

PATHFINDER

4041-8126

An Operating Unit of Smith International, Inc.

30 015 37338



DIRECTIONAL SURVEY REPORT

OXY PETROLEUM

MOBIL FEDERAL 29 # 3

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

MR

DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) STEWART ROBERTSON
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 03/07/10 TO 03/10/10
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:

OXY PETROLEUM
MOBIL FEDERAL 29 #3
EDDY COUNTY, NM
RIG: H & P 340

9. SURVEY CERTIFIED FROM: 4041 TO 8126 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE DISPLACED AT 74.58 FEET ON A BEARING OF 104.03 DEGREES FROM THE CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 8183 FEET, ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

FRANCISCO SINISTERRA
M/LWD SERVICE COORDINATOR



PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 03/07/2010
Date Completed: 03/10/2010

OXY PETROLEUM
MOBIL FEDERAL 29 #3
EDDY COUNTY, NM
Rig:H&P 340
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:S. ROBERTSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.16.50.7371 N LON:103.47.46.1775 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 666012.4000 Y: 466273.6000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.56° EAST TO GRID
Vertical Section Plane: 0.00
Survey Vert. Reference: 16.50' Rotary Table To Ground
Altitude:3342.80' Ground To MSL

Measured Depth	8183.00	(feet)
Inclination	0.79	(deg)
Azimuth	214.89	(deg)
True Vertical Depth	8162.58	(feet)
Vertical Section	-18.08	(feet)
Survey X cord	666084.88	(feet)
Survey Y cord	466255.42	(feet)
Survey Lat	32.28070931 N	(deg)
Survey Lon	103.79592619 W	(deg)
Rectangular Corr. N/S	18.08 S	(feet)
Rectangular Corr. E/W	72.35 E	(feet)
Closure Distance	74.58	(feet)
Direction of Closure	104.03	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
MOBIL FEDERAL 29 #3
EDDY COUNTY, NM
Rig:H&P 340
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers: S. ROBERTSON

Survey Horiz. Reference:WELLHEAD
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Vertical Section Plane: 0.00
Survey Vert. Reference: 16.50' Rotary Table To Ground
Altitude:3342.80' Ground To MSL

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)
TIE-IN TO WEATHERFORD SURVEY @ 3944' MD.										
3944.00	8.50	91.50	3932.21	0.00	26.69	26.69 N	238.50 E	239.99@	83.61	0.00
THE FOLLOWING SURVEYS ARE PATHFINDER MWD SURVEYS.										
4041.00	7.65	96.68	4028.25	97.00	25.75	25.75 N	252.08 E	253.39@	84.17	1.15
4086.00	6.42	95.54	4072.91	45.00	25.16	25.16 N	257.56 E	258.78@	84.42	2.75
4131.00	4.84	98.00	4117.69	45.00	24.65	24.65 N	261.94 E	263.10@	84.62	3.55
4176.00	3.96	97.56	4162.56	45.00	24.18	24.18 N	265.36 E	266.46@	84.79	1.96
4221.00	3.96	94.31	4207.45	45.00	23.86	23.86 N	268.45 E	269.51@	84.92	0.50
4266.00	3.43	87.01	4252.36	45.00	23.82	23.82 N	271.35 E	272.39@	84.98	1.57
4311.00	2.99	80.95	4297.29	45.00	24.07	24.07 N	273.85 E	274.91@	84.98	1.23
4356.00	2.02	73.48	4342.24	45.00	24.48	24.48 N	275.77 E	276.85@	84.93	2.27
4402.00	1.32	68.82	4388.22	46.00	24.90	24.90 N	277.04 E	278.16@	84.86	1.55
4447.00	0.79	43.95	4433.22	45.00	25.31	25.31 N	277.74 E	278.89@	84.79	1.53
4492.00	0.35	296.37	4478.21	45.00	25.60	25.60 N	277.83 E	279.01@	84.74	2.12
4537.00	1.06	264.99	4523.21	45.00	25.62	25.62 N	277.29 E	278.48@	84.72	1.74
4582.00	1.76	261.12	4568.20	45.00	25.48	25.48 N	276.20 E	277.37@	84.73	1.57
4627.00	2.64	265.43	4613.16	45.00	25.29	25.29 N	274.48 E	275.64@	84.74	1.99
4717.00	3.69	268.95	4703.02	90.00	25.07	25.07 N	269.52 E	270.68@	84.69	1.19
4808.00	3.52	268.51	4793.84	91.00	24.95	24.95 N	263.80 E	264.98@	84.60	0.19
4898.00	3.25	270.18	4883.69	90.00	24.88	24.88 N	258.49 E	259.68@	84.50	0.32
4988.00	3.17	271.85	4973.55	90.00	24.97	24.97 N	253.45 E	254.67@	84.37	0.14
5078.00	2.64	275.19	5063.43	90.00	25.24	25.24 N	248.90 E	250.17@	84.21	0.62
5168.00	3.52	266.75	5153.30	90.00	25.27	25.27 N	244.07 E	245.38@	84.09	1.10
5259.00	3.34	267.72	5244.14	91.00	25.01	25.01 N	238.63 E	239.94@	84.02	0.21
5349.00	3.61	269.39	5333.97	90.00	24.87	24.87 N	233.18 E	234.50@	83.91	0.32
5439.00	3.34	274.22	5423.81	90.00	25.03	25.03 N	227.73 E	229.11@	83.73	0.44

