Sat Feb 06 17:11:29 2010

Coordinates

Latitude: 32.079929 N (32 deg. 4 min. 47.7449 sec.)
Longitude: 104.253616 W (-104 deg. 15 min. 13.0175 sec.)
Elevation: 3361.50 feet.
Calculation Date: Dec/31/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 59.9848 degrees
Total Magnetic Field: 0.48629 gauss
Magnetic Declination: 8.045345 degrees
Horizontal Intensity: 0.243255 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.045345 Degs

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 524690.5000 feet
Y: 392811.4000 feet
True to Grid: (convergence) -0.042338 degrees
Magnetic to Grid: 8.003007 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 8.003007 Degs.



An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

MARBOB ENERGY CORPORATION
CRAIG STATE COM #1H (HORIZONTAL)
EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

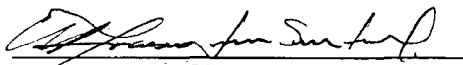


DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) MATT SHIPP
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 02/11/10 TO 02/17/10
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
CRAIG STATE COM #1H HORIZONTAL
EDDY COUNTY, NM
RIG: PATRIOT 6
9. SURVEY CERTIFIED FROM: 5548 TO 10319 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 4556.07 FEET ON A BEARING OF 89.57 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 10396 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: 02/11/2010
Date Completed: 02/17/2010

MARBOB ENERGY
CRAIG STATE COM # 1H - LATERAL
EDDY COUNTY, NM
Rig: PATRIOT #6
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: N. TVRDY
W. GRAHAM

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.4.47.7449 N LON: 104.15.13.0175 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 524690.5000 Y: 392811.4000
North Aligned To: GRID NORTH
Total Magnetic Correction: 8.00° EAST TO GRID
Vertical Section Plane: 89.92
Survey Vert. Reference: 16.50' Kelly Bushing To Ground
Altitude: 3345.00' Ground To MSL

Measured Depth	10396.00	(feet)
Inclination	86.17	(deg)
Azimuth	94.60	(deg)
True Vertical Depth	6166.11	(feet)
Vertical Section	4555.98	(feet)
Survey X cord	529246.44	(feet)
Survey Y cord	392845.43	(feet)
Survey Lat	32.08001258 N	(deg)
Survey Lon	104.23890629 W	(deg)
Rectangular Corr. N/S	34.03 N	(feet)
Rectangular Corr. E/W	4555.94 E	(feet)
Closure Distance	4556.07	(feet)
Direction of Closure	89.57	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY

CRAIG STATE COM # 1H - LATERAL

EDDY COUNTY, NM

Rig: PATRIOT #6

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: N. TVRDY
W. GRAHAM

Survey Horiz. Reference: WELLHEAD

Ref Coordinates: LAT: 32.4.47.7449 N LON: 104.15.13.0175 W

GRID Reference: NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 524690.5000 Y: 392811.4000

