



An Operating Unit of Smith International, Inc.

DIRECTIONAL SURVEY REPORT

OXY PETROLEUM

FEDERAL 29 #5

EDDY COUNTY, NEW MEXICO

PREPARED BY: FRANCISCO SINISTERRA

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

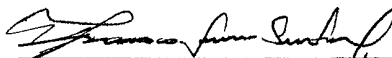
DIRECTIONAL SURVEY COMPANY REPORT:

1. NAME OF SURVEYING COMPANY: PATHFINDER ENERGY SERVICES
2. NAME OF PERSON(S) PERFORMING SURVEY:
A) RAFAEL DONARUMMA
3. POSITION OF SAID PERSON(S): (A-F) SURVEYORS (FIELD ENGINEERS)
4. DATE(S) ON WHICH SURVEY WAS PERFORMED: 11/26/09 TO 12/05/09
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
FEDERAL 29 #5
EDDY COUNTY, NM
RIG: H & P 340

9. SURVEY CERTIFIED FROM: 533 TO 8534 FEET MEASURED DEPTH.

THIS IS TO VERIFY THAT ATTACHED DOCUMENTS SHOWING THE WELL TO BE
DISPLACED AT 2091.2 FEET ON A BEARING OF 268.22 DEGREES FROM THE
CENTER OF THE ROTARY TABLE AT A PROJECTED BIT DEPTH OF 8605 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: 11/26/2009
Date Completed: 12/05/2009

OXY PETROLEUM
FEDERAL 29 #5
EDDY COUNTY, NM
Rig:H&P #340
PathFinder Office Supervisor: FRANCISCO SINISTERRA
PathFinder Field Engineers:RAFAEL DONARUMMA
DANIEL VASQUEZ
STEWART ROBERTSON

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:32.16.54.0018 N LON:103.47.59.7092 W
GRID Reference:NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 664849.1000 Y: 466597.7000
North Aligned To:GRID NORTH
Total Magnetic Correction: 7.59° EAST TO GRID
Vertical Section Plane: 269.65
Survey Vert. Reference: 17.00' Kelly Bushing To Ground
Altitude:3340.00' Ground To MSL

Measured Depth	8605.00	(feet)
Inclination	29.63	(deg)
Azimuth	266.59	(deg)
True Vertical Depth	7987.80	(feet)
Vertical Section	2090.56	(feet)
Survey X cord	662758.88	(feet)
Survey Y cord	466532.90	(feet)
Survey Lat	32.28151741 N	(deg)
Survey Lon	103.80668347 W	(deg)
Rectangular Corr. N/S	64.79 S	(feet)
Rectangular Corr. E/W	2090.20 W	(feet)
Closure Distance	2091.20	(feet)
Direction of Closure	268.22	(deg)
Dogleg Severity	0.00	(deg/100ft)