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
MOBIL FEDERAL 29 #3
EDDY COUNTY, NM
RIG:H&P 340

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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)
5529.00	4.04	266.22	5513.62	90.00	25.02	25.02 N	221.96 E	223.36@	83.57	0.96
5619.00	3.87	263.59	5603.40	90.00	24.47	24.47 N	215.77 E	217.16@	83.53	0.28
5710.00	3.78	262.44	5694.20	91.00	23.73	23.73 N	209.75 E	211.09@	83.54	0.13
5800.00	3.43	259.81	5784.02	90.00	22.87	22.87 N	204.16 E	205.43@	83.61	0.43
5890.00	4.22	257.61	5873.82	90.00	21.68	21.68 N	198.27 E	199.46@	83.76	0.89
5980.00	4.48	257.35	5963.56	90.00	20.20	20.20 N	191.61 E	192.67@	83.98	0.29
6071.00	4.75	253.74	6054.27	91.00	18.37	18.37 N	184.53 E	185.44@	84.32	0.43
6161.00	4.92	252.16	6143.95	90.00	16.14	16.14 N	177.27 E	178.01@	84.80	0.24
6251.00	4.57	262.53	6233.64	90.00	14.49	14.49 N	170.04 E	170.66@	85.13	1.03
6341.00	4.57	262.88	6323.36	90.00	13.58	13.58 N	162.93 E	163.50@	85.24	0.03
6431.00	4.48	260.42	6413.08	90.00	12.55	12.55 N	155.91 E	156.41@	85.40	0.24
6522.00	3.61	254.36	6503.85	91.00	11.19	11.19 N	149.64 E	150.06@	85.72	1.06
6612.00	3.69	258.31	6593.66	90.00	9.84	9.84 N	144.08 E	144.42@	86.09	0.29
6702.00	3.96	258.14	6683.46	90.00	8.61	8.61 N	138.20 E	138.47@	86.43	0.30
6792.00	3.25	259.46	6773.29	90.00	7.51	7.51 N	132.65 E	132.87@	86.76	0.79
6882.00	2.99	257.43	6863.15	90.00	6.53	6.53 N	127.85 E	128.02@	87.08	0.31
6973.00	3.17	260.68	6954.02	91.00	5.60	5.60 N	123.05 E	123.18@	87.39	0.28
7063.00	3.52	259.54	7043.87	90.00	4.70	4.70 N	117.88 E	117.98@	87.72	0.40
7153.00	3.34	255.32	7133.71	90.00	3.53	3.53 N	112.63 E	112.68@	88.20	0.34
7243.00	3.34	255.06	7223.55	90.00	2.19	2.19 N	107.56 E	107.58@	88.83	0.02
7333.00	2.99	253.57	7313.42	90.00	0.85	0.85 N	102.78 E	102.78@	89.52	0.40
7424.00	2.90	248.03	7404.30	91.00	-0.68	0.68 S	98.36 E	98.37@	90.40	0.33
7514.00	2.64	245.66	7494.19	90.00	-2.39	2.39 S	94.36 E	94.39@	91.45	0.32
7604.00	2.64	243.11	7584.10	90.00	-4.18	4.18 S	90.63 E	90.72@	92.64	0.13
7694.00	2.73	241.08	7674.00	90.00	-6.15	6.15 S	86.90 E	87.12@	94.05	0.14
7784.00	2.81	234.67	7763.89	90.00	-8.46	8.46 S	83.23 E	83.66@	95.81	0.35
7875.00	2.90	232.12	7854.78	91.00	-11.17	11.17 S	79.59 E	80.37@	97.99	0.17
7965.00	2.73	229.13	7944.67	90.00	-13.97	13.97 S	76.17 E	77.44@	100.39	0.25

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
 MOBIL FEDERAL 29 #3
 EDDY COUNTY, NM
 RIG:H&P 340

Page 03/03

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)
8055.00	1.58	221.49	8034.61	90.00	-16.30	16.30 S	73.73 E	75.51@	102.47	1.32
8126.00	0.79	214.89	8105.59	71.00	-17.43	17.43 S	72.80 E	74.86@	103.47	1.13
STRAIGHT-LINE PROJECTION TO BIT DEPTH @ 8183' MD.										
8183.00	0.79	214.89	8162.58	57.00	-18.08	18.08 S	72.35 E	74.58@	104.03	0.00