North Aligned To: GRID NORTH

Total Magnetic Correction: 8.00° EAST TO GRID

Vertical Section Plane: 89.92

Survey Vert. Reference: 16.50' Kelly Bushing To Ground

Altitude: 3345.00' 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 TO SCIENTIFIC DRILLING GYRO SURVEY @ 5500' MD.										
5500.00	2.22	223.09	5498.21	0.00	-29.32	66.48 S	29.23 W	72.62@	203.73	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
5548.00	5.45	87.98	5546.15	48.00	-27.68	67.08 S	27.58 W	72.53@	202.35	14.99
5574.00	13.45	83.03	5571.77	26.00	-23.44	66.67 S	23.34 W	70.64@	199.30	30.90
5606.00	16.97	82.12	5602.65	32.00	-15.11	65.58 S	15.02 W	67.27@	192.90	11.02
5637.00	20.75	79.78	5631.98	31.00	-5.22	63.98 S	5.13 W	64.19@	184.58	12.43
5668.00	23.65	77.71	5660.68	31.00	6.27	61.68 S	6.35 E	62.01@	174.12	9.69
5699.00	27.96	76.47	5688.58	31.00	19.42	58.66 S	19.50 E	61.81@	161.61	14.01
5730.00	32.62	76.42	5715.34	31.00	34.62	54.99 S	34.69 E	65.02@	147.75	15.03
5761.00	35.35	75.64	5741.04	31.00	51.44	50.81 S	51.51 E	72.35@	134.61	8.92
5792.00	37.46	75.34	5765.99	31.00	69.25	46.20 S	69.32 E	83.30@	123.68	6.83
5823.00	39.83	75.05	5790.20	31.00	87.97	41.25 S	88.03 E	97.22@	115.11	7.67
5854.00	41.94	75.10	5813.64	31.00	107.59	36.02 S	107.64 E	113.51@	108.50	6.81
5885.00	43.97	75.05	5836.32	31.00	128.01	30.58 S	128.05 E	131.65@	103.43	6.55
5916.00	46.17	75.46	5858.22	31.00	149.24	25.00 S	149.27 E	151.35@	99.51	7.16
5947.00	49.95	76.23	5878.93	31.00	171.60	19.36 S	171.63 E	172.72@	96.44	12.33
5978.00	53.90	76.44	5898.05	31.00	195.32	13.60 S	195.34 E	195.81@	93.98	12.75
6010.00	57.42	76.72	5916.09	32.00	221.02	7.47 S	221.03 E	221.16@	91.94	11.02
6042.00	59.71	76.81	5932.78	32.00	247.61	1.22 S	247.61 E	247.61@	90.28	7.16
6074.00	60.94	76.99	5948.62	32.00	274.70	5.08 N	274.69 E	274.74@	88.94	3.88
6105.00	61.82	76.55	5963.47	31.00	301.19	11.31 N	301.18 E	301.39@	87.85	3.10
6137.00	64.19	76.28	5978.00	32.00	328.92	18.01 N	328.89 E	329.38@	86.87	7.44
6169.00	67.80	76.18	5991.01	32.00	357.31	24.96 N	357.28 E	358.15@	86.00	11.29
6201.00	71.05	76.14	6002.26	32.00	386.41	32.13 N	386.36 E			

