



An Operating Unit of Smith International, Inc.

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HOBBSOCD

DIRECTIONAL SURVEY REPORT

YATES PETROLEUM

CARAVAN STATE UNIT #1

LEA COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

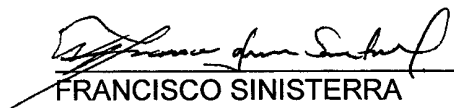
Pathfinder Energy Services, Inc.
6213 W. Interstate 20 • Midland, TX • 79706
(432) 681-6000

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) CHRIS CARSON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 02/23/10 TO 02/25/10
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
CARAVAN STATE UNIT #1
LEA COUNTY, NM
RIG: SILVER OAK #10
9. SURVEY CERTIFIED FROM: 3812 TO 5067 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 34.85 FEET ON A BEARING OF 53.97 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 5119 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: 02/22/2010
Date Completed: 02/25/2010

YATES PETROLEUM
CARAVAN STATE UNIT #1
LEA COUNTY, NM
Rig:SILVER OAK 10
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:CHRIS CARSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.10.26.0004 N LON:103.36.50.0004 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 722604.5518 Y: 427725.6837
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.38° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 20.00' Rotary Table To Ground
Altitude:3499.00' Ground To MSL

Measured Depth	5119.00	(feet)
Inclination	0.70	(deg)
Azimuth	194.32	(deg)
True Vertical Depth	5118.29	(feet)
Vertical Section	20.50	(feet)
Survey X cord	722632.74	(feet)
Survey Y cord	427746.19	(feet)
Survey Lat	32.17394484 N	(deg)
Survey Lon	103.61379747 W	(deg)
Rectangular Corr. N/S	20.50 N	(feet)
Rectangular Corr. E/W	28.19 E	(feet)
Closure Distance	34.85	(feet)
Direction of Closure	53.97	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

YATES PETROLEUM
CARAVAN STATE UNIT #1
LEA COUNTY, NM
Rig:SILVER OAK 10
PathFinder Office Supervisor: FRANCISCO SINISTERRA
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Survey Calculations by RX5 V6.02B 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 (ft)	Dir (deg)	DLS (dg/100ft)
ASSUME VERTICAL HOLE TO 3712'MD.										
3712.00	0.00	0.00	3712.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.										
3812.00	2.64	65.65	3811.96	100.00	0.95	0.95 N	2.10 E	2.30@	65.65	2.64
3896.00	2.37	58.44	3895.88	84.00	2.66	2.66 N	5.34 E	5.97@	63.56	0.49
3992.00	1.49	58.09	3991.83	96.00	4.36	4.36 N	8.09 E	9.19@	61.71	0.92
4086.00	1.85	32.78	4085.79	94.00	6.28	6.28 N	9.95 E	11.76@	57.76	0.86
4181.00	2.29	26.54	4180.73	95.00	9.26	9.26 N	11.63 E	14.87@	51.46	0.52
4276.00	2.02	17.40	4275.66	95.00	12.56	12.56 N	12.98 E	18.06@	45.94	0.46
4339.00	2.37	10.98	4338.62	63.00	14.90	14.90 N	13.56 E	20.14@	42.30	0.68
4434.00	1.76	39.81	4433.56	95.00	17.95	17.95 N	14.87 E	23.30@	39.64	1.25
4529.00	1.41	54.05	4528.52	95.00	19.75	19.75 N	16.75 E	25.90@	40.29	0.55
4624.00	1.76	57.30	4623.48	95.00	21.23	21.23 N	18.92 E	28.44@	41.71	0.38
4718.00	2.81	76.55	4717.41	94.00	22.54	22.54 N	22.38 E	31.76@	44.79	1.37
4750.00	2.90	83.58	4749.37	32.00	22.82	22.82 N	23.94 E	33.07@	46.38	1.13
4782.00	2.37	83.32	4781.33	32.00	22.98	22.98 N	25.40 E	34.26@	47.86	1.66
4814.00	1.58	95.97	4813.32	32.00	23.02	23.02 N	26.50 E	35.10@	49.03	2.80
4878.00	0.70	111.97	4877.30	64.00	22.78	22.78 N	27.74 E	35.89@	50.61	1.45
4941.00	0.62	145.46	4940.30	63.00	22.35	22.35 N	28.29 E	36.06@	51.69	0.62
5004.00	0.53	184.48	5003.30	63.00	21.78	21.78 N	28.46 E	35.84@	52.57	0.62
5067.00	0.70	194.32	5066.29	63.00	21.12	21.12 N	28.34 E	35.35@	53.31	0.32
STRAIGHT-LINE PROJECTION TO BIT @ 5119.00.										
5119.00	0.70	194.32	5118.29	52.00	20.50	20.50 N	28.19 E	34.85@	53.97	0.00

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

YATES PETROLEUM
CARAVAN STATE UNIT #1
LEA COUNTY, NEW MEXICO
Rig:SILVER OAK 7

Mon Feb 22 13:37:36 2010

Coordinates

Latitude: 32.173889 N (32 deg. 10 min. 26.0004 sec.)
Longitude: 103.613889 W (-103 deg. 36 min. 50.0004 sec.)
Elevation: 3499.00 feet.
Calculation Date: Feb/22/2010

Magnetic Calculations

Model: IGRF2010
Dip Angle: 60.1655 degrees
Total Magnetic Field: 0.48712 gauss
Magnetic Declination: 7.761827 degrees
Horizontal Intensity: 0.242342 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.761827 Degr.

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 722604.5518 feet
Y: 427725.6837 feet
True to Grid: (convergence) -0.383112 degrees
Magnetic to Grid: 7.378716 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.378716 Degr.



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	YATES PETROLEUM		
LEASE / WELL No.:	CARAVAN STATE UNIT	#1	
WELL LOCATION:	LEA COUNTY		
COUNTY / STATE / COUNTRY:	LEA	NM	USA
RIG:	SILVER OAK 10		
API WELL No:	30-025-39609		
JOB No:	101009907 WT-WT		
P.O. / AFE No.			
DIRECTIONAL COMPANY:	PES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.378716	LWD Calculated:	7.378716
		Agreed Upon:	7.378716
X =	722604.551800	Feet	Y = 427725.683700
			Feet
SITE LATITUDE:	32.173889 N	SITE LONGITUDE:	103.613889 W
GRID SYSTEM:	TRUE ☐ UTM ☐ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	0		
KELLY BUSHING ELEVATION:	20		
ALTITUDE:	3479	Feet	WATER DEPTH:
			Feet

TIE-IN SURVEY

MEASURED DEPTH:	3712		
DRIFT ANGLE:	0		
DRIFT DIRECTION:	0		
TRUE VERTICAL DEPTH:	3712		
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):	NONE		
COPY OF TIE-IN SURVEY REPORT	☐ YES ☒ NO		

WELL PLAN

KICKOFF DEPTH:	3864	TOTAL DEPTH:	
KICKOFF ANGLE:	0	MAX ANGLE:	0

PES Engineers: _____

**Signature of both field engineers required if applicable

Directional Driller: _____

DATE: _____