



An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

30-025-39525

YATES PETROLEUM
FARBER BOB FEDERAL #1H
LEA 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) MATT SHIPP
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 12/26/09 TO 01/02/10
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: LEA COUNTY
7. TYPE OF SURVEY(S) PERFORMED: MWD
8. COMPLETE IDENTIFICATION OF WELL:

YATES PETROLEUM
FARBER BOB FEDERAL #1H
LEA COUNTY, NM
RIG: SILVER OAK #10

9. SURVEY CERTIFIED FROM: 983 TO 4718 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 39.01 FEET ON A BEARING OF 99.18 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 4768 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: 12/26/2009
Date Completed: 01/02/2010

YATES PETROLEUM COPORATION
FARBER BOB FEDERAL #1H
LEA COUNTY, NEW MEXICO
Rig:SILVER OAK #10
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:M. SHIPP

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.9.11.5516 N LON:103.38.5.6371 W
GRID Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 757485.3000 Y: 420173.8000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.41° EAST TO GRID
Vertical Section Plane: 359.54
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:3531.00' Ground To MSL

Measured Depth	4768.00	(feet)
Inclination	0.70	(deg)
Azimuth	204.47	(deg)
True Vertical Depth	4766.79	(feet)
Vertical Section	-6.53	(feet)
Survey X cord	757523.81	(feet)
Survey Y cord	420167.58	(feet)
Survey Lat	32.15319099 N	(deg)
Survey Lon	103.63477488 W	(deg)
Rectangular Corr. N/S	6.22 S	(feet)
Rectangular Corr. E/W	38.51 E	(feet)
Closure Distance	39.01	(feet)
Direction of Closure	99.18	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

Page 01/02
Tie-in Date: 12/26/2009
Date Completed: 01/02/2010

YATES PETROLEUM COPORATION
FARBER BOB FEDERAL #1H
LEA COUNTY, NEW MEXICO
Rig:SILVER OAK #10
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: M. SHIPP

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.9.11.5516 N LON:103.38.5.6371 W
Reference:NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 757485.3000 Y: 420173.8000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.41° EAST TO GRID
Vertical Section Plane: 359.54
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude:3531.00' Ground To MSL

Survey Calculations by RX5 V6.02A 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 VERTICAL @ 900' MD										
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
983.00	2.64	134.04	982.97	83.00	-1.34	1.33 S	1.37 E	1.91@	134.04	3.18
1078.00	1.14	112.29	1077.92	95.00	-3.24	3.21 S	3.82 E	4.99@	130.02	1.72
1204.00	0.88	113.72	1203.90	126.00	-4.12	4.07 S	5.87 E	7.14@	124.77	0.21
1300.00	1.23	96.61	1299.88	96.00	-4.55	4.49 S	7.57 E	8.80@	120.68	0.49
1426.00	0.97	61.56	1425.86	126.00	-4.21	4.14 S	9.85 E	10.68@	112.78	0.56
1552.00	1.23	56.45	1551.84	126.00	-2.98	2.88 S	11.91 E	12.26@	103.60	0.22
1679.00	1.32	304.07	1678.82	127.00	-1.40	1.31 S	11.84 E	11.91@	96.31	1.67
1806.00	1.93	317.32	1805.77	127.00	1.01	1.08 N	9.17 E	9.24@	83.26	0.56
1933.00	0.97	235.98	1932.74	127.00	2.00	2.05 N	6.83 E	7.14@	73.26	1.59
2059.00	1.06	239.07	2058.72	126.00	0.82	0.86 N	4.95 E	5.02@	80.15	0.08
2186.00	1.32	242.33	2185.69	127.00	-0.45	0.42 S	2.65 E	2.68@	99.10	0.21
2313.00	0.79	133.75	2312.68	127.00	-1.72	1.71 S	1.98 E	2.62@	130.75	1.37
2440.00	1.41	129.59	2439.65	127.00	-3.34	3.31 S	3.82 E	5.05@	130.91	0.49
2566.00	0.26	308.65	2565.64	126.00	-4.16	4.12 S	4.79 E	6.32@	130.69	1.33
2690.00	0.18	304.65	2689.64	124.00	-3.87	3.83 S	4.41 E	5.84@	130.99	0.07
2820.00	0.44	262.83	2819.64	130.00	-3.81	3.78 S	3.75 E	5.32@	135.24	0.25
2947.00	0.26	329.31	2946.64	127.00	-3.62	3.59 S	3.12 E	4.76@	139.05	0.32
3074.00	0.35	1.17	3073.63	127.00	-2.98	2.96 S	2.98 E	4.20@	134.79	0.15
3200.00	0.62	41.30	3199.63	126.00	-2.09	2.06 S	3.44 E	4.01@	120.94	0.33
3327.00	1.06	46.96	3326.62	127.00	-0.78	0.74 S	4.75 E	4.81@	98.88	0.35
3454.00	1.23	39.92	3453.59	127.00	1.05	1.11 N	6.48 E	6.58@	80.32	0.17
3581.00	1.41	56.42	3580.56	127.00	2.95	3.01 N	8.66 E	9.17@	70.80	0.33
3707.00	2.99	78.42	3706.46	126.00	4.43	4.53 N	13.17 E	13.93@	71.01	1.40

