

PathFinder -- a Schlumberger company

Survey Report

OXY USA INC
CEDAR CANYON 22 FEDERAL 6H
EDDY COUNTY, NM
API#: 30-015-43759 Rig: H&P639
PathFinder Office Supervisor: L. KEITH
PathFinder Field Engineers: K. UGA
D. CRESS

Survey Calculations by RX5 V7.01C using Minimum Curvature

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Tie-in Date: 08/08/2016
Date Completed: 08/11/2016

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.11.54.4786 N LON: 103.58.47.0063 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 609380.5600 Y: 436101.7200
Total Magnetic Correction: 7.04° EAST TO GRID
North Aligned To: GRID NORTH
Vertical Section Plane: 92.08
Survey Vert. Reference: 28.20' Rotary Table To MSL
Water Depth: 2939.10' MSL TO SEABED

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	TEMP (F)
ORIGIN OF WELL AT SURFACE.									
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00@ 0.00	0.00	0.00
THE FOLLOWING ARE SCHLUMBERGER MWD SURVEYS.									
442.00	0.70	265.57	441.99	442.00	-2.68	0.21 S	2.70@ 265.57	0.16	97.41
520.00	2.72	240.25	519.95	78.00	-4.73	1.16 S	4.91@ 256.30	2.70	101.02
611.00	2.97	240.42	610.84	91.00	-8.57	3.40 S	9.34@ 248.66	0.27	101.02
701.00	3.14	235.63	700.71	90.00	-12.54	5.94 S	14.08@ 245.03	0.34	104.64
792.00	2.66	233.49	791.59	91.00	-16.19	8.60 S	18.62@ 242.48	0.54	108.25
883.00	0.70	223.02	882.55	91.00	-18.21	10.27 S	21.24@ 241.09	2.17	108.25
974.00	0.11	270.44	973.55	91.00	-18.66	10.67 S	21.84@ 240.75	0.69	111.87
1065.00	0.09	230.86	1064.55	91.00	-18.80	10.72 S	21.99@ 240.83	0.08	111.87
1159.00	0.13	153.82	1158.55	94.00	-18.81	10.86 S	22.07@ 240.52	0.15	115.48
1253.00	0.04	32.34	1252.55	94.00	-18.74	10.93 S	22.05@ 240.28	0.16	115.48
1443.00	0.15	12.00	1442.55	190.00	-18.66	10.63 S	21.82@ 240.85	0.06	115.48
1537.00	0.09	246.05	1536.55	94.00	-18.71	10.54 S	21.82@ 241.11	0.23	115.48
1631.00	0.11	340.48	1630.55	94.00	-18.81	10.48 S	21.88@ 241.36	0.16	119.09
1820.00	0.11	335.95	1819.55	189.00	-18.95	10.15 S	21.83@ 242.31	0.01	122.71
1915.00	0.13	243.53	1914.55	95.00	-19.09	10.11 S	21.94@ 242.55	0.18	122.71
2009.00	0.04	299.41	2008.55	94.00	-19.21	10.14 S	22.06@ 242.63	0.12	122.71
2103.00	0.20	205.86	2102.55	94.00	-19.31	10.27 S	22.21@ 242.45	0.22	122.71
2198.00	0.13	160.65	2197.55	95.00	-19.33	10.53 S	22.36@ 241.92	0.15	122.71
2292.00	0.13	58.81	2291.55	94.00	-19.21	10.57 S	22.27@ 241.66	0.21	126.32
2480.00	0.11	22.26	2479.55	188.00	-18.96	10.29 S	21.92@ 241.99	0.04	126.32
2574.00	0.11	227.62	2573.55	94.00	-19.00	10.27 S	21.94@ 242.08	0.23	126.32
2669.00	0.07	54.39	2668.55	95.00	-19.02	10.30 S	21.97@ 242.04	0.19	126.32
2763.00	0.11	16.41	2762.55	94.00	-18.95	10.18 S	21.85@ 242.23	0.07	126.32

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CEDAR CANYON 22 FEDERAL 6H
EDDY COUNTY, NM
AP#: 30-015-43759 Rtg: H&P639