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM

FEDERAL 29 #5

EDDY COUNTY, NM

Rig:H&P #340

PathFinder Office Supervisor: FRANCISCO SINISTERRA

PathFinder Field Engineers: RAFAEL DONARUMMA

DANIEL VASQUEZ

STEWART ROBERTSON

Survey Calculations by RX5 V5.11i using Minimum Curvature

Survey Horiz. Reference:WELLHEAD

Ref Coordinates: LAT:32.16.54.0018 N LON:103.47.59.7092 W

Reference:NAD27 new mexico east Transverse Mercator

Ref GRID Coord: X: 664849.1000 Y: 466597.7000

North Aligned To:GRID NORTH

Total Magnetic Correction: 7.59° EAST TO GRID

Vertical Section Plane: 269.65

Survey Vert. Reference: 17.00' Kelly Bushing To Ground

Altitude:3340.00' Ground To MSL

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)
TIE IN TO SCIENTIFIC GYRO @ 353' MD.										
353.00	0.13	264.63	353.00	0.00	0.75	0.51 N	0.75 W	0.91@	304.22	0.00
THE FOLLOWING ARE PATHFINDER SURVEYS.										
533.00	0.88	302.16	532.99	180.00	2.12	1.23 N	2.12 W	2.45@	300.01	0.43
656.00	1.32	261.39	655.97	123.00	4.31	1.52 N	4.32 W	4.58@	289.34	0.71
779.00	1.49	227.54	778.94	123.00	6.90	0.23 N	6.90 W	6.91@	271.87	0.68
945.00	2.02	202.60	944.86	166.00	9.64	3.93 S	9.62 W	10.39@	247.77	0.55
1123.00	1.41	195.75	1122.78	178.00	11.48	8.94 S	11.42 W	14.50@	231.96	0.36
1213.00	1.67	190.35	1212.75	90.00	12.03	11.29 S	11.96 W	16.45@	226.64	0.33
1303.00	1.76	189.01	1302.71	90.00	12.49	13.95 S	12.41 W	18.67@	221.66	0.11
1394.00	1.06	188.35	1393.68	91.00	12.85	16.16 S	12.75 W	20.58@	218.27	0.77
1484.00	0.62	236.45	1483.67	90.00	13.38	17.25 S	13.28 W	21.77@	217.58	0.88
1574.00	0.62	210.00	1573.66	90.00	14.04	17.94 S	13.93 W	22.71@	217.82	0.31
1664.00	0.35	182.74	1663.66	90.00	14.30	18.64 S	14.18 W	23.42@	217.27	0.39
1755.00	0.44	229.00	1754.66	91.00	14.58	19.15 S	14.46 W	23.99@	217.06	0.35
1844.00	0.09	124.41	1843.66	89.00	14.78	19.41 S	14.66 W	24.32@	217.06	0.53
1934.00	0.26	326.69	1933.66	90.00	14.83	19.28 S	14.71 W	24.25@	217.35	0.38
2024.00	0.26	328.64	2023.66	90.00	15.05	18.94 S	14.93 W	24.11@	218.26	0.01
2115.00	0.53	345.14	2114.65	91.00	15.26	18.35 S	15.15 W	23.80@	219.54	0.32
2205.00	0.70	351.93	2204.65	90.00	15.44	17.41 S	15.33 W	23.20@	221.38	0.20
2295.00	0.79	14.36	2294.64	90.00	15.35	16.26 S	15.26 W	22.30@	223.17	0.34
2385.00	0.79	352.70	2384.63	90.00	15.27	15.04 S	15.18 W	21.37@	225.26	0.33
2475.00	0.79	358.62	2474.63	90.00	15.36	13.81 S	15.27 W	20.59@	227.89	0.09
2566.00	0.53	358.67	2565.62	91.00	15.38	12.76 S	15.30 W	19.92@	230.17	0.29
2656.00	0.44	353.27	2655.62	90.00	15.42	12.00 S	15.35 W	19.48@	231.98	0.11
2746.00	0.18	42.88	2745.61	90.00	15.36	11.55 S	15.29 W	19.17@	232.93	0.39

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
FEDERAL 29 #5
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)
2836.00	0.26	20.57	2835.61	90.00	15.19	11.26 S	15.13 W	18.86@	233.34	0.13
2926.00	0.53	317.33	2925.61	90.00	15.40	10.76 S	15.34 W	18.73@	234.94	0.53
3016.00	0.09	331.28	3015.61	90.00	15.71	10.39 S	15.65 W	18.79@	236.41	0.49
3106.00	0.18	337.24	3105.61	90.00	15.80	10.20 S	15.74 W	18.76@	237.05	0.10
3197.00	0.44	311.30	3196.61	91.00	16.12	9.84 S	16.06 W	18.83@	238.50	0.32
3287.00	0.35	326.08	3286.61	90.00	16.53	9.38 S	16.47 W	18.96@	240.33	0.15
3377.00	0.44	40.46	3376.61	90.00	16.45	8.89 S	16.40 W	18.66@	241.54	0.54
3467.00	0.53	89.46	3466.60	90.00	15.81	8.62 S	15.76 W	17.97@	241.31	0.46
3557.00	0.53	107.11	3556.60	90.00	15.00	8.74 S	14.95 W	17.32@	239.67	0.18
3647.00	0.53	130.55	3646.60	90.00	14.29	9.14 S	14.23 W	16.91@	237.30	0.24
3737.00	0.88	146.01	3736.59	90.00	13.59	9.98 S	13.53 W	16.81@	233.58	0.44
3828.00	1.41	139.07	3827.57	91.00	12.47	11.41 S	12.40 W	16.85@	227.40	0.60
3918.00	1.32	137.99	3917.54	90.00	11.06	13.01 S	10.99 W	17.03@	220.17	0.10
3938.00	1.32	133.33	3937.54	20.00	10.75	13.34 S	10.66 W	17.08@	218.64	0.54
4054.00	0.88	110.75	4053.52	116.00	8.95	14.57 S	8.86 W	17.06@	211.29	0.53
4099.00	0.62	105.13	4098.51	45.00	8.39	14.76 S	8.30 W	16.93@	209.35	0.60
4145.00	0.53	104.52	4144.51	46.00	7.95	14.88 S	7.85 W	16.82@	207.83	0.20
4190.00	0.44	89.65	4189.51	45.00	7.57	14.93 S	7.48 W	16.70@	206.61	0.34
4235.00	0.70	298.70	4234.51	45.00	7.64	14.80 S	7.55 W	16.61@	207.03	2.46
4280.00	2.29	289.70	4279.49	45.00	8.72	14.36 S	8.64 W	16.76@	211.02	3.56
4325.00	3.78	285.97	4324.43	45.00	10.99	13.65 S	10.91 W	17.47@	218.63	3.34
4370.00	4.57	282.18	4369.31	45.00	14.17	12.86 S	14.09 W	19.08@	227.60	1.86
4415.00	5.10	281.27	4414.15	45.00	17.87	12.09 S	17.80 W	21.52@	235.81	1.19
4460.00	5.72	279.36	4458.95	45.00	22.04	11.34 S	21.98 W	24.73@	242.71	1.43
4505.00	7.12	277.29	4503.66	45.00	27.02	10.62 S	26.95 W	28.97@	248.50	3.15
4550.00	7.91	275.44	4548.28	45.00	32.86	9.97 S	32.80 W	34.29@	253.09	1.84
4595.00	8.79	273.61	4592.80	45.00	39.37	9.46 S	39.32 W	40.44@	256.47	2.04
4640.00	10.29	272.17	4637.18	45.00	46.82	9.09 S	46.77 W	47.64@	259.00	3.38

