

30-015-410859

Job Number: SVMO-140151

Company: OXY USA, Inc.

Lease/Well: Rogers 23 Fee 5

Location: Eddy County, NM

Rig Name: Savanna #415

RKB: 14'

G.L. or M.S.L.: GL

State/Country: New Mexico/USA

Declination: 7.69°

Grid: East To Grid North

File name: S:\2014SU~1\OXY\MOIROGERS\23FEE5.SVY

Date/Time: 10-Feb-14 / 16:29

Curve Name: Surface - 3962' M.D. (Rate Gyro)

MS Energy Services

RECEIVED
APR 02 2014
NMOCD ARTESIA

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane .00
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from
Surface MD to 3962' MD is, to the best of
our knowledge a true and accurate account of
the well bore.
James Gally 2/10/14
MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
66.00	.65	140.73	66.00	-.29	.24	-.29	.37	140.73	.98
103.00	1.00	140.80	102.99	-.70	.57	-.70	.91	140.75	.95
146.00	1.04	141.98	145.99	-1.30	1.05	-1.30	1.67	141.05	.11
188.00	1.10	142.46	187.98	-1.92	1.53	-1.92	2.46	141.43	.14
231.00	1.16	150.21	230.97	-2.63	2.00	-2.63	3.30	142.71	.38
273.00	1.24	152.05	272.96	-3.40	2.42	-3.40	4.17	144.48	.21
315.00	1.15	157.01	314.95	-4.19	2.80	-4.19	5.04	146.21	.33
358.00	1.08	162.58	357.95	-4.97	3.09	-4.97	5.85	148.12	.30
400.00	.99	169.69	399.94	-5.70	3.27	-5.70	6.58	150.14	.37

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
443.00	.96	180.82	442.93	-6.43	3.34	-6.43	7.24	152.58	.45
485.00	1.01	189.64	484.93	-7.15	3.27	-7.15	7.86	155.42	.38
527.00	1.02	202.38	526.92	-7.86	3.06	-7.86	8.43	158.69	.54
570.00	1.24	214.43	569.91	-8.59	2.66	-8.59	9.00	162.83	.75
612.00	1.48	227.32	611.90	-9.34	2.00	-9.34	9.55	167.91	.92
655.00	1.72	229.47	654.88	-10.13	1.10	-10.13	10.19	173.80	.58
697.00	1.82	223.32	696.86	-11.03	.16	-11.03	11.03	179.14	.51
739.00	1.98	250.93	738.84	-11.75	-.98	-11.75	11.79	184.76	2.19
782.00	2.16	248.06	781.81	-12.30	-2.43	-12.30	12.53	191.19	.48
824.00	2.17	246.36	823.78	-12.91	-3.89	-12.91	13.48	196.79	.15
867.00	2.15	245.64	866.75	-13.57	-5.38	-13.57	14.60	201.61	.08
909.00	2.04	245.64	908.72	-14.20	-6.77	-14.20	15.74	205.50	.26
951.00	2.04	243.89	950.70	-14.84	-8.13	-14.84	16.92	208.71	.15
994.00	2.07	244.83	993.67	-15.51	-9.52	-15.51	18.19	211.54	.10
1036.00	1.90	241.84	1035.64	-16.16	-10.82	-16.16	19.44	213.80	.47
1079.00	1.80	240.20	1078.62	-16.83	-12.03	-16.83	20.69	215.56	.26
1121.00	1.76	239.53	1120.60	-17.49	-13.16	-17.49	21.88	216.97	.11
1163.00	1.75	235.55	1162.58	-18.18	-14.24	-18.18	23.09	218.09	.29
1206.00	1.78	232.54	1205.56	-18.95	-15.32	-18.95	24.37	218.94	.23
1248.00	1.72	235.52	1247.54	-19.71	-16.35	-19.71	25.61	219.69	.26
1291.00	1.72	234.06	1290.52	-20.45	-17.41	-20.45	26.86	220.41	.10
1333.00	1.69	232.95	1332.50	-21.19	-18.41	-21.19	28.07	220.98	.11
1375.00	1.64	229.63	1374.49	-21.96	-19.36	-21.96	29.28	221.41	.26
1418.00	1.60	227.44	1417.47	-22.76	-20.28	-22.76	30.48	221.70	.17
1460.00	1.56	226.91	1459.45	-23.55	-21.12	-23.55	31.63	221.90	.10
1503.00	1.53	226.52	1502.44	-24.34	-21.97	-24.34	32.79	222.07	.07
1545.00	1.50	226.29	1544.42	-25.11	-22.77	-25.11	33.90	222.21	.07
1587.00	1.54	224.47	1586.41	-25.89	-23.57	-25.89	35.01	222.31	.15
1630.00	1.58	224.85	1629.39	-26.72	-24.39	-26.72	36.18	222.38	.10