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY
CRAIG STATE COM # 1H - LATERAL
EDDY COUNTY, NM
RIG: PATRIOT #6

Page 02/03

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)
6264.00	73.95	76.21	6021.12	32.00	444.79	46.47 N	444.73 E	447.15@	84.03	4.12
6296.00	77.38	76.33	6029.04	32.00	474.92	53.83 N	474.84 E	477.88@	83.53	10.72
6328.00	80.99	76.75	6035.05	32.00	505.49	61.14 N	505.41 E	509.09@	83.10	11.35
6360.00	84.42	76.86	6039.11	32.00	536.40	68.39 N	536.30 E	540.65@	82.73	10.72
6391.00	86.61	76.64	6041.53	31.00	566.49	75.47 N	566.39 E	571.39@	82.41	7.10
6423.00	88.55	76.47	6042.88	32.00	597.59	82.90 N	597.48 E	603.20@	82.10	6.09
6455.00	91.71	78.21	6042.81	32.00	628.82	89.92 N	628.70 E	635.09@	81.86	11.27
6487.00	91.98	77.77	6041.78	32.00	660.11	96.57 N	659.98 E	667.01@	81.68	1.61
6518.00	91.45	79.32	6040.85	31.00	690.49	102.73 N	690.35 E	697.95@	81.54	5.28
6550.00	90.22	80.73	6040.39	32.00	722.01	108.27 N	721.86 E	729.93@	81.47	5.85
6582.00	90.22	80.15	6040.26	32.00	753.57	113.58 N	753.41 E	761.93@	81.43	1.81
6647.00	89.87	83.81	6040.21	65.00	817.94	122.65 N	817.77 E	826.91@	81.47	5.66
6742.00	88.29	84.95	6041.74	95.00	912.48	131.95 N	912.29 E	921.79@	81.77	2.05
6806.00	87.58	85.04	6044.04	64.00	976.20	137.53 N	976.01 E	985.65@	81.98	1.12
6870.00	87.23	84.61	6046.94	64.00	1039.88	143.30 N	1039.68 E	1049.51@	82.15	0.87
6902.00	87.76	84.53	6048.34	32.00	1071.71	146.32 N	1071.51 E	1081.45@	82.22	1.67
6965.00	89.08	85.93	6050.08	63.00	1134.47	151.56 N	1134.26 E	1144.34@	82.39	3.05
7029.00	89.25	86.09	6051.01	64.00	1198.32	156.01 N	1198.10 E	1208.22@	82.58	0.36
7092.00	89.52	86.28	6051.69	63.00	1261.18	160.20 N	1260.96 E	1271.09@	82.76	0.52
7156.00	89.34	85.99	6052.32	64.00	1325.04	164.52 N	1324.81 E	1334.98@	82.92	0.53
7220.00	89.52	86.12	6052.96	64.00	1388.89	168.92 N	1388.65 E	1398.89@	83.06	0.35
7283.00	89.08	85.79	6053.73	63.00	1451.73	173.36 N	1451.49 E	1461.81@	83.19	0.87
7379.00	89.34	86.86	6055.05	96.00	1547.53	179.52 N	1547.28 E	1557.66@	83.38	1.15
7505.00	88.37	89.05	6057.57	126.00	1673.42	184.01 N	1673.17 E	1683.26@	83.72	1.90
7632.00	88.81	89.07	6060.70	127.00	1800.37	186.09 N	1800.11 E	1809.71@	84.10	0.35
7760.00	88.99	89.05	6063.15	128.00	1928.33	188.19 N	1928.07 E	1937.24@	84.43	0.14
7887.00	89.60	89.11	6064.72	127.00	2055.31	190.23 N	2055.05 E	2063.83@	84.71	0.48
7982.00	88.37	91.39	6066.40	95.00	2150.28	189.82 N	2150.02 E	2158.38@	84.95	2.73

PathFinder Energy Services, Inc.

Survey Report

MARBOB ENERGY
CRAIG STATE COM # 1H - LATERAL
EDDY COUNTY, NM
RIG-PATRIOT #6

Page 03/03

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)
8046.00	88.11	91.07	6068.36	64.00	2214.24	188.45 N	2213.98 E	2221.98@	85.13	0.64
8109.00	88.20	91.66	6070.39	63.00	2277.18	186.95 N	2276.93 E	2284.59@	85.31	0.95
8205.00	88.81	91.88	6072.90	96.00	2373.10	183.98 N	2372.85 E	2379.97@	85.57	0.68
8332.00	89.52	92.39	6074.75	127.00	2499.99	179.25 N	2499.74 E	2506.16@	85.90	0.69
8458.00	89.34	93.07	6076.00	126.00	2625.83	173.25 N	2625.59 E	2631.30@	86.22	0.56
8585.00	87.67	93.00	6079.31	127.00	2752.60	166.53 N	2752.37 E	2757.40@	86.54	1.32
8712.00	88.81	93.23	6083.22	127.00	2879.34	159.63 N	2879.12 E	2883.54@	86.83	0.92
8839.00	88.81	93.22	6085.85	127.00	3006.10	152.49 N	3005.89 E	3009.76@	87.10	0.01
8965.00	88.55	93.96	6088.76	126.00	3131.81	144.60 N	3131.61 E	3134.95@	87.36	0.62
9060.00	88.37	94.36	6091.31	95.00	3226.51	137.71 N	3226.32 E	3229.26@	87.56	0.46
9156.00	88.55	95.01	6093.89	96.00	3322.15	129.87 N	3321.97 E	3324.51@	87.76	0.70
9282.00	87.58	95.51	6098.14	126.00	3447.53	118.33 N	3447.36 E	3449.39@	88.03	0.87
9346.00	87.85	95.60	6100.69	64.00	3511.17	112.14 N	3511.01 E	3512.80@	88.17	0.45
9473.00	87.41	93.03	6105.95	127.00	3637.67	102.59 N	3637.53 E	3638.98@	88.38	2.05
9505.00	86.61	93.22	6107.62	32.00	3669.58	100.85 N	3669.44 E	3670.83@	88.43	2.57
9632.00	86.17	93.52	6115.61	127.00	3796.10	93.40 N	3795.97 E	3797.12@	88.59	0.42
9759.00	84.94	93.98	6125.46	127.00	3922.43	85.12 N	3922.31 E	3923.24@	88.76	1.03
9854.00	86.26	94.39	6132.74	95.00	4016.89	78.21 N	4016.78 E	4017.54@	88.88	1.45
9949.00	86.61	94.41	6138.65	95.00	4111.41	70.93 N	4111.32 E	4111.93@	89.01	0.37
10076.00	86.44	94.81	6146.35	127.00	4237.75	60.74 N	4237.67 E	4238.11@	89.18	0.34
10203.00	86.79	95.01	6153.85	127.00	4364.05	49.89 N	4363.98 E	4364.27@	89.34	0.32
10319.00	86.17	94.60	6160.97	116.00	4479.41	40.19 N	4479.36 E	4479.54@	89.49	0.64
STRAIGHT LINE PROJECTION TO BIT @ 10396' MD.										
10396.00	86.17	94.60	6166.11	77.00	4555.98	34.03 N	4555.94 E	4556.07@	89.57	0.00