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM COPORATION
FARBER BOB FEDERAL #1H
LEA COUNTY, NEW MEXICO
RIG:SILVER OAK #10

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)
3802.00	3.52	75.62	3801.31	95.00	5.61	5.75 N	18.42 E	19.30@	72.65	0.58
3898.00	2.11	75.49	3897.19	96.00	6.74	6.93 N	22.99 E	24.01@	73.23	1.47
3993.00	0.79	94.12	3992.16	95.00	7.12	7.32 N	25.33 E	26.37@	73.88	1.46
4119.00	0.88	131.85	4118.15	126.00	6.40	6.61 N	26.92 E	27.72@	76.20	0.43
4246.00	2.81	111.93	4245.08	127.00	4.55	4.80 N	30.54 E	30.91@	81.07	1.58
4341.00	3.08	118.18	4339.95	95.00	2.44	2.72 N	34.95 E	35.05@	85.54	0.44
4436.00	1.76	138.49	4434.86	95.00	0.12	0.43 N	38.16 E	38.16@	89.36	1.64
4531.00	1.41	184.65	4529.83	95.00	-2.15	1.83 S	39.03 E	39.08@	92.69	1.35
4627.00	1.32	178.45	4625.80	96.00	-4.43	4.11 S	38.97 E	39.18@	96.03	0.18
4718.00	0.70	204.47	4716.79	91.00	-5.98	5.67 S	38.77 E	39.18@	98.32	0.83
STRAIGHT-LINE PROJECTION TO BIT @ 4768' MD.										
4768.00	0.70	204.47	4766.79	50.00	-6.53	6.22 S	38.51 E	39.01@	99.18	0.00

PATHFINDER

ENERGY SERVICES

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	YATES PETROLEUM CORPORATION		
LEASE / WELL NO.:	FARBER BOB FEDERAL	#1H	
WELL LOCATION:	WILDCAT(BONE SPRING)		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	SILVER OAK #10		
API Well No:	30-025-39525		
JOB No:	101009467-WT-WT		
P.O. / AFE No.			
DRILLING COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.41	LWD Calculated:	7.405304
		Agreed Upon:	7.41
X =	757485 300000	Feet	Y = 420173 800000
			Feet
SITE LATITUDE:	32.153209N	SITE LONGITUDE:	103.634899W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	359.54		
KELLY BUSHING ELEVATION:	3549'		
ALTITUDE:	3531	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	900		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	900		
VERTICAL SECTION:	0		
RECTANGULAR COORDINATE (N / S):	0		
RECTANGULAR COORDINATE (E / W):	0		
CLOSURE DISTANCE / DIRECTION:	0	0	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ RT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SURFACE		
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO		

WELL PLAN

KICKOFF DEPTH:	900	TOTAL DEPTH:	4400
KICKOFF ANGLE:	2.75	MAX ANGLE:	0

PLS Engineers:

Matthew L.

*Signature of both field engineers required if applicable

Directional Driller:

Richard Hall

DATE:

12/26/99

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

YATES PETROLEUM
FARBER BOB FEDERAL #1H
LEA COUNTY, NEW MEXICO
Rig: SILVER OAK 10

Fri Dec 18 09:10:16 2009

Coordinates

Latitude: 32.153209 N (32 deg. 9 min. 11.5516 sec.)
Longitude: 103.634899 W (-103 deg. 38 min. 5.6371 sec.)
Elevation: 3549.00 feet.
Calculation Date: Dec/18/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.1650 degrees
Total Magnetic Field: 0.48746 gauss
Magnetic Declination: 7.777013 degrees
Horizontal Intensity: 0.242511 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.777013 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 757485.3000 feet
Y: 420173.8000 feet
True to Grid: (convergence) -0.371710 degrees
Magnetic to Grid: 7.405304 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.405304 Degr.