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
FEDERAL 29 #5
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)
4685.00	11.43	272.09	4681.37	45.00	55.29	8.78 S	55.24 W	55.93@	260.97	2.53
4731.00	11.78	270.41	4726.43	46.00	64.54	8.58 S	64.49 W	65.06@	262.42	1.06
4776.00	12.93	269.19	4770.39	45.00	74.17	8.62 S	74.12 W	74.62@	263.37	2.62
4821.00	14.33	268.14	4814.12	45.00	84.77	8.87 S	84.72 W	85.18@	264.02	3.16
4866.00	15.48	266.84	4857.60	45.00	96.34	9.38 S	96.28 W	96.74@	264.43	2.66
4911.00	15.65	264.83	4900.95	45.00	108.38	10.26 S	108.32 W	108.81@	264.59	1.26
4956.00	15.92	263.66	4944.26	45.00	120.57	11.49 S	120.50 W	121.05@	264.55	0.93
5001.00	15.21	263.14	4987.61	45.00	132.57	12.87 S	132.49 W	133.12@	264.45	1.61
5047.00	16.09	264.91	5031.90	46.00	144.92	14.16 S	144.84 W	145.53@	264.42	2.18
5092.00	16.53	264.69	5075.09	45.00	157.51	15.31 S	157.42 W	158.16@	264.45	0.99
5137.00	17.15	264.69	5118.16	45.00	170.50	16.51 S	170.40 W	171.20@	264.46	1.38
5182.00	18.29	264.57	5161.02	45.00	184.14	17.80 S	184.04 W	184.90@	264.48	2.53
5227.00	19.70	266.81	5203.57	45.00	198.75	18.89 S	198.64 W	199.54@	264.57	3.53
5272.00	21.28	268.60	5245.72	45.00	214.49	19.51 S	214.38 W	215.26@	264.80	3.78
5317.00	22.51	268.78	5287.48	45.00	231.27	19.89 S	231.15 W	232.01@	265.08	2.74
5362.00	22.86	268.63	5329.00	45.00	248.62	20.28 S	248.50 W	249.33@	265.33	0.79
5407.00	24.09	268.53	5370.27	45.00	266.55	20.73 S	266.42 W	267.23@	265.55	2.73
5452.00	25.15	267.88	5411.18	45.00	285.29	21.32 S	285.16 W	285.96@	265.72	2.43
5498.00	26.56	267.61	5452.57	46.00	305.33	22.11 S	305.21 W	306.01@	265.86	3.08
5543.00	27.61	266.88	5492.64	45.00	325.81	23.09 S	325.67 W	326.49@	265.94	2.45
5588.00	27.08	266.76	5532.61	45.00	346.45	24.24 S	346.31 W	347.16@	266.00	1.18
5633.00	27.17	265.98	5572.66	45.00	366.93	25.54 S	366.78 W	367.67@	266.02	0.82
5678.00	27.87	265.88	5612.57	45.00	387.68	27.02 S	387.52 W	388.46@	266.01	1.56
5723.00	28.40	265.75	5652.25	45.00	408.85	28.56 S	408.69 W	409.68@	266.00	1.19
5768.00	28.67	266.19	5691.79	45.00	430.31	30.07 S	430.13 W	431.18@	266.00	0.76
5814.00	29.37	266.75	5732.01	46.00	452.59	31.45 S	452.40 W	453.49@	266.02	1.63
5859.00	30.07	267.30	5771.09	45.00	474.87	32.60 S	474.68 W	475.80@	266.07	1.67
5904.00	31.74	266.63	5809.70	45.00	497.96	33.83 S	497.76 W	498.91@	266.11	3.79

