Schlumberger

Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-20,505' Survey Geodetic Report

(Def Survey)

Report Date:	March 24, 2018 - 03:41 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	358.126 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Mesa Verde BS Unit 5 / Oxy Mesa Verde BS Unit 5	**TVD Reference Datum:**	RKB=26.5'
Well:	Oxy Mesa Verde BS Unit 5	**TVD Reference Elevation:**	3587.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3560.500 ft above MSL
UWI / API#:	Unknown / 30-025-44185	**Magnetic Declination:**	6.836 °
Survey Name:	Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-20,505	**Total Gravity Field Strength:**	998.4321mgn (9.80665 Based)
Survey Date:	March 01, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	220.171 ° / 10689.417 ft / 6.660 / 1.012	**Total Magnetic Field Strength:**	48027.764 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.931 °
Location Lat / Long:	N 32° 12' 39.64553", W 103° 41' 29.05511"	**Declination Date:**	March 01, 2018
Location Grid N/E Y/X:	N 441093.320 ftUS, E 739872.600 ftUS	**Magnetic Declination Model:**	HDGM 2018
CRS Grid Convergence Angle:	0.3422 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99995423	**Grid Convergance Used:**	0.3422 °
Version / Patch:	2.10.706.0	**Total Corr Mag North->Grid North:**	6.4934 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	441093.32	739872.60	N 32 12 39.65	W 103 41 29.06
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	441093.32	739872.60	N 32 12 39.65	W 103 41 29.06
	87.00	0.50	237.58	87.00	-0.13	-0.14	-0.22	0.83	441093.18	739872.38	N 32 12 39.64	W 103 41 29.06
	182.00	0.50	223.98	182.00	-0.83	-0.85	-0.86	0.12	441092.66	739871.74	N 32 12 39.64	W 103 41 29.07
	273.00	0.48	214.05	272.99	-1.22	-1.27	-1.36	0.09	441092.05	739871.24	N 32 12 39.63	W 103 41 29.07
	364.00	0.60	221.64	363.99	-1.68	-1.94	-1.90	0.14	441091.38	739870.70	N 32 12 39.63	W 103 41 29.08
	455.00	0.62	223.99	454.98	-2.57	-2.65	-2.56	0.04	441090.67	739870.04	N 32 12 39.62	W 103 41 29.09
	546.00	0.58	227.63	545.98	-3.20	-3.31	-3.23	0.08	441090.01	739869.37	N 32 12 39.61	W 103 41 29.09
	637.00	0.37	234.63	636.98	-3.65	-3.78	-3.79	0.22	441089.54	739868.81	N 32 12 39.61	W 103 41 29.10
	728.00	0.23	252.98	727.97	-3.86	-4.00	-4.21	0.18	441089.32	739868.39	N 32 12 39.61	W 103 41 29.10
	819.00	0.19	261.50	818.97	-3.93	-4.08	-4.53	0.05	441089.24	739868.07	N 32 12 39.61	W 103 41 29.11
	910.00	0.13	134.74	909.97	-4.02	-4.17	-4.61	0.32	441089.15	739867.99	N 32 12 39.60	W 103 41 29.11