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	TEMP (F)
2857.00	0.18	337.69	2856.55	94.00	-18.99	9.96 S 19.36 W	21.77@ 242.79	0.12	126.32
2952.00	0.11	269.98	2951.54	95.00	-19.14	9.82 S 19.51 W	21.84@ 243.29	0.18	129.94
3140.00	0.09	173.97	3139.54	188.00	-19.30	9.96 S 19.68 W	22.05@ 243.14	0.08	129.94
3235.00	0.11	213.94	3234.54	95.00	-19.34	10.11 S 19.72 W	22.16@ 242.85	0.08	129.94
3329.00	0.13	219.90	3328.54	94.00	-19.45	10.27 S 19.84 W	22.34@ 242.63	0.02	129.94
3423.00	0.15	52.32	3422.54	94.00	-19.42	10.28 S 19.81 W	22.32@ 242.58	0.30	126.32
3518.00	0.07	30.75	3517.54	95.00	-19.30	10.15 S 19.68 W	22.14@ 242.71	0.09	126.32
3612.00	0.15	149.94	3611.54	94.00	-19.21	10.21 S 19.59 W	22.09@ 242.47	0.21	126.32
3706.00	0.13	92.88	3705.54	94.00	-19.03	10.32 S 19.42 W	21.99@ 242.01	0.14	126.32
3801.00	0.13	105.14	3800.54	95.00	-18.82	10.35 S 19.21 W	21.82@ 241.67	0.03	126.32
3895.00	0.13	245.84	3894.54	94.00	-18.81	10.43 S 19.20 W	21.85@ 241.50	0.26	126.32
3989.00	0.09	69.32	3988.54	94.00	-18.84	10.44 S 19.23 W	21.88@ 241.50	0.23	126.32
4084.00	0.11	325.44	4083.54	95.00	-18.83	10.34 S 19.21 W	21.82@ 241.71	0.17	126.32
4178.00	0.09	313.34	4177.54	94.00	-18.93	10.22 S 19.32 W	21.85@ 242.13	0.03	126.32
4272.00	0.11	324.33	4271.54	94.00	-19.05	10.09 S 19.42 W	21.89@ 242.55	0.03	126.32
4461.00	0.11	58.97	4460.54	189.00	-19.00	9.85 S 19.38 W	21.74@ 243.05	0.09	129.94
4555.00	0.15	247.45	4554.54	94.00	-19.04	9.85 S 19.41 W	21.77@ 243.09	0.28	111.87
4744.00	0.13	328.74	4743.54	189.00	-19.38	9.76 S 19.75 W	22.03@ 243.69	0.10	119.09
5120.00	0.11	78.35	5119.54	376.00	-19.27	9.33 S 19.62 W	21.72@ 244.57	0.05	111.87
5214.00	0.11	268.44	5213.54	94.00	-19.27	9.31 S 19.62 W	21.72@ 244.61	0.23	111.87
5308.00	0.29	217.95	5307.54	94.00	-19.50	9.50 S 19.86 W	22.01@ 244.43	0.25	115.48
5402.00	1.21	240.53	5401.53	94.00	-20.48	10.18 S 20.87 W	23.22@ 244.00	1.01	115.48
5496.00	2.66	250.83	5495.48	94.00	-23.36	11.38 S 23.79 W	26.37@ 244.44	1.58	115.48
5590.00	3.82	246.03	5589.32	94.00	-28.21	13.37 S 28.71 W	31.67@ 245.03	1.27	119.09
5684.00	4.81	239.19	5683.06	94.00	-34.33	16.66 S 34.96 W	38.73@ 244.52	1.19	108.25

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Page 01/03
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Survey Calculations by RX5 V7.01C using Minimum Curvature