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1672.00	1.54	225.19	1671.38	-27.53	-25.20	-27.53	37.32	222.47	.10
1715.00	1.53	229.35	1714.36	-28.31	-26.04	-28.31	38.47	222.61	.26
1757.00	1.57	228.85	1756.35	-29.06	-26.90	-29.06	39.60	222.79	.10
1799.00	1.58	230.45	1798.33	-29.80	-27.78	-29.80	40.74	222.99	.11
1842.00	1.49	229.84	1841.31	-30.54	-28.67	-30.54	41.89	223.18	.21
1884.00	1.47	228.78	1883.30	-31.25	-29.49	-31.25	42.97	223.34	.08
1927.00	1.42	228.29	1926.29	-31.97	-30.30	-31.97	44.05	223.47	.12
1969.00	1.38	228.01	1968.27	-32.65	-31.07	-32.65	45.07	223.57	.10
2011.00	1.29	227.66	2010.26	-33.31	-31.79	-33.31	46.04	223.66	.22
2054.00	1.14	227.79	2053.25	-33.92	-32.47	-33.92	46.95	223.74	.35
2096.00	1.05	227.20	2095.25	-34.46	-33.06	-34.46	47.75	223.81	.22
2139.00	.93	221.83	2138.24	-34.99	-33.58	-34.99	48.50	223.82	.35
2181.00	.78	221.32	2180.23	-35.46	-33.99	-35.46	49.12	223.79	.36
2223.00	.63	216.51	2222.23	-35.86	-34.32	-35.86	49.64	223.74	.38
2266.00	.57	210.87	2265.23	-36.23	-34.57	-36.23	50.08	223.65	.20
2308.00	.56	205.94	2307.23	-36.60	-34.77	-36.60	50.48	223.53	.12
2351.00	.54	201.96	2350.23	-36.98	-34.94	-36.98	50.87	223.38	.10
2393.00	.39	199.40	2392.22	-37.29	-35.06	-37.29	51.18	223.23	.36
2435.00	.36	188.11	2434.22	-37.56	-35.12	-37.56	51.42	223.08	.19
2478.00	.21	190.89	2477.22	-37.77	-35.16	-37.77	51.60	222.95	.35
2520.00	.29	181.74	2519.22	-37.95	-35.18	-37.95	51.75	222.83	.21
2563.00	.31	177.27	2562.22	-38.18	-35.17	-38.18	51.91	222.65	.07
2605.00	.30	178.77	2604.22	-38.40	-35.17	-38.40	52.07	222.48	.03
2647.00	.26	177.35	2646.22	-38.61	-35.16	-38.61	52.22	222.32	.10
2690.00	.26	176.09	2689.22	-38.80	-35.15	-38.80	52.35	222.17	.01
2732.00	.25	181.70	2731.22	-38.99	-35.14	-38.99	52.49	222.03	.06
2775.00	.30	177.07	2774.22	-39.19	-35.14	-39.19	52.64	221.88	.13
2817.00	.23	175.33	2816.22	-39.39	-35.13	-39.39	52.78	221.73	.17
2859.00	.39	175.95	2858.22	-39.61	-35.11	-39.61	52.93	221.55	.38

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2902.00	.44	170.86	2901.22	-39.92	-35.07	-39.92	53.14	221.30	.14
2944.00	.51	161.99	2943.22	-40.26	-34.99	-40.26	53.34	221.00	.24
2987.00	.51	158.87	2986.21	-40.62	-34.86	-40.62	53.53	220.64	.06
3029.00	.52	148.04	3028.21	-40.96	-34.69	-40.96	53.68	220.27	.23
3071.00	.53	148.79	3070.21	-41.28	-34.49	-41.28	53.80	219.88	.03
3114.00	.47	147.02	3113.21	-41.60	-34.29	-41.60	53.91	219.50	.14
3156.00	.36	146.86	3155.21	-41.86	-34.13	-41.86	54.01	219.19	.26
3199.00	.38	152.51	3198.21	-42.10	-33.99	-42.10	54.10	218.92	.10
3241.00	.33	169.00	3240.21	-42.34	-33.90	-42.34	54.24	218.68	.27
3283.00	.41	174.32	3282.20	-42.61	-33.86	-42.61	54.42	218.48	.21
3326.00	.41	178.96	3325.20	-42.91	-33.85	-42.91	54.65	218.26	.08
3368.00	.45	183.68	3367.20	-43.23	-33.85	-43.23	54.91	218.07	.13
3411.00	.46	186.83	3410.20	-43.57	-33.88	-43.57	55.19	217.87	.06
3453.00	.45	190.47	3452.20	-43.90	-33.93	-43.90	55.49	217.70	.07
3495.00	.50	191.97	3494.20	-44.24	-34.00	-44.24	55.80	217.55	.12
3538.00	.65	207.24	3537.20	-44.64	-34.15	-44.64	56.21	217.42	.50
3580.00	.68	210.54	3579.19	-45.07	-34.39	-45.07	56.69	217.35	.12
3623.00	.65	211.28	3622.19	-45.49	-34.64	-45.49	57.18	217.29	.07
3665.00	.66	223.56	3664.19	-45.87	-34.94	-45.87	57.66	217.29	.33
3707.00	.81	235.01	3706.18	-46.22	-35.35	-46.22	58.19	217.41	.50
3750.00	.87	236.72	3749.18	-46.57	-35.87	-46.57	58.78	217.60	.15
3792.00	.90	245.59	3791.17	-46.88	-36.43	-46.88	59.38	217.85	.33
3835.00	.88	238.19	3834.17	-47.20	-37.02	-47.20	59.99	218.11	.27
3877.00	1.03	253.93	3876.16	-47.47	-37.66	-47.47	60.60	218.42	.72
3919.00	1.27	274.53	3918.16	-47.54	-38.49	-47.54	61.17	218.99	1.13

Last Survey Depth Recorded

3962.00	1.37	300.50	3961.14	-47.24	-39.40	-47.24	61.52	219.83	1.40
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