

DIRECTIONAL SURVEY REPORT

MEWBOURNE OIL CO.

QUAIL HOLLOW 20 STATE #1

LEA COUNTY, NEW MEXICO

PREPARED BY: CODY MEBANE

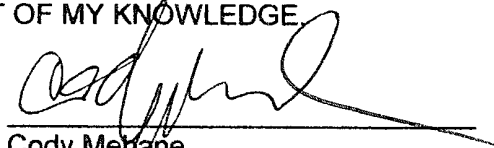


DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) CAESAR DAVILA
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 05/25/07 TO 05/30/07
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

MEWBOURNE OIL CO.
QUAIL HOLLOW 20 STATE #1
LEA COUNTY, NM
RIG: PATTERSON 41
9. SURVEY CERTIFIED FROM: 4299 TO 4708 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 45.50 FEET ON A BEARING OF 82.08 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 4756 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE


Cody Mebane
M/LWD SERVICE COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 05/25/2007
Date Completed: 05/25/2007

MEWBOURNE OIL CO.
QUAIL HOLLOW 20 STATE #1
LEA COUNTY COUNTY, NM
Rig:PATTERSON 41
PathFinder Office Supervisor:
PathFinder Field Engineers:

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.26.25.9008 N LON:103.24.24.8004 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 785816.5975 Y: 525217.4335
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.50° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference:3630.00' Rotary Table To MSL

Measured Depth	4756.00	(feet)
Inclination	2.11	(deg)
Azimuth	276.89	(deg)
True Vertical Depth	4755.60	(feet)
Vertical Section	6.27	(feet)
Survey X cord	785861.66	(feet)
Survey Y cord	525223.70	(feet)
Survey Lat	32.44054416 N	(deg)
Survey Lon	103.40674277 W	(deg)
Rectangular Corr. N/S	6.27 N	(feet)
Rectangular Corr. E/W	45.06 E	(feet)
Closure Distance	45.50	(feet)
Direction of Closure	82.08	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

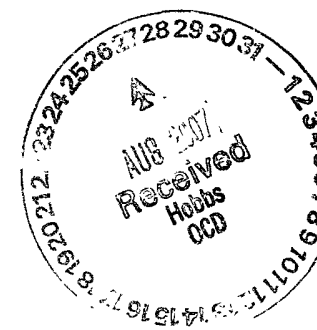
Survey Report

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Total Magnetic Correction: 7.50° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference:3630.00' Rotary Table To MSL

Survey Calculations by PathCalc v1.95U using Minimum Curvature

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Retangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
TIE-IN @ SURFACE.										
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
FOLLOWING ARE PATHFINDER MWD SURVEYS										
4299.00	1.14	81.16	4298.72	4299.00	6.57	6.57 N	42.26 E	42.77@	81.16	0.03
4327.00	0.88	95.75	4326.71	28.00	6.59	6.59 N	42.75 E	43.25@	81.23	1.30
4359.00	1.23	81.51	4358.71	32.00	6.62	6.62 N	43.33 E	43.83@	81.31	1.36
4390.00	1.41	78.17	4389.70	31.00	6.75	6.75 N	44.03 E	44.55@	81.29	0.63
4422.00	1.32	87.48	4421.69	32.00	6.84	6.84 N	44.79 E	45.31@	81.31	0.75
4486.00	1.41	98.29	4485.67	64.00	6.76	6.76 N	46.30 E	46.79@	81.69	0.43
4517.00	1.32	106.56	4516.66	31.00	6.61	6.61 N	47.02 E	47.48@	82.00	0.70
4550.00	1.14	104.97	4549.65	33.00	6.41	6.41 N	47.70 E	48.13@	82.34	0.56
4582.00	0.79	104.75	4581.65	32.00	6.27	6.27 N	48.23 E	48.63@	82.59	1.09
4614.00	0.35	146.90	4613.65	32.00	6.14	6.14 N	48.49 E	48.88@	82.79	1.81
4645.00	0.79	256.14	4644.65	31.00	6.01	6.01 N	48.34 E	48.71@	82.92	3.11
4676.00	1.32	272.49	4675.64	31.00	5.97	5.97 N	47.77 E	48.14@	82.88	1.95
4708.00	2.11	276.89	4707.63	32.00	6.06	6.06 N	46.82 E	47.21@	82.63	2.50
STRAIGHT LINE PROJECTION TO BIT @ 4756' MD.										
4756.00	2.11	276.89	4755.60	48.00	6.27	6.27 N	45.06 E	45.50@	82.08	0.00



