

DIRECTIONAL SURVEY REPORT

YATES PETROLEUM
TRACTOR BPC FEDERAL COM #1H
EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA



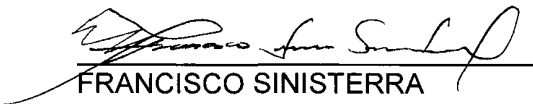
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JAY FULTON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 09-28-10 TO 09-30-10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

YATES PETROLEUM
TRACTOR BPC FEDERAL COM #1H
EDDY COUNTY, NM
RIG: SILVER OAK 10

9. SURVEY CERTIFIED FROM: 430 TO 1582 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 4.77 FEET ON A BEARING OF 97.42 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 1634 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: 09/28/2010
Date Completed: 09/30/2010

YATES PETROLEUM
TRACTOR "BPC" FEDERAL COM #1H
EDDY COUNTY, NEW MEXICO
Rig:SILVEROAK 10
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:J. FULTON
R. PAGE

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.7.10.8889 N LON:104.25.27.1996 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 513199.7180 Y: 407291.7070
North Aligned To:GRID NORTH
Total Magnetic Correction: 8.10° EAST TO GRID
Vertical Section Plane: 179.29
Survey Vert. Reference: 18.00' Rotary Table To Ground
Altitude:3597.00' Ground To MSL

Measured Depth	1634.00	(feet)
Inclination	0.53	(deg)
Azimuth	63.89	(deg)
True Vertical Depth	1633.95	(feet)
Vertical Section	0.67	(feet)
Survey X cord	513204.45	(feet)
Survey Y cord	407291.09	(feet)
Survey Lat	32.11968969 N	(deg)
Survey Lon	104.42420684 W	(deg)
Rectangular Corr. N/S	0.62 S	(feet)
Rectangular Corr. E/W	4.73 E	(feet)
Closure Distance	4.77	(feet)
Direction of Closure	97.42	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
 TRACTOR "BPC" FEDERAL COM #1H
 EDDY COUNTY, NEW MEXICO
 Rig:SILVEROAK 10
 PathFinder Office Supervisor: FRANCISCO SINISTERRA
 PathFinder Field Engineers: J. FULTON
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 Total Magnetic Correction: 8.10° EAST TO GRID
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 Survey Vert. Reference: 18.00' Rotary Table To Ground
 Altitude:3597.00' Ground To MSL

Survey Calculations by PathCalc v2.00 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 DEPTH @ 330' MD										
330.00	0.00	0.00	330.00	0.00	0.00	0.00	0.00	0.00@	0.00	1.#J
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
430.00	1.06	166.89	429.99	100.00	0.90	0.90 S	0.21 E	0.92@	166.89	1.06
522.00	0.62	206.19	521.98	92.00	2.18	2.18 S	0.18 E	2.18@	175.19	0.76
704.00	0.26	212.20	703.98	182.00	3.40	3.41 S	0.47 W	3.44@	187.87	0.20
894.00	0.53	32.12	893.98	190.00	3.03	3.03 S	0.23 W	3.04@	184.42	0.42
1084.00	0.70	42.14	1083.97	190.00	1.44	1.43 S	1.01 E	1.75@	144.62	0.11
1274.00	0.35	111.50	1273.96	190.00	0.81	0.78 S	2.33 E	2.46@	108.44	0.35
1465.00	0.35	94.56	1464.96	191.00	1.08	1.04 S	3.45 E	3.61@	106.71	0.05
1582.00	0.53	63.89	1581.95	117.00	0.88	0.83 S	4.30 E	4.38@	100.90	0.25
STRAIGHT LINE PROJECTION TO BIT @ 1634' MD										
1634.00	0.53	63.89	1633.95	52.00	0.67	0.62 S	4.73 E	4.77@	97.42	0.00



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	YATES PETROLEUM		
LEASE / WELL No.:	TRACTOR "BPC" FEDERAL COM	1H	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY	NEW MEXICO	USA
RIG:	SILVER OAK 10		
API WELL No:	30-015-37779		
JOB No:	700000378-WT-WT		
P.O. / AFE No.	10-005-0		
DIRECTIONAL COMPANY:	PATHFINDER ENERGY		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	8.1	LWD Calculated:	8.1
Agreed Upon:		8.1	
X =	513199.720000	Feet	Y = 407291.710000
		Feet	
SITE LATITUDE:	32.119691 N	SITE LONGITUDE:	104.424222 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	179.29		
KELLY BUSHING ELEVATION:	18		
ALTITUDE:	3597'	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):	0		
RECTANGULAR COORDINATE (E / W):	0		
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:	400	TOTAL DEPTH:	6300
KICKOFF ANGLE:	0	MAX ANGLE:	0

PES Engineers:

JAY FULTON

RICHARD PAGE

**Signature of both field engineers required if applicable

Directional Driller: RICHARD HILL

DATE: 28-Sep-2010

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

YATES PETROLEUM
TRACTOR BPC FEDERAL COM #1H
EDDY COUNTY, NEW MEXICO
Rig:SILVER OAK 10

Thu Sep 23 12:12:20 2010

Coordinates

Latitude: 32.119691 N (32 deg. 7 min. 10.8889 sec.)
Longitude: 104.424222 W (-104 deg. 25 min. 27.1996 sec.)
Elevation: 3615.50 feet.
Calculation Date: Sep/23/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 59.9557 degrees
Total Magnetic Field: 0.48526 gauss
Magnetic Declination: 8.050080 degrees
Horizontal Intensity: 0.242956 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.050080 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 513199.7180 feet
Y: 407291.7070 feet
True to Grid: (convergence) 0.048325 degrees
Magnetic to Grid: 8.098405 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.098405 Degr.

PathFinder Energy Services, Inc.
Magnetic & Grid Calculations

Field
Calculations

YATES PETROLEUM
TRACTOR "BPC" FEDERAL COM #1H
EDDY COUNTY
Rig:SILVEROAK 10

Tue Sep 28 12:08:56 2010

Coordinates

Latitude: 32.119691 N (32 deg. 7 min. 10.8890 sec.)
Longitude: 104.424222 W (-104 deg. 25 min. 27.1996 sec.)
Elevation: 3615.00 feet.
Calculation Date: Sep/28/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 59.9554 degrees
Total Magnetic Field: 0.48525 gauss
Magnetic Declination: 8.048434 degrees
Horizontal Intensity: 0.242952 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 8.048434 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 513199.7200 feet
Y: 407291.7100 feet
True to Grid: (convergence) 0.048325 degrees
Magnetic to Grid: 8.096758 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 8.096758 Degr.