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
FEDERAL 29 #5
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)
5949.00	33.15	265.63	5847.67	45.00	522.05	35.46 S	521.85 W	523.05@	266.11	3.35
5994.00	34.56	265.99	5885.04	45.00	547.07	37.29 S	546.85 W	548.12@	266.10	3.16
6039.00	35.61	265.74	5921.87	45.00	572.87	39.16 S	572.65 W	573.98@	266.09	2.36
6084.00	37.02	266.36	5958.13	45.00	599.47	40.99 S	599.23 W	600.63@	266.09	3.24
6129.00	38.60	266.43	5993.68	45.00	627.01	42.73 S	626.76 W	628.22@	266.10	3.51
6174.00	38.51	266.88	6028.87	45.00	655.02	44.36 S	654.76 W	656.26@	266.12	0.65
6219.00	38.34	266.65	6064.12	45.00	682.95	45.94 S	682.68 W	684.23@	266.15	0.49
6264.00	38.51	266.67	6099.38	45.00	710.88	47.57 S	710.60 W	712.19@	266.17	0.38
6309.00	39.31	266.52	6134.39	45.00	739.11	49.25 S	738.82 W	740.46@	266.19	1.79
6355.00	39.31	267.87	6169.98	46.00	768.22	50.68 S	767.92 W	769.59@	266.22	1.86
6400.00	38.95	268.74	6204.89	45.00	796.61	51.52 S	796.31 W	797.97@	266.30	1.46
6445.00	38.95	268.89	6239.89	45.00	824.90	52.10 S	824.59 W	826.24@	266.38	0.21
6490.00	37.64	269.32	6275.20	45.00	852.78	52.54 S	852.48 W	854.09@	266.47	2.97
6535.00	37.28	269.88	6310.92	45.00	880.15	52.73 S	879.84 W	881.42@	266.57	1.10
6580.00	37.46	269.18	6346.69	45.00	907.46	52.96 S	907.16 W	908.70@	266.66	1.03
6626.00	36.05	269.32	6383.54	46.00	934.99	53.32 S	934.68 W	936.20@	266.74	3.07
6671.00	34.47	269.35	6420.29	45.00	960.96	53.62 S	960.65 W	962.15@	266.81	3.51
6716.00	34.03	270.17	6457.48	45.00	986.29	53.73 S	985.98 W	987.44@	266.88	1.42
6761.00	34.56	270.81	6494.66	45.00	1011.64	53.51 S	1011.33 W	1012.75@	266.97	1.43
6806.00	36.14	270.81	6531.36	45.00	1037.67	53.14 S	1037.37 W	1038.73@	267.07	3.51
6851.00	38.08	271.41	6567.25	45.00	1064.81	52.61 S	1064.51 W	1065.81@	267.17	4.39
6896.00	38.25	270.33	6602.63	45.00	1092.61	52.19 S	1092.31 W	1093.56@	267.26	1.53
6942.00	36.05	270.43	6639.29	46.00	1120.39	52.01 S	1120.09 W	1121.30@	267.34	4.79
6987.00	34.65	271.08	6675.99	45.00	1146.42	51.66 S	1146.12 W	1147.29@	267.42	3.22
7032.00	34.91	270.18	6712.95	45.00	1172.08	51.38 S	1171.79 W	1172.91@	267.49	1.28
7077.00	34.47	269.19	6749.95	45.00	1197.69	51.52 S	1197.40 W	1198.51@	267.54	1.59
7122.00	34.82	268.26	6786.98	45.00	1223.27	52.09 S	1222.97 W	1224.08@	267.56	1.41
7167.00	36.14	268.27	6823.62	45.00	1249.38	52.88 S	1249.08 W	1250.20@	267.58	2.93