	1001.00	0.33	117.39	1000.97	-4.22	-4.36	-4.30	0.23	441088.96	739868.30	N 32 12 39.60	W 103 41 29.11
	1092.00	0.33	117.20	1091.97	-4.48	-4.60	-3.84	0.00	441088.72	739868.76	N 32 12 39.60	W 103 41 29.10
	1187.00	0.30	114.16	1186.97	-4.72	-4.83	-3.37	0.04	441088.49	739869.23	N 32 12 39.60	W 103 41 29.09
	1282.00	0.18	104.68	1281.97	-4.87	-4.97	-3.00	0.13	441088.35	739869.60	N 32 12 39.60	W 103 41 29.09
	1376.00	0.07	71.03	1375.97	-4.90	-4.99	-2.80	0.14	441088.33	739869.80	N 32 12 39.60	W 103 41 29.09
	1471.00	0.05	38.76	1470.97	-4.85	-4.94	-2.72	0.04	441088.38	739869.88	N 32 12 39.60	W 103 41 29.09
	1565.00	0.04	302.70	1564.97	-4.80	-4.89	-2.72	0.07	441088.43	739869.88	N 32 12 39.60	W 103 41 29.09
	1660.00	0.07	320.72	1659.97	-4.73	-4.83	-2.78	0.04	441088.49	739869.82	N 32 12 39.60	W 103 41 29.09
	1754.00	0.11	292.95	1753.97	-4.65	-4.75	-2.90	0.05	441088.57	739869.70	N 32 12 39.60	W 103 41 29.09
	1849.00	0.10	233.52	1848.97	-4.66	-4.76	-3.05	0.11	441088.56	739869.55	N 32 12 39.60	W 103 41 29.09
	1943.00	0.16	220.74	1942.97	-4.80	-4.91	-3.21	0.07	441088.41	739869.39	N 32 12 39.60	W 103 41 29.09
	2038.00	0.21	215.64	2037.97	-5.04	-5.15	-3.39	0.06	441088.17	739869.21	N 32 12 39.59	W 103 41 29.09
	2133.00	0.18	211.01	2132.97	-5.30	-5.42	-3.57	0.04	441087.90	739869.03	N 32 12 39.59	W 103 41 29.10
	2227.00	0.13	209.93	2226.97	-5.52	-5.64	-3.70	0.05	441087.68	739868.90	N 32 12 39.59	W 103 41 29.10
	2322.00	0.17	205.19	2321.97	-5.73	-5.86	-3.82	0.04	441087.48	739868.78	N 32 12 39.59	W 103 41 29.10
	2417.00	0.23	203.66	2416.97	-6.03	-6.16	-3.95	0.06	441087.18	739868.65	N 32 12 39.58	W 103 41 29.10
	2511.00	0.26	182.70	2510.96	-6.41	-6.55	-4.04	0.10	441086.77	739868.56	N 32 12 39.58	W 103 41 29.10
	2606.00	0.32	182.28	2605.96	-6.89	-7.03	-4.06	0.06	441086.29	739868.54	N 32 12 39.58	W 103 41 29.10
	2701.00	0.38	142.31	2700.96	-7.41	-7.55	-3.68	0.26	441085.79	739868.72	N 32 12 39.57	W 103 41 29.10
	2795.00	0.53	139.20	2794.96	-8.01	-8.12	-3.40	0.16	441085.20	739869.00	N 32 12 39.57	W 103 41 29.10
	2890.00	0.68	130.72	2889.95	-8.73	-8.83	-2.98	0.19	441084.49	739869.42	N 32 12 39.56	W 103 41 29.09
	2984.00	0.79	131.62	2983.95	-9.56	-9.69	-1.77	0.11	441083.63	739870.63	N 32 12 39.55	W 103 41 29.08
	3079.00	0.72	125.32	3078.94	-10.37	-10.41	-0.79	0.11	441082.91	739871.61	N 32 12 39.54	W 103 41 29.07
	3174.00	0.19	93.73	3173.93	-10.75	-10.76	-0.15	0.60	441082.56	739872.45	N 32 12 39.54	W 103 41 29.06
	3268.00	0.15	57.18	3267.93	-10.70	-10.71	0.11	0.12	441082.62	739872.71	N 32 12 39.54	W 103 41 29.05
	3363.00	0.06	63.97	3362.93	-10.62	-10.62	0.26	0.10	441082.70	739872.86	N 32 12 39.54	W 103 41 29.05
