



A Schlumberger Company

HOBBS OCD

DEC 22 2011

DIRECTIONAL SURVEY REPORT

RECEIVED

YATES PETROLEUM

DEAN APQ FEDERAL #2H SHC

LEA COUNTY, NEW MEXICO

SUR; N-03-26s-34e, 330/S & 1980/W
BHL; C-03-26s-34e, 4910/S & 1926/W
API # 30-025-40089

PREPARED BY: FRANCISCO SINISTERRA

JAN 12 2012

Pathfinder

6213 WCR 112
Midland, Texas 79706
Tel (432)687-1647
Fax (432)687-1544



DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) ERIC PAYNE
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 07-25-11 TO 07-31-11
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:

YATES PETROLEUM
DEAN APQ FEDERAL #2H SHC
LEA COUNTY, NM
RIG: PATTERSON 36
9. SURVEY CERTIFIED FROM: 1010 TO 5278 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 35.42 FEET ON A BEARING OF 117.4 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 5338 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.


FRANCISCO SINISTERRA
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

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Tie-in Date: 07/24/2011

Date Completed: 07/31/2011

YATES PETROLEUM
 DEAN APQ FEDERAL #2H
 LEA COUNTY, NM
 Rig: PATTERSON 36
 PathFinder Office Supervisor: STEVE BIBB
 PathFinder Field Engineers: ERIC PAYNE
 SAUL CARRILLO

Survey Horiz. Reference: WELLHEAD
 Ref Coordinates: LAT: 32.3.58.1719 N LON: 103.27.35.6643 W
 GRID Reference: NAD83 new mexico east Transverse Mercator
 Ref GRID Coord: X: 811899.3300 Y: 388901.0300
 North Aligned To: GRID NORTH
 Total Magnetic Correction: 7.05° EAST TO GRID
 Vertical Section Plane: 0.00
 Survey Vert. Reference: 21.50' Kelly Bushing To Ground
 Altitude: 3313.00' Ground To MSL

Measured Depth	5338.00	(feet)
Inclination	1.06	(deg)
Azimuth	96.17	(deg)
True Vertical Depth	5337.51	(feet)
Vertical Section	-16.30	(feet)
Survey X cord	811930.78	(feet)
Survey Y cord	388884.73	(feet)
Survey Lat	32.06611336 N	(deg)
Survey Lon	103.45980567 W	(deg)
Rectangular Corr. N/S	16.30 S	(feet)
Rectangular Corr. E/W	31.45 E	(feet)
Closure Distance	35.42	(feet)
Direction of Closure	117.40	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
DEAN APQ FEDERAL #2H
LEA COUNTY, NM