PATHFINDER

ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MARBOB ENERGY CORP.		
LEASE / WELL No.:	CRAIG STATE COM #1H		
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY COUNTY	NM	USA
RIG:	PATRIOT #6		
API WELL No:	30-015-37466		
JOB No:	101009771-WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	8	LWD Calculated:	8.04392
		Agreed Upon:	8
X =	52946.526600	Feet	Y = 388392.211900
			Feet
SITE LATITUDE:	32.067780N	SITE LONGITUDE:	104.252800W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	16.5		
ALTITUDE:	3345	Feet	WATER DEPTH:
			Feet

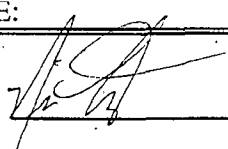
TIE-IN SURVEY

MEASURED DEPTH:	5500		
DRIFT ANGLE:	2.22		
DRIFT DIRECTION:	223.09		
TRUE VERTICAL DEPTH:	5498.21		
VERTICAL SECTION:	-29.33		
RECTANGULAR COORDINATE (N / S) :	-66.48		
RECTANGULAR COORDINATE (E / W) :	-29.23		
CLOSURE DISTANCE / DIRECTION:	72.62	203.74	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC DRILLING		
COPY OF TIE-IN SURVEY REPORT	☒ YES ☐ NO		

WELL PLAN

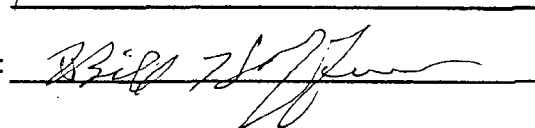
KICKOFF DEPTH:	5520	TOTAL DEPTH:	10378
KICKOFF ANGLE:	2.22	MAX ANGLE:	90

PES Engineers:

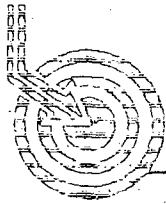


**Signature of both field engineers required if applicable

Directional Driller:



DATE:



Scientific Drilling

Hzspt dpqjd!Tvsf z!Sf qpsu

gs
NBSCPC

X f mtMpdbypo	FEEZ!DPVOUZ-IOFX !NFY.DP
X f mtObn f	DSBJHITUBUF!DPN!\$2I
Sjh!Obn f	QBUSJPUI!\$7
Tvsf z!Ebf	300121
Mbjwef	43/19!ef h
Opsu !Sf g sf odf	Hse!Opsu
Hse!Dpsf dypo	.1/15!ef h
Ef qu !Sf g sf odf	SLC
Dbrdvrbypo!Nf u pe	Njojn vn !Dvsbwf
Tf dypo!)WT*!Sf g	1/11O!)gt-!1/11F!)gt-!9: /: 3B{jn !)ef h*
Ef gojw !Tvsf z	GOBMPVUSVO!TVSWFZ
Pqf sbps	B/NBES.E