Job Number: □

Company: OXY Permian

Lease/Well: Sand Dune Mobil Fed 29 #3

Location: Eddy County

Rig Name: H&P 340

RKB: 3359.3

G.L. or M.S.L.: 3342.8

State/Country: New Mexico

Declination: 7.56 East to Grid

Grid: New Mexico East

File name: C:\WINSERVE\FED29_3.SVY

Date/Time: 10-Mar-10 / 15:10

Curve Name: Work

PathFinder Energy Services

WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane .00

Vertical Section Referenced to Wellhead

Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00
200.00	.25	353.50	200.00	.43	.43	-.05	.12
400.00	.50	63.50	400.00	1.26	1.26	.68	.24
588.00	1.00	58.50	587.98	2.48	2.48	2.82	.27
800.00	.75	56.50	799.95	4.21	4.21	5.55	.12
1000.00	1.00	77.50	999.93	5.31	5.31	8.34	.20
1200.00	1.00	87.50	1199.90	5.77	5.77	11.79	.09
1400.00	1.50	91.50	1399.85	5.77	5.77	16.15	.25
1600.00	2.00	81.50	1599.76	6.22	6.22	22.22	.29
1749.00	2.50	86.50	1748.64	6.80	6.80	28.04	.36
1930.00	2.75	75.50	1929.46	8.13	8.13	36.18	.31
2020.00	3.50	77.50	2019.32	9.27	9.27	40.95	.84
2065.00	4.00	76.50	2064.22	9.93	9.93	43.82	1.12
2111.00	4.25	70.50	2110.11	10.87	10.87	46.99	1.08
2156.00	4.25	68.50	2154.98	12.04	12.04	50.11	.33
2201.00	4.50	73.50	2199.85	13.15	13.15	53.35	1.01
2246.00	4.75	73.50	2244.70	14.19	14.19	56.83	.56
2291.00	4.50	66.50	2289.56	15.42	15.42	60.24	1.37
2381.00	5.00	73.50	2379.25	17.94	17.94	67.24	.85
2427.00	5.00	72.50	2425.07	19.11	19.11	71.07	.19
2517.00	5.50	73.50	2514.70	21.52	21.52	78.95	.56
2562.00	5.50	69.50	2559.49	22.88	22.88	83.03	.85
2607.00	5.50	69.50	2604.28	24.39	24.39	87.07	.00
2652.00	5.75	69.50	2649.07	25.94	25.94	91.21	.56
2697.00	5.75	74.50	2693.84	27.33	27.33	95.49	1.11

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100
2746.00	5.75	75.50	2742.59	28.60	28.60	100.23	.20
2791.00	5.75	75.50	2787.37	29.73	29.73	104.60	.00
2881.00	5.75	77.50	2876.91	31.84	31.84	113.36	.22
2972.00	6.00	81.50	2967.44	33.52	33.52	122.52	.53
3026.00	6.00	81.50	3021.14	34.36	34.36	128.10	.00
3168.00	6.00	86.50	3162.36	35.91	35.91	142.85	.37
3228.00	6.25	84.50	3222.02	36.41	36.41	149.23	.55
3373.00	6.75	86.50	3366.09	37.69	37.69	165.59	.38
3464.00	7.00	90.50	3456.43	37.97	37.97	176.47	.59
3509.00	7.00	121.50	3501.11	36.51	36.51	181.56	8.29
3554.00	7.00	91.50	3545.79	35.01	35.01	186.64	8.03
3599.00	7.25	93.50	3590.45	34.76	34.76	192.21	.78
3644.00	6.75	101.50	3635.11	34.06	34.06	197.64	2.43
3689.00	7.50	94.50	3679.77	33.30	33.30	203.16	2.55
3734.00	7.75	99.50	3724.37	32.57	32.57	209.08	1.57
3739.00	8.00	100.50	3729.32	32.45	32.45	209.75	5.70
3825.00	8.00	103.50	3814.48	29.97	29.97	221.45	.49
3870.00	8.50	100.50	3859.02	28.63	28.63	227.77	1.47
3915.00	8.50	103.50	3903.52	27.25	27.25	234.27	.99
Last Weatherford Survey							
3944.00	8.50	91.50	3932.21	26.69	26.69	238.50	6.11
4041.00	7.65	96.68	4028.25	25.75	25.75	252.08	1.15
4086.00	6.42	95.54	4072.91	25.16	25.16	257.56	2.75
4131.00	4.84	98.00	4117.69	24.65	24.65	261.94	3.55
4176.00	3.96	97.56	4162.56	24.18	24.18	265.36	1.96
4221.00	3.96	94.31	4207.45	23.86	23.86	268.45	.50
4266.00	3.43	87.01	4252.35	23.82	23.82	271.35	1.57
4311.00	2.99	80.95	4297.28	24.07	24.07	273.85	1.23
4356.00	2.02	73.48	4342.24	24.48	24.48	275.77	2.27
4402.00	1.32	68.82	4388.22	24.90	24.90	277.04	1.55
4447.00	.79	43.95	4433.21	25.31	25.31	277.74	1.53
4492.00	.35	296.37	4478.21	25.60	25.60	277.83	2.12
4537.00	1.06	264.99	4523.21	25.62	25.62	277.29	1.74
4582.00	1.76	261.12	4568.19	25.48	25.48	276.20	1.57
4627.00	2.64	265.43	4613.16	25.29	25.29	274.48	1.99
4717.00	3.69	268.95	4703.02	25.07	25.07	269.52	1.19
4808.00	3.52	268.51	4793.84	24.95	24.95	263.80	.19
4898.00	3.25	270.18	4883.69	24.88	24.88	258.49	.32
4988.00	3.17	271.85	4973.54	24.97	24.97	253.45	.14
5078.00	2.64	275.19	5063.43	25.24	25.24	248.90	.62
5168.00	3.52	266.75	5153.30	25.27	25.27	244.07	1.10
5259.00	3.34	267.72	5244.13	25.00	25.00	238.64	.21
5349.00	3.61	269.39	5333.97	24.87	24.87	233.18	.32
5439.00	3.34	274.22	5423.80	25.03	25.03	227.73	.44
5529.00	4.04	266.22	5513.62	25.02	25.02	221.96	.96
5619.00	3.87	263.59	5603.40	24.47	24.47	215.77	.28