	3458.00	0.10	66.41	3457.93	-10.57	-10.56	0.38	0.04	441082.76	739872.98	N 32 12 39.54	W 103 41 29.05
	3552.00	0.13	67.44	3551.93	-10.50	-10.49	0.56	0.03	441082.83	739873.16	N 32 12 39.54	W 103 41 29.05
	3647.00	0.06	59.74	3646.93	-10.44	-10.42	0.70	0.07	441082.90	739873.30	N 32 12 39.54	W 103 41 29.05
	3742.00	0.06	91.32	3741.93	-10.42	-10.40	0.79	0.03	441082.92	739873.39	N 32 12 39.54	W 103 41 29.06
	3836.00	0.10	65.98	3835.93	-10.38	-10.35	0.91	0.07	441082.97	739873.51	N 32 12 39.54	W 103 41 29.05
	3930.00	0.12	82.17	3929.93	-10.32	-10.29	1.07	0.06	441083.03	739873.67	N 32 12 39.54	W 103 41 29.04
	4025.00	0.23	81.81	4024.93	-10.29	-10.25	1.36	0.12	441083.07	739873.96	N 32 12 39.54	W 103 41 29.04
	4120.00	0.15	100.11	4119.93	-10.30	-10.25	1.67	0.10	441083.07	739874.27	N 32 12 39.54	W 103 41 29.04
	4214.00	0.15	109.99	4213.93	-10.37	-10.31	1.91	0.03	441083.01	739874.51	N 32 12 39.54	W 103 41 29.03
	4309.00	0.15	94.99	4308.93	-10.43	-10.36	2.15	0.04	441082.96	739874.75	N 32 12 39.54	W 103 41 29.03
	4404.00	0.19	87.78	4403.93	-10.44	-10.37	2.43	0.05	441082.95	739875.03	N 32 12 39.54	W 103 41 29.03
	4498.00	0.20	82.77	4497.93	-10.43	-10.34	2.75	0.02	441082.98	739875.35	N 32 12 39.54	W 103 41 29.02
	4593.00	0.14	76.25	4592.93	-10.39	-10.29	3.03	0.07	441083.03	739875.63	N 32 12 39.54	W 103 41 29.02
	4687.00	0.23	107.47	4686.93	-10.40	-10.32	3.32	0.14	441083.00	739875.92	N 32 12 39.54	W 103 41 29.02
	4782.00	0.75	163.66	4781.93	-11.09	-10.98	3.67	0.68	441082.34	739876.27	N 32 12 39.54	W 103 41 29.01
	4877.00	0.10	209.64	4876.92	-11.76	-11.65	3.81	0.72	441081.68	739876.41	N 32 12 39.53	W 103 41 29.01
	4972.00	0.21	18.47	4971.92	-11.67	-11.55	3.82	0.32	441081.77	739876.42	N 32 12 39.53	W 103 41 29.01
	5066.00	0.21	56.02	5065.92	-11.42	-11.29	4.02	0.14	441082.03	739876.62	N 32 12 39.53	W 103 41 29.01
	5161.00	0.14	85.68	5160.92	-11.32	-11.19	4.29	0.12	441082.13	739876.88	N 32 12 39.53	W 103 41 29.01
	5255.00	0.03	54.52	5254.92	-11.30	-11.16	4.41	0.12	441082.16	739877.01	N 32 12 39.53	W 103 41 29.00
	5350.00	0.07	30.45	5349.92	-11.24	-11.10	4.46	0.05	441082.22	739877.06	N 32 12 39.54	W 103 41 29.00
	5445.00	0.12	46.13	5444.92	-11.12	-10.98	4.57	0.06	441082.34	739877.16	N 32 12 39.54	W 103 41 29.00
	5539.00	0.12	29.36	5538.92	-10.97	-10.83	4.68	0.04	441082.49	739877.28	N 32 12 39.54	W 103 41 29.00
	5634.00	0.12	53.87	5633.92	-10.83	-10.68	4.81	0.05	441082.64	739877.41	N 32 12 39.54	W 103 41 29.00
	5728.00	0.10	43.18	5727.92	-10.72	-10.56	4.95	0.03	441082.76	739877.55	N 32 12 39.54	W 103 41 29.00