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	TEMP (F)
ORIGIN OF WELL AT SURFACE.									
0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00@ 0.00	0.00	0.00
28.20	0.00	0.00	28.20	28.20	-0.00	0.00	0.00@ 0.00	0.00	0.00
THE FOLLOWING ARE SCHLUMBERGER MWD SURVEYS.									
442.00	0.70	265.57	441.99	413.80	-2.51	0.20 S 2.52 W	2.53@ 265.57	0.17	97.41
520.00	2.72	240.25	519.95	78.00	-4.56	1.15 S 4.60 W	4.74@ 255.96	2.70	101.02
611.00	2.97	240.42	610.84	91.00	-8.40	3.39 S 8.53 W	9.17@ 248.34	0.27	101.02
701.00	3.14	235.63	700.71	90.00	-12.37	5.93 S 12.59 W	13.92@ 244.78	0.34	104.64
792.00	2.66	233.49	791.59	91.00	-16.02	8.59 S 16.34 W	18.46@ 242.27	0.54	108.25
883.00	0.70	223.02	882.55	91.00	-18.04	10.25 S 18.42 W	21.08@ 240.90	2.17	108.25
974.00	0.11	270.44	973.55	91.00	-18.49	10.66 S 18.89 W	21.69@ 240.56	0.69	111.87
1065.00	0.09	230.86	1064.55	91.00	-18.63	10.70 S 19.03 W	21.83@ 240.64	0.08	111.87
1159.00	0.13	153.82	1158.55	94.00	-18.63	10.85 S 19.04 W	21.91@ 240.33	0.15	115.48
1253.00	0.04	32.34	1252.55	94.00	-18.57	10.91 S 18.98 W	21.89@ 240.09	0.16	115.48
1443.00	0.15	12.00	1442.55	190.00	-18.49	10.62 S 18.89 W	21.67@ 240.66	0.06	115.48
1537.00	0.09	246.05	1536.55	94.00	-18.54	10.53 S 18.93 W	21.66@ 240.93	0.23	115.48
1631.00	0.11	340.48	1630.55	94.00	-18.64	10.47 S 19.03 W	21.72@ 241.18	0.16	119.09
1820.00	0.11	335.95	1819.55	189.00	-18.78	10.13 S 19.16 W	21.68@ 242.13	0.01	122.71
1915.00	0.13	243.53	1914.55	95.00	-18.92	10.10 S 19.30 W	21.78@ 242.38	0.18	122.71
2009.00	0.04	299.41	2008.55	94.00	-19.04	10.13 S 19.42 W	21.90@ 242.45	0.12	122.71
2103.00	0.20	205.86	2102.55	94.00	-19.13	10.26 S 19.52 W	22.05@ 242.27	0.22	122.71
2198.00	0.13	160.65	2197.55	95.00	-19.16	10.51 S 19.56 W	22.20@ 241.74	0.15	122.71
2292.00	0.13	58.81	2291.55	94.00	-19.03	10.56 S 19.43 W	22.11@ 241.48	0.21	126.32
2480.00	0.11	22.26	2479.55	188.00	-18.79	10.28 S 19.18 W	21.76@ 241.81	0.04	126.32
2574.00	0.11	227.62	2573.55	94.00	-18.83	10.26 S 19.21 W	21.78@ 241.90	0.23	126.32
2669.00	0.07	54.39	2668.55	95.00	-18.85	10.28 S 19.23 W	21.81@ 241.86	0.19	126.32
2763.00	0.11	16.41	2762.55	94.00	-18.78	10.16 S 19.16 W	21.69@ 242.05	0.07	126.32

