



A Schlumberger Company

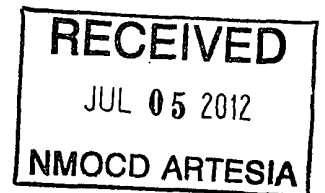
DIRECTIONAL SURVEY REPORT

15-39511

YATES PETROLEUM

HANAGAN "APL" FED COM #2H SHC

EDDY COUNTY, NEW MEXICO



PREPARED BY: JUAN ALCOCER

Pathfinder

6213 WCP 112
Midland, Texas 79706
Tel (432)687-1647
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DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) JEFF HULL
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 3-20-12 TO 3-23-12
5. STATE IN WHICH SURVEY WAS PERFORMED: NEW MEXICO
6. LOCATION OF WELL: EDDY COUNTY, NM
7. TYPE OF SURVEY(S) PERFORMED: GAMMA-RAY
8. COMPLETE IDENTIFICATION OF WELL:

YATES PETROLEUM
HANAGAN "APL" FED COM #2H SHC
EDDY COUNTY, NM
RIG: SILVER OAK 10
9. SURVEY CERTIFIED FROM: 1,759 TO 3,471 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 30.23 FEET ON A BEARING OF 117.45 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 3,522 FEET,
ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.



JUAN ALCOCER
MWD COORDINATOR

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 03/20/2012
Date Completed: 03/23/2012

YATES PETROLEUM CORPORATION
HANAGAN APL FEDERAL COM #2H
Eddy COUNTY, NM
Rig: Silver Oak 10
PathFinder Office Supervisor:
PathFinder Field Engineers: Alfonso Habeych
Cody Bundick

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.36.50.6958 N LON: 104.1.7.5333 W
GRID Reference: NAD83 new mexico east Transverse Mercator
Ref GRID Coord: X: 638196.4010 Y: 587277.1930
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.56° EAST TO GRID
Vertical Section Plane: 89.86
Survey Vert. Reference: 18.00' Rotary Table To Ground
Altitude: 3324.00' Ground To MSL

Measured Depth	3522.00	(feet)
Inclination	1.23	(deg)
Azimuth	225.58	(deg)
True Vertical Depth	3521.57	(feet)
Vertical Section	26.79	(feet)
Survey X cord	638223.23	(feet)
Survey Y cord	587263.26	(feet)
Survey Lat	32.61404366 N	(deg)
Survey Lon	104.01867226 W	(deg)
Rectangular Corr. N/S	13.93 S	(feet)
Rectangular Corr. E/W	26.83 E	(feet)
Closure Distance	30.23	(feet)
Direction of Closure	117.45	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM CORPORATION

HANAGAN APL FEDERAL COM #2H

Eddy COUNTY, NM

Rig:Silver Oak 10

PathFinder Office Supervisor:

PathFinder Field Engineers: Alfonso Habeych

Cody Bundick

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.36.50.6958 N LON:104.1.7.5333 W

GRID Reference:NAD83 new mexico east Transverse Mercator

Ref GRID Coord: X: 638196.4010 Y: 587277.1930

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.56° EAST TO GRID

Vertical Section Plane: 89.86

Survey Vert. Reference: 18.00' Rotary Table To Ground

Altitude:3324.00' Ground To MSL

Survey Calculations by RX5 V6.04 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)
ASSUMED VERTICAL WELLBORE AT 1659'MD.										
1659.00	0.00	0.00	1659.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
1759.00	1.06	62.87	1758.90	1759.00	14.50	7.42 N	14.48 E	16.27@	62.87	0.06
1885.00	0.79	76.04	1884.88	126.00	16.38	8.16 N	16.36 E	18.28@	63.49	0.27
2075.00	1.32	86.45	2074.85	190.00	19.84	8.61 N	19.82 E	21.61@	66.51	0.30
2265.00	0.70	140.98	2264.82	190.00	22.75	7.85 N	22.73 E	24.05@	70.96	0.57
2456.00	0.79	152.48	2455.81	191.00	24.09	5.77 N	24.07 E	24.76@	76.52	0.09
2646.00	0.79	153.27	2645.79	190.00	25.28	3.44 N	25.27 E	25.50@	82.25	0.01
2836.00	1.49	162.63	2835.75	190.00	26.59	0.09 S	26.60 E	26.60@	90.19	0.38
3026.00	1.67	161.61	3025.68	190.00	28.19	5.07 S	28.21 E	28.66@	100.19	0.10
3216.00	0.97	166.35	3215.63	190.00	29.44	9.26 S	29.46 E	30.88@	107.45	0.37
3406.00	1.14	222.99	3405.60	190.00	28.52	12.21 S	28.55 E	31.05@	113.15	0.53
3471.00	1.23	225.58	3470.59	65.00	27.58	13.17 S	27.61 E	30.59@	115.50	0.16
STRAIGHT LINE POJECTION TO BIT DEPTH AT 3522'MD.										
3522.00	1.23	225.58	3521.57	51.00	26.79	13.93 S	26.83 E	30.23@	117.45	0.00