	5823.00	0.10	50.41	5822.92	-10.61	-10.45	5.07	0.01	441082.87	739877.67	N 32 12 39.54	W 103 41 29.00
	5917.00	0.09	54.29	5916.92	-10.52	-10.35	5.19	0.01	441082.97	739877.78	N 32 12 39.54	W 103 41 29.00
	6012.00	0.06	43.62	6011.92	-10.44	-10.27	5.29	0.03	441083.05	739877.89	N 32 12 39.54	W 103 41 28.99
	6106.00	0.07	44.44	6105.92	-10.37	-10.20	5.36	0.01	441083.12	739877.96	N 32 12 39.54	W 103 41 28.99
	6200.00	0.07	75.71	6199.92	-10.32	-10.14	5.46	0.04	441083.18	739878.06	N 32 12 39.54	W 103 41 28.99
	6295.00	0.10	49.41	6294.92	-10.25	-10.07	5.58	0.05	441083.25	739878.18	N 32 12 39.55	W 103 41 28.99
	6390.00	0.46	125.20	6389.92	-10.43	-10.24	5.95	0.47	441083.08	739878.55	N 32 12 39.54	W 103 41 28.99
	6484.00	2.82	233.01	6483.88	-11.99	-11.85	4.41	3.18	441081.47	739877.01	N 32 12 39.53	W 103 41 29.00
	6579.00	6.24	241.01	6578.57	-15.69	-15.78	1.97	3.65	441077.56	739870.83	N 32 12 39.49	W 103 41 29.08

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6674.00	9 72	242.07	6672.64	-21.58	-22.02	-13.58	3 67	441071 30	739859 02	N 32 12 39 43	W 103 41 29 21
	6768 00	13 31	242 22	6764.73	-29.78	-30.78	-20.17	3 82	441062 54	739842 43	N 32 12 39 34	W 103 41 29 41
	6862 00	14 88	239.74	6855.94	-40.17	-41.83	-50.03	1.59	441051 49	739822 57	N 32 12 39 23	W 103 41 29 64
	6957 00	13 60	232.19	6948.07	-52.45	-54.74	-69.25	2.25	441038 58	739803 35	N 32 12 39 11	W 103 41 29 86
	7051 00	11 59	223.02	7039.81	-65.63	-68.42	-84.43	3.01	441024 90	739788 17	N 32 12 38 97	W 103 41 30.04
	7146 00	8 87	209.42	7133.30	-76.65	-81.79	-94.54	3.81	441011.54	739778 06	N 32 12 38 84	W 103 41 30.16
	7240.00	7.07	193.64	7225 40	-90 41	-93.72	-99 49	2.97	440999.61	739773 12	N 32 12 38 72	W 103 41 30.22
	7334.00	4.96	170.93	7319.89	-100 02	-100 23	-100 23	3.36	440989.98	739772 38	N 32 12 38 63	W 103 41 30 23
	7429 00	3 29	134.83	7414.66	-106.06	-109.33	-97 65	3.17	440984.00	739774 96	N 32 12 38 57	W 103 41 30 20
	7523.00	1.52	71 33	7508.59	-107.68	-110.63	-94 55	3.13	440982 49	739778 05	N 32 12 38 55	W 103 41 30.16
	7618.00	0.04	2.63	7603.57	-107.28	-110.39	-93 36	1.59	440982.93	739779 25	N 32 12 38 56	W 103 41 30 15
	7712.00	0 09	46.24	7697.57	-107.20	-110.31	-93 30	0.07	440983 01	739779.30	N 32 12 38 56	W 103 41 30 15
	7806 00	0.11	57.51	7791.57	-107.11	-110 21	-93 17	0 03	440983.11	739779 43	N 32 12 38 56	W 103 41 30 15
	7901.00	0 43	256 36	7886.57	-107.13	-110 25	-93 44	0 56	440983 08	739779 16	N 32 12 38 56	W 103 41 30 15
	7995.00	2.61	235.95	7980 54	-108 30	-111.46	-95 49	2.25	440981.84	739777 11	N 32 12 38 55	W 103 41 30 17