Dpn n f out



Scientific Drilling

Tvswf z!Sf qpsu

X fntObn f;		DSBJHITUBUFIDPNIS2I							
Tvswf z;		GOBMPVUSVOITVSWFZ							
Tvswf z!Ebf;		3008121							
NE	Jbd	B{jn	UME	WT	Opsu joh	Fbt joh	EMT	Drpt vsf !Ejt lbof	Drpt vsf !Bohrf
gr	efh	efh	gr	gr	gr	gr	efhQ211gr	gr	efh
1/11	1/11	1/11	1/11	1/11	1/11	1/11	.bwbje	1/11	1/11
211/11	1/61	337/23	211/11	.1/42	.1/41	.1/42	1/61	1/54	337/23
311/11	1/9:	349/66	2: :/: :	.2/3:	.2/12	.2/3:	1/53	2/74	343/11
411/11	2/23	351/: 5	3: :/: 9	.3/92	.2/9:	.3/91	1/34	4/49	347/19
511/11	2/86	353/: 3	4: :/: 5	.6/13	.4/16	.6/12	1/74	6/98	349/77
611/11	2/: 4	354/64	5: :/: 9:	.8/99	.5/61	.8/99	1/29	: /18	351/39
711/11	2/87	348/85	6: :/: 95	.21/79	.7/17	.21/79	1/36	23/39	351/52
811/11	2/: 1	349/39	7: :/: 8:	.24/4:	.8/86	.24/49	1/25	26/58	34: /: 2
911/11	2/98	359/27	8: :/: 85	.27/43	: /34	.27/42	1/44	29/85	351/59
: 11/11	3/22	371/38	9: :/: 79	.2: /75	.21/26	.2: /74	1/59	33/21	353/77
2111/11	3/73	377/82	: :/: /6:	.34/84	.21/6:	.34/83	1/69	36/: 9	356/: 5
2211/11	3/68	374/16	21: :/: /5:	.39/35	.21/: :	.39/33	1/28	41/3:	359/83
2311/11	3/91	365/: 7	22: :/: /49	.43/93	.22/: 1	.43/91	1/55	45/: 1	361/18
2411/11	3/3:	351/37	23: :/: /39	.47/: 3	.24/63	.47/: 1	1/93	4: /41	35: /98
2511/11	2/62	31: /19	24: :/: /34	.4: /41	.26/78	.4: /39	2/38	53/3:	359/36
2611/11	2/77	296/17	25: :/: /2:	.51/18	.29/38	.51/16	1/79	55/13	356/59
2711/11	3/14	261/66	26: :/: /25	.4: /44	.32/36	.4: /42	2/26	55/79	352/71
2811/11	4/39	229/72	27: :/: /15	.46/: 7	.35/27	.46/: 4	2/9:	54/3:	347/19
2911/11	4/26	221/84	28: 9/99	.41/99	.37/61	.41/96	1/57	51/78	33: /44
2: 11/11	3/52	222/98	29: 9/87	.37/48	.39/37	.37/44	1/86	49/73	333/: 8
3111/11	2/91	227/52	2: : 9/81	.34/12	.3: /85	.33/: 8	1/74	48/69	328/7:
3211/11	2/51	222/2:	31: 9/77	.31/58	.41/99	.31/54	1/53	48/13	324/5:
3311/11	2/12	213/63	32: 9/74	.29/58	.42/62	.29/54	1/54	47/61	321/43
3411/11	1/89	225/28	33: 9/73	.27/: :	.42/: 9	.27/: 5	1/3:	47/2:	318/: 2
3511/11	1/85	22: /43	34: 9/72	.26/91	.43/69	.26/87	1/19	47/2:	316/92
3611/11	1/49	232/11	35: 9/72	.25/: 7	.44/17	.25/: 2	1/47	47/38	315/38
3711/11	1/54	238/22	36: 9/72	.25/48	.44/57	.25/43	1/18	47/51	314/28
3811/11	1/51	248/35	37: 9/71	.24/95	.44/: 5	.24/8:	1/19	47/75	313/22
3911/11	1/49	256/8:	38: 9/71	.24/52	.45/59	.24/48	1/17	47/: 9	312/2:
3: 11/11	1/54	252/66	39: 9/71	.23/: :	.46/16	.23/: 6	1/16	48/47	311/38
4111/11	1/56	248/56	3: : 9/71	.23/61	.46/73	.23/56	1/15	48/85	2: : /37
4211/11	1/49	259/16	41: 9/6:	.23/17	.47/2:	.23/12	1/21	49/24	2: 9/47
4311/1									