Rig: PATTERSON 36

PathFinder Office Supervisor: STEVE BIBB

PathFinder Field Engineers: ERIC PAYNE
SAUL CARRILLO

Survey Horiz. Reference: WELLHEAD

Ref Coordinates: LAT: 32.3.58.1719 N LON: 103.27.35.6643 W

GRID Reference: NAD83 new mexico east Transverse Mercator

Ref GRID Coord: X: 811899.3300 Y: 388901.0300

North Aligned To: GRID NORTH

Total Magnetic Correction: 7.05° EAST TO GRID

Vertical Section Plane: 0.00

Survey Vert. Reference: 21.50' Kelly Bushing To Ground

Altitude: 3313.00' Ground To MSL

Survey Calculations by RX5 V6.03E 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)
TIED-IN ASSUMING VERTICAL @ 910'MD.										
910.00	0.00	0.00	910.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
1010.00	0.79	273.27	1010.00	100.00	0.04	0.04 N	0.69 W	0.69@	273.27	0.79
1169.00	0.97	243.65	1168.98	159.00	-0.50	0.50 S	2.99 W	3.03@	260.59	0.30
1328.00	0.62	245.23	1327.96	159.00	-1.45	1.45 S	4.98 W	5.18@	253.72	0.22
1487.00	0.62	174.48	1486.96	159.00	-2.67	2.67 S	5.67 W	6.27@	244.80	0.45
1646.00	0.70	174.83	1645.95	159.00	-4.49	4.49 S	5.50 W	7.11@	230.77	0.05
1804.00	0.70	173.43	1803.93	158.00	-6.41	6.41 S	5.31 W	8.32@	219.60	0.01
1963.00	0.79	175.45	1962.92	159.00	-8.47	8.47 S	5.11 W	9.89@	211.09	0.06
2121.00	0.88	177.56	2120.90	158.00	-10.77	10.77 S	4.97 W	11.86@	204.77	0.06
2279.00	0.97	182.74	2278.88	158.00	-13.32	13.32 S	4.98 W	14.22@	200.51	0.08
2438.00	1.14	169.12	2437.86	159.00	-16.21	16.21 S	4.75 W	16.90@	196.32	0.19
2597.00	0.35	355.45	2596.85	159.00	-17.28	17.28 S	4.49 W	17.86@	194.56	0.94
2755.00	0.62	7.75	2754.84	158.00	-15.96	15.96 S	4.41 W	16.55@	195.45	0.18
2914.00	0.88	6.08	2913.83	159.00	-13.89	13.89 S	4.17 W	14.50@	196.70	0.16
3072.00	0.79	50.47	3071.81	158.00	-11.99	11.99 S	3.20 W	12.41@	194.93	0.40
3231.00	1.14	50.91	3230.79	159.00	-10.29	10.29 S	1.12 W	10.36@	186.23	0.22
3389.00	0.62	110.32	3388.77	158.00	-9.60	9.60 S	0.90 E	9.64@	174.66	0.62
3548.00	0.79	106.54	3547.76	159.00	-10.21	10.21 S	2.75 E	10.58@	164.90	0.11
3707.00	0.70	99.51	3706.75	159.00	-10.68	10.68 S	4.76 E	11.70@	155.97	0.08
3865.00	0.88	93.36	3864.73	158.00	-10.91	10.91 S	6.93 E	12.93@	147.60	0.13
4023.00	1.32	94.41	4022.70	158.00	-11.13	11.13 S	9.95 E	14.93@	138.19	0.28
4182.00	0.53	109.36	4181.68	159.00	-11.51	11.51 S	12.47 E	16.97@	132.70	0.52
4341.00	0.88	106.72	4340.67	159.00	-12.10	12.10 S	14.34 E	18.76@	130.18	0.22
4500.00	0.88	98.54	4499.65	159.00	-12.64	12.64 S	16.71 E	20.95@	127.10	0.08

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
DEAN APQ FEDERAL #2H
LEA COUNTY, NM
RIG:PATTERSON 36

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
4658.00	1.32	110.50	4657.62	158.00	-13.46	13.46 S	19.62 E	23.79@	124.45	0.31
4817.00	0.88	121.04	4816.59	159.00	-14.73	14.73 S	22.38 E	26.79@	123.35	0.30
4975.00	0.88	88.96	4974.57	158.00	-15.33	15.33 S	24.63 E	29.01@	121.90	0.31
5134.00	1.23	102.94	5133.55	159.00	-15.69	15.69 S	27.51 E	31.67@	119.69	0.27
5278.00	1.06	96.17	5277.52	144.00	-16.18	16.18 S	30.35 E	34.39@	118.06	0.15
STRAIGHT LINE PROJECTION TO BIT @ 5338' MD										
5338.00	1.06	96.17	5337.51	60.00	-16.30	16.30 S	31.45 E	35.42@	117.40	0.00



A Schlumberger Company

TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	Yates Petroleum		
LEASE / WELL No.:	Dean APQ Federal	#2H	
WELL LOCATION:	Lea County		
COUNTY / STATE / COUNTRY:	Lea	NM	USA
RIG:	Patterson 36		
API WELL No:	30-025-40089		
JOB No:	700003135-WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	Pathfinder		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.05	LWD Calculated:	7.05
Agreed Upon:		7.05	
X =	811899 330000	Feet	Y = 388901.030000
		Feet	
SITE LATITUDE:	32° 3' 58.1719" N	SITE LONGITUDE:	103° 27' 35.6643" W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	21.5		
ALTITUDE:	3313	Feet	WATER DEPTH:
		Feet	

TIE-IN SURVEY

MEASURED DEPTH:	910		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	910		
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		
COPY OF TIE-IN SURVEY REPORT	☐ YES		☒ NO

WELL PLAN

KICKOFF DEPTH:	N / A	TOTAL DEPTH:	5400
KICKOFF ANGLE:	N / A	MAX ANGLE:	0

PES Engineers: Eric Payne
Saul Carrillo

**Signature of both field engineers required if applicable

Directional Driller: Phillip Garrison

DATE: 24-Jul-2011

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations



Yates Petroleum Corporation
Dean APQ Federal #2H
Lea County, NM
Rig: Patterson 36

Sun Jul 24 12:55:51 2011

Coordinates

Latitude: 32.066159 N (32 deg. 3 min. 58.1719 sec.)
Longitude: 103.459907 W (-103 deg. 27 min. 35.6643 sec.)
Elevation: 3334.50 feet.
Calculation Date: Jul/24/2011

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.0570 degrees
Total Magnetic Field: 0.48523 gauss
Magnetic Declination: 7.509450 degrees
Horizontal Intensity: 0.242198 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.509450 Degs

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 811899.3300 feet
Y: 388901.0300 feet
True to Grid: (convergence) -0.463727 degrees
Magnetic to Grid: 7.045723 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.045723 Degs.