	8089.00	4.59	226.11	8074 35	-111.81	-115.15	-100 00	2 27	440978.18	739772 61	N 32 12 38 51	W 103 41 30.23
	8184.00	6.12	226.24	8168.94	-117.84	-121.19	-106 48	1.62	440972.14	739766 12	N 32 12 38 45	W 103 41 30 30
	8279.00	5 91	226.52	8263 41	-124.27	-128.06	-113 69	0.22	440965.27	739758 91	N 32 12 38 39	W 103 41 30.39
	8373.00	5.95	226.62	8356 91	-130.71	-134.73	-120 74	0.04	440958 59	739751 88	N 32 12 38.32	W 103 41 30.47
	8468.00	6 06	226.32	8451.39	-137.32	-141.56	-127 95	0.12	440951.75	739744 66	N 32 12 38.25	W 103 41 30 55
	8562.00	6.07	226.28	8544 86	-143.94	-148.44	-135.13	0.01	440944.89	739737 48	N 32 12 38 18	W 103 41 30 64
	8657.00	5.83	223.42	8639.37	-150.57	-155.29	-141 98	0.56	440938 03	739730 64	N 32 12 38 12	W 103 41 30 72
	8752 00	4.90	225.39	8733 97	-156.60	-161.53	-148 05	0.79	440931.80	739724 55	N 32 12 38 06	W 103 41 30 79
	8846.00	6.19	227.53	8827.52	-162.62	-167.77	-154 65	1.39	440925.56	739717 95	N 32 12 37 99	W 103 41 30 87
	8941.00	6.07	231.29	8921.99	-168.97	-174.37	-162 35	0.44	440918.96	739710 28	N 32 12 37 93	W 103 41 30 96
	9035.00	5.91	223.05	9015 47	-175 37	-181.01	-169 53	0.93	440912.31	739703 08	N 32 12 37 86	W 103 41 31 04
	9130.00	5.75	232.67	9109.98	-181.60	-187.47	-176 65	1.04	440905 85	739695 96	N 32 12 37 80	W 103 41 31 12
	9225.00	6 04	234.11	9204 48	-187.15	-193 29	-184 49	0.34	440900.04	739688 12	N 32 12 37 74	W 103 41 31.22
	9319.00	5.01	226.84	9297.96	-193.18	-199.57	-192 07	0.83	440893.76	739680 54	N 32 12 37 68	W 103 41 31 30
	9414.00	5.80	229.76	9392.46	-199.45	-206.08	-199 35	0.40	440887.25	739673.25	N 32 12 37 62	W 103 41 31.39
	9508.00	6.97	252.69	9485.90	-202.94	-209.68	-208.64	4.02	440883.45	739663 97	N 32 12 37 58	W 103 41 31 50
	9603.00	8 01	259.71	9580.09	-203.31	-210.65	-220 97	1.46	440882.68	739651 64	N 32 12 37 57	W 103 41 31 64
	9697.00	6 53	287.97	9673.35	-201.31	-209 03	-232.81	2.90	440884.30	739640 00	N 32 12 37.59	W 103 41 31 78
	9792 00	4 79	311.55	9767.89	-196.74	-204.73	-240.71	3.03	440888.60	739631.90	N 32 12 37.63	W 103 41 31 87
	9887 00	2 38	1.14	9862.72	-192.06	-200.13	-243 64	3.91	440893.20	739628 97	N 32 12 37.68	W 103 41 31 90
	9981.00	12 51	2.09	9955.81	-179.94	-187 99	-243.23	10.80	440905.34	739629 38	N 32 12 37.80	W 103 41 31 90
	10076.00	21.39	357.02	10046.59	-152.30	-160 35	-243.75	9.47	440932.97	739628 88	N 32 12 38.07	W 103 41 31 90
	10171.00	31.32	358.98	10131.61	-110.18	-118 29	-245.97	10.45	440975.04	739626 64	N 32 12 38.49	W 103 41 31 93
	10265.00	35 78	352.77	10209.95	-58.38	-66 61	-250.73	5 32	441026.71	739621 89	N 32 12 39 00	W 103 41 31 98