PATHFINDER ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	MEWBOURNE OIL CO.		
LEASE / WELL No.:	QUAIL HOLLOW 20 STATE #1		
WELL LOCATION:	NEW MEXICO		
COUNTY / STATE / COUNTRY:	LEA COUNTY	NM	USA
RIG:	PATTERSON 41		
API WELL No:			
JOB No:	101006459		
P O. / AFE No.			
DIRECTIONAL COMPANY:	PATHFINDER		

WELL SITE INFORMATION

MAGNETIC DECLINATION:			
<i>On Wall Plat:</i>	<i>LWD Calculated:</i>	<i>Agreed Upon:</i>	
X = 785816 632500	Feet	Y = 525217 353000	Feet
SITE LATITUDE: 32.440528	SITE LONGITUDE: 103.406889		
GRID SYSTEM: TRUE ☐ UTM ☒ LAMBERT ☐ ZONE:			
PROPOSED DRIFT DIRECTION:			
KELLY BUSHING ELEVATION:			
ALTITUDE:	Feet	WATER DEPTH:	Feet

TIE-IN SURVEY

MEASURED DEPTH:	0		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	0		
VERTICAL SECTION:	0		
RECTANGULAR COORDINATE (N / S):	32.440528 N		
RECTANGULAR COORDINATE (E / W):	103.406889 W		
CLOSURE DISTANCE / DIRECTION:	0	0	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	N/A		
COPY OF TIE-IN SURVEY REPORT	☐ YES ☐ NO		

WELL PLAN

KICKOFF DEPTH:	0	TOTAL DEPTH:	0
KICKOFF ANGLE:	0	MAX ANGLE:	0

PES Engineers:

**Signature of both field engineers required if applicable

Directional Driller:

DATE: _____

PATHFINDER

ENERGY SERVICES

MAGNETIC DECLINATION / TOOLFACE OFFSET WORKSHEET

Client:	MEWBOURNE OIL CO.	LWD Run No:	1
Well:	QUAIL HOLLOW 20 STATE #1	DTA No:	
Location:	NEW MEXICO	HDAS No:	5119
Rig:	PATTERSON 41	TrkrElec No:	
Job No:	010100-6459		

Magnetic Declination:

GRID SYSTEM USED: TRUE ☐ UTM ☒ LAMBERT ☐ ZONE: _____
X = 785816.6325 Y = 525217.353
SITE LATITUDE: 32.440528 SITE LONGITUDE: 103.406889

Magnetic Declination:

On Wall Plat: 7.503614
LWD Calculated: 7.503614
Agreed Upon: 7.503614
Directional Driller Approval: _____
LWD Engineers Approval: _____
Supervisor Approval: _____

ToolFace Offset Calculation:

- 1: Ensure all connections between M/LWD are torqued correctly.
- 2: Estimate toolface offset.
- 3: Measure the distance from the M/LWD scribe line to the motor scribe line in a clockwise direction looking down hole.
- 4: Measure the circumference of the tool.
- 5: Calculate Tool Face Offset using.

$$\text{TOOL FACE OFFSET} = \frac{\text{Distance from M/LWD to Motor}}{\text{Circumference}} \times 360^\circ$$

ToolFace Offset Using Protractor:

- 1: Hook protractor onto the M/LWD tool.
- 2: Read Tool Face Offset from top of protractor where the motor scribe line intersects protractor
- 3: If motor scribe line does not intersect protractor flip protractor over and repeat steps 1 and 2.

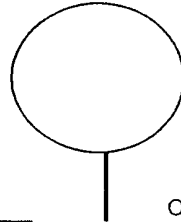
Distance from M/LWD to Motor: 0

Circumference: 0

OTF Estimate: 0

OTF Calculated: 0

OTF Protractor: 0



V- Door

Offset Tool Face Used = 307.7

M/LWD Engineer #1: *[Signature]*

M/LWD Engineer #2: _____

Directional Driller: *[Signature]*

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

Mewbourne Oil Company
Quail Hollow 20 State #1
Lea County, New Mexico
Rig: Patterson #41

Thu May 24 17:00:47 2007

Coordinates

Latitude: 32.440528 N (32 deg. 26 min. 25.9000 sec.)
Longitude: 103.406889 W (-103 deg. 24 min. 24.8000 sec.)
Elevation: 3630.00 feet.
Calculation Date: May/24/2007

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.5291 degrees
Total Magnetic Field: 0.49193 gauss
Magnetic Declination: 8.000612 degrees
Horizontal Intensity: 0.242021 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.000612 Degr.

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 785816.6325 feet
Y: 525217.3530 feet
True to Grid: (convergence) -0.496998 degrees
Magnetic to Grid: 7.503614 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.503614 Degr.