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TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	Yates Petroleum Corp.		
LEASE / WELL No.:	Hanagan APL Fed Com	2H	
WELL LOCATION:	Eddy County, NM		
COUNTY / STATE / COUNTRY:	Eddy	NM	USA
RIG:	Silver Oak 10		
API WELL No:	30-015-39511		
JOB No:	12MLD0078		
P.O. / AFE No.	11-167-0		
DIRECTIONAL COMPANY:	Pathfinder		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.56	LWD Calculated:	7.56
X = 638196.401000		Feet	Y = 587377.193000
			Feet
SITE LATITUDE:	32.614082 N	SITE LONGITUDE:	104.018759 W
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	New Mexico
PROPOSED DRIFT DIRECTION:	89.86		
KELLY BUSHING ELEVATION:	18		
ALTITUDE:	3324	Feet	WATER DEPTH: N/A
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	1659		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	1659		
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):	ASSUMED VERTICAL WELLBORE		
COPY OF TIE-IN SURVEY REPORT	☐ YES		☒ NO

WELL PLAN

KICKOFF DEPTH:	7948.5	TOTAL DEPTH:	12835.9
KICKOFF ANGLE:	0	MAX ANGLE:	89.86

PES Engineers: ALFONSO HABEYCH
Cody Bundick

**Signature of both field engineers required if applicable

Directional Driller: JAY FULTON

DATE: 6-Mar-2012

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

YATES PETROLEUM CORPORATION
HANAGAN APL FEDERAL COM #2H
PARKWAY, BONE SPRING
Rig: Silver Oak 10

field copy

Sun Apr 08 13:35:36 2012

Coordinates

Latitude: 32.614082 N (32 deg. 36 min. 50.6958 sec.)
Longitude: 104.018759 W (-104 deg. 1 min. 7.5333 sec.)
Elevation: 3342.00 feet.
Calculation Date: Mar/20/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.4520 degrees
Total Magnetic Field: 0.48751 gauss
Magnetic Declination: 7.729604 degrees
Horizontal Intensity: 0.240418 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.729604 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 638196.4010 feet
Y: 587277.1930 feet
True to Grid: (convergence) -0.169550 degrees
Magnetic to Grid: 7.560055 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.560055 Degr.



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PathFinder Energy Services, Inc. Magnetic & Grid Calculations

Yates Petroleum Corp.
Hanagan APL Fed Com #2H
Eddy County, NM
Rig: Silver Oak 10

Sat Mar 10 14:00:20 2012

Coordinates

Latitude: 32.614082 N (32 deg. 36 min. 50.6958 sec.)
Longitude: 104.018759 W (-104 deg. 1 min. 7.5333 sec.)
Elevation: 3342.00 feet.
Calculation Date: Mar/10/2012

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.4528 degrees
Total Magnetic Field: 0.48729 gauss
Magnetic Declination: 7.731247 degrees
Horizontal Intensity: 0.240302 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.731247 Degr

Transverse Mercator Grid Calculations NAD83

Grid System: Transverse Mercator: new mexico east
Ellipsoid: GRS80
X: 638196.4010 feet
Y: 587277.1930 feet
True to Grid: (convergence) -0.169550 degrees
Magnetic to Grid: 7.561698 degrees

To Convert a Magnetic Dir. to a GRID dir. Add 7.561698 Degr.

True