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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)
7212.00	36.32	268.44	6859.92	45.00	1275.97	53.65 S	1275.67 W	1276.79@	267.59	0.46
7257.00	36.49	269.65	6896.14	45.00	1302.67	54.09 S	1302.37 W	1303.49@	267.62	1.64
7302.00	36.58	269.61	6932.29	45.00	1329.46	54.26 S	1329.16 W	1330.26@	267.66	0.21
7347.00	35.96	270.05	6968.57	45.00	1356.08	54.34 S	1355.78 W	1356.87@	267.70	1.49
7393.00	36.05	270.96	7005.79	46.00	1383.12	54.11 S	1382.82 W	1383.88@	267.76	1.18
7438.00	36.93	271.84	7041.96	45.00	1409.87	53.45 S	1409.57 W	1410.58@	267.83	2.28
7483.00	37.99	272.34	7077.68	45.00	1437.21	52.45 S	1436.92 W	1437.88@	267.91	2.45
7528.00	38.69	272.36	7112.98	45.00	1465.10	51.31 S	1464.81 W	1465.71@	267.99	1.56
7573.00	39.48	272.18	7147.91	45.00	1493.44	50.18 S	1493.16 W	1494.00@	268.08	1.77
7618.00	39.66	271.76	7182.60	45.00	1522.08	49.20 S	1521.81 W	1522.60@	268.15	0.72
7664.00	39.31	270.82	7218.10	46.00	1551.32	48.54 S	1551.05 W	1551.81@	268.21	1.51
7708.00	38.25	269.74	7252.40	44.00	1578.87	48.40 S	1578.61 W	1579.35@	268.24	2.86
7753.00	38.25	269.63	7287.74	45.00	1606.73	48.55 S	1606.47 W	1607.20@	268.27	0.15
7798.00	38.69	269.41	7322.97	45.00	1634.73	48.79 S	1634.46 W	1635.19@	268.29	1.02
7843.00	38.25	269.59	7358.20	45.00	1662.72	49.03 S	1662.45 W	1663.18@	268.31	1.01
7889.00	36.67	269.61	7394.72	46.00	1690.70	49.23 S	1690.43 W	1691.15@	268.33	3.44
7934.00	34.73	269.30	7431.26	45.00	1716.96	49.48 S	1716.69 W	1717.40@	268.35	4.33
7979.00	33.41	268.43	7468.53	45.00	1742.16	49.97 S	1741.89 W	1742.61@	268.36	3.13
8024.00	34.73	267.40	7505.81	45.00	1767.36	50.89 S	1767.08 W	1767.81@	268.35	3.20
8069.00	35.70	267.62	7542.57	45.00	1793.29	52.02 S	1793.00 W	1793.76@	268.34	2.17
8114.00	35.96	267.60	7579.06	45.00	1819.61	53.12 S	1819.32 W	1820.10@	268.33	0.58
8159.00	36.40	267.98	7615.38	45.00	1846.16	54.14 S	1845.87 W	1846.66@	268.32	1.10
8204.00	37.20	268.53	7651.41	45.00	1873.11	54.96 S	1872.81 W	1873.62@	268.32	1.92
8249.00	36.05	268.28	7687.53	45.00	1899.95	55.71 S	1899.65 W	1900.46@	268.32	2.58
8294.00	35.09	268.16	7724.13	45.00	1926.12	56.52 S	1925.81 W	1926.64@	268.32	2.14
8339.00	34.73	267.45	7761.03	45.00	1951.86	57.51 S	1951.54 W	1952.39@	268.31	1.21
8384.00	33.24	267.67	7798.34	45.00	1976.99	58.58 S	1976.67 W	1977.54@	268.30	3.32
8429.00	32.01	267.28	7836.24	45.00	2001.24	59.65 S	2000.91 W	2001.80@	268.29	2.77

PathFinder Energy Services, Inc.