	10360 00	45 47	357.43	10282.00	3.28	-5 09	-255.75	10.70	441088.23	739616 88	N 32 12 39 61	W 103 41 32 03
	10454.00	54 92	359.66	10342.11	75.40	67.02	-257.49	10 22	441160.33	739615 13	N 32 12 40.32	W 103 41 32 05
	10549 00	64 31	359.76	10390.11	157.23	148 88	-257.90	9.88	441242.19	739614 72	N 32 12 41 13	W 103 41 32 05
	10643.00	73 09	359.28	10424.22	244.70	236 37	-258 64	9.35	441329.67	739613 97	N 32 12 42 00	W 103 41 32 05
Last Gyro	10738.00	78 37	0 80	10447.63	336.66	328 40	-258 58	5.77	441421.70	739614 05	N 32 12 42 91	W 103 41 32 04
	10787.00	81 96	3 65	10456.00	384.82	376 63	-256.72	9.18	441469.93	739615 89	N 32 12 43 39	W 103 41 32 02
	10882 00	86 86	3 71	10465.25	478.91	470 96	-250.74	5.16	441564.26	739621 87	N 32 12 44 32	W 103 41 31 94
	10935.00	87 01	3 60	10468.09	531.59	523 78	-247.36	0 35	441617.07	739625 25	N 32 12 44 84	W 103 41 31 90
	11027.00	87 48	1.11	10472.50	623.22	615 59	-243.69	2.75	441708.88	739629 02	N 32 12 45 75	W 103 41 31 85
	11118.00	87.42	357.42	10476.54	714.10	706 47	-244.76	4 05	441799.76	739627 88	N 32 12 46 65	W 103 41 31.85
	11301.00	88 97	355.80	10482.31	896.93	889 05	-255.57	1.22	441982.33	739617 04	N 32 12 48 46	W 103 41 31 97
	11392.00	88 56	355 67	10484.27	987.84	979 79	-262.18	0.48	442073.06	739610 43	N 32 12 49.36	W 103 41 32.04
	11484.00	88 56	357.66	10486.58	1079.78	1071 61	-267.37	1.95	442164 88	739605 24	N 32 12 50 26	W 103 41 32 09
	11574.00	88 63	357.92	10488.79	1169.75	1161 52	-270.84	0.30	442254.78	739601 77	N 32 12 51 15	W 103 41 32 13
	11665.00	88 78	358 63	10490.86	1260.73	1252 45	-273.58	0.79	442345 71	739599 04	N 32 12 52 05	W 103 41 32.15
	11756.00	89 04	358.69	10492.61	1351.71	1343 41	-275.70	0 31	442436.66	739596 91	N 32 12 52 95	W 103 41 32.17
	11850.00	88 56	357.29	10494.58	1445 68	1437 33	-279.00	1.57	442530 58	739593 61	N 32 12 53 88	W 103 41 32 20
	11945.00	88.25	357.21	10497.22	1540.63	1532 18	-283.56	0 34	442625 43	739589 06	N 32 12 54 82	W 103 41 32 25
	12039.00	88 59	357.65	10499.61	1634.59	1626 05	-287.77	0.59	442719.29	739584 84	N 32 12 55 75	W 103 41 32 29
	12228.00	88 45	357.53	10504 69	1823.52	1814.82	-295.72	0.10	442908 05	739576.90	N 32 12 57.62	W 103 41 32 37
	12318.00	88.45	0.80	10507.07	1911.46	1902.77	-297.00	3.71	442996 00	739575.62	N 32 12 58.49	W 103 41 32.38
	12410.00	88.42	1.15	10509.64	2005 31	1996.72	-295.40	0 37	443089.94	739577.22	N 32 12 59.42	W 103 41 32.35
	12505.00	88.73	1.44	10512.00	2100.14	2091.55	-293 25	0.45	443184.88	739579.36	N 32 13 0.36	W 103 41 32.32
	12599.00	88.49	0.65	10514.28	2193 98	2185 62	-291.54	0.88	443278.84	739581.08	N 32 13 1.29	W 103 41 32.30