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100
5710.00	3.78	262.44	5694.20	23.73	23.73	209.75	.13
5800.00	3.43	259.81	5784.02	22.86	22.86	204.16	.43
5890.00	4.22	257.61	5873.82	21.68	21.68	198.27	.89
5980.00	4.48	257.35	5963.56	20.20	20.20	191.61	.29
6071.00	4.75	253.74	6054.27	18.36	18.36	184.53	.44
6161.00	4.92	252.16	6143.95	16.14	16.14	177.27	.24
6251.00	4.57	262.53	6233.64	14.49	14.49	170.05	1.03
6341.00	4.57	262.88	6323.35	13.58	13.58	162.93	.03
6431.00	4.48	260.42	6413.07	12.55	12.55	155.91	.24
6522.00	3.61	254.36	6503.85	11.19	11.19	149.65	1.06
6612.00	3.69	258.31	6593.66	9.84	9.84	144.08	.29
6702.00	3.96	258.14	6683.46	8.61	8.61	138.20	.30
6792.00	3.25	259.46	6773.28	7.50	7.50	132.65	.79
6882.00	2.99	257.43	6863.15	6.53	6.53	127.85	.31
6973.00	3.17	260.68	6954.02	5.60	5.60	123.06	.28
7063.00	3.52	259.54	7043.87	4.70	4.70	117.88	.40
7153.00	3.34	255.32	7133.70	3.53	3.53	112.63	.34
7243.00	3.34	255.06	7223.55	2.19	2.19	107.56	.02
7333.00	2.99	253.52	7313.41	.85	.85	102.78	.40
7424.00	2.90	248.03	7404.29	-.68	-.68	98.37	.33
7514.00	2.64	245.66	7494.19	-2.39	-2.39	94.37	.32
7604.00	2.64	243.11	7584.09	-4.18	-4.18	90.63	.13
7694.00	2.73	241.08	7674.00	-6.16	-6.16	86.90	.15
7784.00	2.81	234.67	7763.89	-8.47	-8.47	83.23	.36
7875.00	2.90	232.12	7854.78	-11.17	-11.17	79.59	.17
7965.00	2.73	229.13	7944.67	-13.97	-13.97	76.17	.25
8055.00	1.58	221.49	8034.60	-16.30	-16.30	73.73	1.31
8126.00	.79	214.89	8105.59	-17.44	-17.44	72.80	1.13
Projection to Bit - TD							
8183.00	.79	214.89	8162.58	-18.08	-18.08	72.35	.00

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100
3689.00	7.50	94.50	3679.77	33.30	33.30	203.16	2.55
3734.00	7.75	99.50	3724.37	32.57	32.57	209.08	1.57
3739.00	8.00	100.50	3729.32	32.45	32.45	209.75	5.70
3825.00	8.00	103.50	3814.48	29.97	29.97	221.45	.49
3870.00	8.50	100.50	3859.02	28.63	28.63	227.77	1.47
3915.00	8.50	103.50	3903.52	27.25	27.25	234.27	.99
3944.00	8.50	91.50	3932.21	26.69	26.69	238.50	6.11