Survey Report

OXY PETROLEUM
FEDERAL 29 #5
EDDY COUNTY, NM
RIG:H&P #340

Page 06/05

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS
						(ft)	(ft)	(ft)	(deg)	(dg/100ft)
8475.00	31.66	266.66	7875.32	46.00	2025.47	60.93 S	2025.14 W	2026.06@	268.28	1.04
8534.00	29.63	266.59	7926.08	59.00	2055.50	62.70 S	2055.16 W	2056.12@	268.25	3.44
STRAIGHT LINE PROJECTION TO BIT @ 8605'MD.										
8605.00	29.63	266.59	7987.80	71.00	2090.56	64.79 S	2090.20 W	2091.20@	268.22	0.00



TIE-IN SURVEY INFORMATION SHEET

CLIENT INFORMATION

CLIENT:	OXY PETROLEUM		
LEASE / WELL No.:	FEDERAL 29	# 5	
WELL LOCATION:	EDDY COUNTY		
COUNTY / STATE / COUNTRY:	EDDY COUNTY	NEW MEXICO	USA
RIG:	HP 340		
API WELL No:	30-15-37337		
JOB No:	101009333-WT-WT		
P.O. / AFE No.	n/a		
DIRECTIONAL COMPANY:	PATHFINDER ENERGY SERVICES		

WELL SITE INFORMATION

TOTAL MAGNETIC CORRECTION (TMC):			
On Wall Plat:	7.59	LWD Calculated:	7.586641
Agreed Upon:		7.59	
X =	664849.100000	Feet	Y = 466597.700000
Feet		Feet	
SITE LATITUDE:	32.281667	SITE LONGITUDE:	103.799919
GRID SYSTEM:	TRUE ☐ UTM ☒ LAMBERT ☐	ZONE:	NEW MEXICO EAST
PROPOSED DRIFT DIRECTION:	269.65		
KELLY BUSHING ELEVATION:	17		
ALTITUDE:	3340.1	Feet	WATER DEPTH: -
		Feet	

TIE-IN SURVEY

MEASURED DEPTH:	353		
DRIFT ANGLE:	0.13		
DRIFT DIRECTION:	264.63		
TRUE VERTICAL DEPTH:	353		
VERTICAL SECTION:	0.75		
RECTANGULAR COORDINATE (N / S) :	0.51		
RECTANGULAR COORDINATE (E / W) :	-0.75		
CLOSURE DISTANCE / DIRECTION:	0.91	304.57	
SURVEY CALCULATION METHOD:	AA ☐	MC ☒	RC ☐ BT ☐
SOURCE OF TIE-IN DATA (COMPANY):	SCIENTIFIC GYRO		
COPY OF TIE-IN SURVEY REPORT	☒ YES		☐ NO

WELL PLAN

KICKOFF DEPTH:	4200	TOTAL DEPTH:	8600.7
KICKOFF ANGLE:	0	MAX ANGLE:	36.63

PES Engineers:

D. VASQUEZ

H. DONARUMMA

**Signature of both field engineers required if applicable

Directional Driller:

S. BRANDT, J. PHILLIPS

DATE: 27-Nov-2009

PathFinder Energy Services, Inc.

Magnetic & Grid Calculations

OXY PETROLEUM
FEDERAL 29 #5
EDDY COUNTY, NEW MEXICO
Rig:HP 340

Tue Nov 24 17:43:44 2009

Coordinates

Latitude: 32.281667 N (32 deg. 16 min. 54.0018 sec.)
Longitude: 103.799919 W (-103 deg. 47 min. 59.7092 sec.)
Elevation: 16.50 feet.
Calculation Date: Nov/24/2009

Magnetic Calculations

Model: IGRF2005
Dip Angle: 60.2568 degrees
Total Magnetic Field: 0.48838 gauss
Magnetic Declination: 7.871533 degrees
Horizontal Intensity: 0.242290 gauss
To Convert a Magnetic Dir. to a TRUE North Dir. Add 7.871533 Degr

7.87
28
7.59 ✓

Transverse Mercator Grid Calculations NAD27

Grid System: Transverse Mercator: new mexico east
Ellipsoid: Clarke 1866
X: 664849.1000 feet
Y: 466597.7000 feet
True to Grid: (convergence) -0.284893 degrees
Magnetic to Grid: 7.586641 degrees
To Convert a Magnetic Dir. to a GRID dir. Add 7.586641 Degr.

TFO = 45.81