Scientific Drilling

Tvswf z!Sf qpsu

X f mObn f ;		DSB.H!TUBUF!DPN!\$2I								
Tvswf z;		GOBMPVUSVOITVSWFZ								
Tvswf z!Ebf ;		3000121								
NE	jd	B{jn	UWE	WT	Opsu joh	Fbt joh	EMT	Drpt vsf !Ejt ubodf	Drpt vsf !Bohrf	
gu	efh	efh	gu	gu	gu	gu	efh0211gu	gu	efh	
4: 11/11	1/5:	329/34	49: 9/68	.23/19	.52/52	.23/13	1/18	54/23	2: 7/2:	
5111/11	1/69	327/84	4: : 9/68	.23/75	.53/26	.23/69	1/1:	54/: 9	2: 7/73	
5211/11	1/6:	326/73	51: 9/67	.24/36	.53/: 8	.24/2:	1/13	55/: 6	2: 8/17	
5311/11	1/75	313/51	52: 9/67	.24/87	.54/: 2	.24/81	1/26	56/: :	2: 8/44	
5411/11	1/74	314/91	53: 9/66	.25/2:	.55/: 3	.25/24	1/13	58/1:	2: 8/57	
5511/11	1/73	325/22	54: 9/65	.25/83	.56/97	.25/76	1/22	59/26	2: 8/83	
5611/11	1/88	352/86	55: 9/65	.26/72	.57/74	.26/66	1/47	5: /26	2: 9/55	
5711/11	1/84	343/: 1	56: 9/64	.27/83	.58/44	.27/76	1/23	61/29	2: : /49	
5811/11	1/98	328/22	57: 9/63	.28/7:	.59/43	.28/73	1/37	62/55	311/15	
5911/11	2/18	324/28	58: 9/61	.29/77	.5: /82	.29/6:	1/32	64/19	311/62	
5: 11/11	2/1:	318/89	59: 9/5:	.2: /72	.62/44	.2: /65	1/21	65/: 4	311/95	
6111/11	2/67	31: /76	5: : 9/57	.31/84	.64/46	.31/77	1/59	68/32	312/28	
6211/11	2/6:	321/63	61: 9/53	.33/23	.66/85	.33/15	1/15	6: /: 4	312/68	
6311/11	2/85	321/61	62: 9/49	.34/71	.69/35	.34/63	1/26	73/92	312/: :	
6411/11	2/: 3	323/58	63: 9/44	.36/38	.71/: 8	.36/2:	1/2:	76/: 8	313/56	
6511/11	2/97	325/27	64: 9/38	.38/1:	.74/83	.38/11	1/19	7: /31	313/: 7	
6611/11	3/33	334/1:	65: 9/32	.3: /44	.77/59	.3: /34	1/59	83/73	314/85	
6711/11	3/27	332/: :	66: 9/25	.42/: 2	.7: /41	.42/93	1/19	87/36	315/77	
6811/11	3/11	334/9:	67: 9/18	.45/4:	.82/: 6	.45/3:	1/28	8: /82	316/59	
6911/11	3/29	354/: 7	68: 9/12	.48/42	.85/16	.48/32	1/86	93/98	317/79	
6: 11/11	3/96	34: /54	69: 8/: 2	.52/27	.87/26	.52/17	1/81	97/62	319/44	
7111/11	4/42	342/99	6: : 8/88	.56/69	.8: /2:	.56/58	1/72	: 2/43	31: /97	
7211/11	3/: 1	346/49	71: 8/73	.5: /: 5	.93/52	.5: /93	1/56	: 7/41	322/26	
7311/11	3/4:	364/18	72: 8/62	.65/13	.95/57	.64/: 1	1/: 7	211/2:	323/65	
7411/11	3/36	384/69	73: 8/54	.68/: 8	.95/: 5	.68/96	1/95	213/88	325/37	
7511/11	3/3:	385/65	74: 8/46	.72/: 3	.95/77	.72/92	1/16	215/93	327/24	
7611/11	3/21	385/58	75: 8/39	.76/86	.95/47	.76/74	1/2:	217/99	328/99	
7711/11	2/71	395/33	76: 8/34	.79/: 4	.94/98	.79/92	1/6:	219/5:	32: /48	
7811/11	2/96	396/46	77: 8/29	.82/95	.94/21	.82/84	1/36	21: /88	331/91	
7911/11	2/47	39: /3:	78: 8/25	.85/63	.93/39	.85/51	1/62	221		