	12694.00	88.52	0.25	10516.76	2288.87	2280.59	-290.79	0.42	443373.80	739581.82	N 32 13 2.23	W 103 41 32.28
	12788.00	88.45	359.79	10519.25	2382.79	2374.55	-290.76	0.49	443467.76	739581.85	N 32 13 3.16	W 103 41 32.27
	12883.00	89.04	359.73	10521.33	2477.73	2469.53	-291.16	0 62	443562.73	739581.46	N 32 13 4.10	W 103 41 32.27
	12977.00	88.45	359.89	10523.39	2571.66	2563.50	-291.47	0.65	443656.70	739581.15	N 32 13 5.03	W 103 41 32.27
	13071.00	88.42	359.99	10525.96	2665.56	2657.47	-291.57	0.11	443750.66	739581.05	N 32 13 5.95	W 103 41 32.26
	13166.00	88.45	0.33	10528.55	2760.49	2752 43	-291.30	0.38	443845 62	739581.31	N 32 13 6.90	W 103 41 32.25
	13355.00	88.45	359.83	10533.66	2949.31	2941.36	-291.04	0.26	444034.54	739581.58	N 32 13 8.77	W 103 41 32.24
	13450 00	88.45	359.88	10536 23	3044.23	3036.33	-291.28	0 05	444129.50	739581.34	N 32 13 9.71	W 103 41 32.23
	13639.00	88.45	359.72	10541.34	3233.08	3225.26	-291.94	0.08	444318 42	739580.68	N 32 13 11.58	W 103 41 32.23
	13733 00	88.65	359 41	10543.80	3327.02	3319.22	-292 65	0 35	444412.38	739579.98	N 32 13 12.51	W 103 41 32.23
	13828 00	88 83	359.68	10545.98	3421.96	3414.20	-293 24	0 58	444507.35	739579.37	N 32 13 13.45	W 103 41 32.23
	13923.00	89.90	359.78	10547.03	3516.91	3509.19	-293 51	1.13	444602.34	739578.10	N 32 13 14.39	W 103 41 32.23
	14017 00	89.97	359.87	10547.14	3610.87	3603.19	-293 96	0.15	444696.33	739578 66	N 32 13 15 32	W 103 41 32.23
	14206 00	89.86	359 64	10547.42	3799.80	3792.18	-295 09	0 08	444885 32	739577.52	N 32 13 17.19	W 103 41 32.23
	14301 00	90.38	0.09	10547.22	3894.76	3887.18	-295 32	0.72	444980 32	739577.30	N 32 13 18.13	W 103 41 32.22
	14395 00	90 41	359.88	10546.57	3988.71	3981.18	-295.26	0.12	445074 31	739577.35	N 32 13 19.06	W 103 41 32.22
	14490 00	91.37	359.99	10545.09	4083.64	4076.17	-295.29	1.01	445169.29	739577.33	N 32 13 20.00	W 103 41 32.21
	14584 00	91.44	0.22	10542.79	4177.56	4170.14	-295.11	0 28	445263 26	739577.50	N 32 13 20.93	W 103 41 32.20
	14679 00	91.55	0.07	10540.31	4272.47	4265.11	-294.87	0.20	445358 22	739577.74	N 32 13 21.87	W 103 41 32.19
	14868 00	91.41	0 05	10535.43	4461.30	4454.04	-294.68	0.07	445547.15	739577.94	N 32 13 23.74	W 103 41 32.18
	14963.00	91.14	359.49	10533.32	4556.23	4549.02	-295.06	0 65	445642.12	739577.56	N 32 13 24.68	W 103 41 32.17
	15057.00	91 34	0 26	10531.28	4650 17	4642.99	-295.26	0.85	445736 09	739577.35	N 32 13 25 61	W 103 41 32 17
	15152 00	91 58	359 31	10528 86	4745.10	4737.96	-295 62	1.03	445831.06	739577 00	N 32 13 26 55	W 103 41 32 17