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)		Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	TEMP (F)
2857.00	0.18	337.69	2856.55	94.00	-18.82	9.94 S	19.19 W	21.61@ 242.61	0.12	126.32
2952.00	0.11	269.98	2951.55	95.00	-18.97	9.80 S	19.34 W	21.68@ 243.12	0.18	129.94
3036.00	1.85	189.33	3035.53	84.00	-19.22	11.14 S	19.64 W	22.58@ 240.43	2.18	97.41
3098.00	7.38	208.27	3097.31	62.00	-21.11	15.64 S	21.69 W	26.74@ 234.20	9.13	97.41
3130.00	10.55	212.48	3128.91	32.00	-23.50	19.92 S	24.24 W	31.37@ 230.58	10.11	101.02
3143.00	11.80	214.39	3141.67	13.00	-24.81	22.02 S	25.63 W	33.79@ 229.32	10.03	97.41
3237.00	13.60	215.26	3233.36	94.00	-36.00	38.98 S	37.44 W	54.05@ 223.84	1.93	93.80
3331.00	12.88	215.06	3324.86	94.00	-47.75	56.58 S	49.83 W	75.40@ 221.37	0.77	97.41
3426.00	11.89	215.56	3417.65	95.00	-58.91	73.21 S	61.61 W	95.68@ 220.08	1.05	101.02
3520.00	10.37	213.05	3509.88	94.00	-68.61	88.18 S	71.85 W	113.75@ 219.18	1.70	101.02
3614.00	9.95	208.39	3602.41	94.00	-76.56	102.42 S	80.33 W	130.16@ 218.11	0.98	104.64
3708.00	9.58	207.68	3695.05	94.00	-83.54	116.49 S	87.82 W	145.88@ 217.01	0.41	104.64
3803.00	7.10	221.07	3789.04	95.00	-90.65	127.92 S	95.36 W	159.55@ 216.70	3.30	108.25
3897.00	3.80	246.04	3882.62	94.00	-97.11	133.56 S	102.02 W	168.07@ 217.37	4.25	108.25
3992.00	3.65	258.66	3977.42	95.00	-102.88	135.44 S	107.86 W	173.14@ 218.53	0.87	108.25
4086.00	4.35	259.32	4071.19	94.00	-109.26	136.68 S	114.30 W	178.18@ 219.90	0.75	111.87
4180.00	5.82	262.98	4164.82	94.00	-117.45	137.93 S	122.53 W	184.50@ 221.62	1.60	104.64
4274.00	7.30	264.79	4258.20	94.00	-128.08	139.05 S	133.21 W	192.56@ 223.77	1.59	108.25
4369.00	8.13	264.03	4352.34	95.00	-140.72	140.30 S	145.90 W	202.42@ 226.12	0.88	108.25
4463.00	8.55	260.09	4445.35	94.00	-154.13	142.19 S	159.40 W	213.60@ 228.26	0.75	111.87
4557.00	6.94	240.57	4538.50	94.00	-165.81	146.19 S	171.23 W	225.15@ 229.51	3.26	115.48
4651.00	6.00	216.01	4631.92	94.00	-173.40	152.95 S	179.07 W	235.50@ 229.50	3.08	115.48
4745.00	5.21	188.13	4725.49	94.00	-176.59	161.15 S	182.56 W	243.51@ 228.56	2.98	104.64
4839.00	3.76	159.44	4819.21	94.00	-175.85	168.27 S	182.08 W	247.93@ 227.26	2.80	104.64
4933.00	0.24	109.05	4913.14	94.00	-174.48	171.22 S	180.81 W	249.01@ 226.56	3.84	108.25
5027.00	0.11	312.05	5007.14	94.00	-174.36	171.22 S	180.69 W	248.93@ 226.54	0.37	111.87
5122.00	0.13	325.93	5102.14	95.00	-174.49	171.07 S	180.82 W	248.92@ 226.59	0.04	111.87
5216.00	0.13	318.33	5196.14	94.00	-174.63	170.90 S	180.95 W	248.90@ 226.64	0.02	115.48

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 EDDY COUNTY, NM
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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft)	Closure Dist Dir (ft) (deg)	DLS (dg/100ft)	TEMP (F)
5404.00	0.07	243.46	5384.14	188.00	-174.88	170.79 S 181.20 W	249.00@ 226.69	0.07	111.87
5592.00	0.07	271.88	5572.14	188.00	-175.09	170.84 S 181.41 W	249.19@ 226.72	0.02	115.48
5780.00	0.07	224.47	5760.14	188.00	-175.29	170.92 S 181.61 W	249.39@ 226.74	0.03	115.48
6062.00	0.09	272.48	6042.14	282.00	-175.62	171.03 S 181.95 W	249.72@ 226.77	0.02	115.48
6156.00	0.06	124.55	6136.14	94.00	-175.66	171.06 S 181.98 W	249.76@ 226.77	0.15	115.00
6438.00	0.07	158.43	6418.13	282.00	-175.46	171.30 S 181.80 W	249.79@ 226.70	0.01	108.25
6909.00	0.11	7.93	6889.14	471.00	-175.30	171.12 S 181.63 W	249.54@ 226.71	0.04	97.41