Scientific Drilling

Tvswf z!Sf qpsu

X fntObn f;		DSB.HITUBUF!DPN!\$2I							
Tvswf z;		GDBMPVUSVO!TVSWFZ							
Tvswf z!Ebuf;		30908121							
NE	Jbd	B{jn	UWE	WT	Opsu joh	Fbt uoh	EMT	Drpt vsf !Ejt ubodf	Drpt vsf !Bohrf
gu	efh	efh	gu	gu	gu	gu	efh011gu	gu	efh
8811/11	1/86	: 1/26	87: 7/: 9	.98/36	.92/27	.98/25	1/68	22: /19	338/14
8911/11	1/36	233/5:	88: 7/: 9	.97/52	.92/39	.97/41	1/66	229/66	337/82
8: 11/11	1/46	26: /95	89: 7/: 9	.97/23	.92/7:	.97/12	1/33	229/73	337/58
9111/11	1/: 7	329/: 3	8: : 7/: 8	.97/65	.93/74	.97/54	1/95	22: /68	337/3:

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
CRAIG STATE COM #1H
EDDY COUNTY, NEW MEXICO
Rig: PATRIOT 6

Fri Feb 05 15:33:50 2010

Coordinates

Latitude: 32.079929 N (32 deg. 4 min. 47.7449 sec.)
Longitude: 104.253616 W (-104 deg. 15 min. 13.0175 sec.)
Elevation: 3361.50 feet.
Calculation Date: Feb/05/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 59.9637 degrees
Total Magnetic Field: 0.48587 gauss
Magnetic Declination: 8.047643 degrees
Horizontal Intensity: 0.243200 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.047643 Degr

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 524690.5000 feet
Y: 392811.4000 feet
True to Grid: (convergence) -0.042338 degrees
Magnetic to Grid: 8.005305 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.005305 Degr.

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

MARBOB ENERGY
CRAIG STATE COM # 1H
WILDCAT; BONE SPRING

Sat Feb 06 17:11:29 2010

Coordinates

Latitude: 32.079929 N (32 deg. 4 min. 47.7449 sec.)
Longitude: 104.253616 W (-104 deg. 15 min. 13.0175 sec.)
Elevation: 3361.50 feet.
Calculation Date: Dec/31/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 59.9848 degrees
Total Magnetic Field: 0.48629 gauss
Magnetic Declination: 8.045345 degrees
Horizontal Intensity: 0.243255 gauss

To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.045345 Degr.

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 524690.5000 feet
Y: 392811.4000 feet
True to Grid: (convergence) -0.042338 degrees
Magnetic to Grid: 8.003007 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 8.003007 Degr.