	15246 00	91 62	359.26	10526.24	4839.04	4831.92	-296.78	0 07	445925 01	739575 82	N 32 13 27 47	W 103 41 32 17
	15341 00	92 03	359 45	10523.21	4933.97	4926.86	-297.66	0.48	446019.95	739574 76	N 32 13 28 41	W 103 41 32 18
	15436 00	91 41	359 37	10520.38	5028.90	5021.82	-298.84	0 68	446114 90	739573 78	N 32 13 29 35	W 103 41 32 18
	15530 00	91 48	358 07	10517 99	5122.85	5115.76	-300.12	0.33	446208 85	739572 50	N 32 13 30.28	W 103 41 32 19
	15624 00	91 55	359 48	10515 50	5216 80	5209.74	-301.31	0.44	446302.81	739571 31	N 32 13 31 21	W 103 41 32 20
	15719 00	91 82	358 12	10512 71	5311.75	5304.67	-303.29	1.46	446397.74	739569 32	N 32 13 32 15	W 103 41 32 22
	15813 00	91 41	357 26	10510 06	5405.71	5398.58	-307.08	1.01	446491.62	739565 53	N 32 13 33 08	W 103 41 32 25
	15908 00	91 24	357 98	10507 86	5500 68	5493 45	-311.04	0 76	446586.51	739561 57	N 32 13 34 02	W 103 41 32 29
	16002 00	91 38	357 52	10505 71	5594.65	5587 35	-314.75	0 49	446680.40	739557 87	N 32 13 34 95	W 103 41 32 33
	16096.00	91 24	357.37	10503 57	5688 62	5681.23	-318.94	0.22	446774.28	739553 68	N 32 13 35 88	W 103 41 32 37
	16191 00	91 44	357 60	10501 34	5783.59	5776 11	-323.10	0.32	446869.16	739549.51	N 32 13 36 82	W 103 41 32 41
	16380 00	92 23	358 62	10495 29	5972.48	5964 95	-327.69	1.15	447057.99	739544 93	N 32 13 38 69	W 103 41 32 45
	16474.00	90 21	358 72	10493 29	6066.43	6058 91	-329.05	2.35	447151.94	739543 57	N 32 13 39 62	W 103 41 32 46
	16663.00	91 24	2.22	10490 90	6255.23	6247 86	-327.50	1.93	447340.88	739545 12	N 32 13 41 49	W 103 41 32 43
	16758 00	91 41	2 47	10488 70	6349.95	6342 76	-323.61	0.32	447435.77	739549 00	N 32 13 42 43	W 103 41 32 38

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	16852.00	91.55	1.68	10486.27	6443.68	6438.68	-320.05	0.64	447529.67	739552.57	N 32 13 43.35	W 103 41 32.33
	16947.00	91.61	2.30	10483.74	6538.42	6531.56	-316.58	0.44	447624.57	739556.09	N 32 13 44.29	W 103 41 32.29
	17042.00	91.58	2.60	10481.18	6633.11	6626.44	-312.52	0.32	447719.44	739560.09	N 32 13 45.23	W 103 41 32.23
	17136.00	91.58	2.61	10478.58	6726.79	6720.30	-308.25	0.01	447813.30	739564.36	N 32 13 46.16	W 103 41 32.18
	17231.00	91.89	2.69	10475.71	6821.45	6815.18	-303.86	0.34	447908.16	739568.75	N 32 13 47.10	W 103 41 32.12
	17325.00	92.10	0.26	10472.43	6915.23	6909.06	-301.45	2.59	448002.05	739571.17	N 32 13 48.03	W 103 41 32.09
	17420.00	91.38	358.50	10469.55	7010.16	7004.01	-302.47	2.00	448097.00	739570.14	N 32 13 48.97	W 103 41 32.09
	17514.00	90.58	358.60	10467.94	7104.14	7097.97	-304.85	0.86	448190.95	739567.76	N 32 13 49.90	W 103 41 32.11
	17608.00	90.62	358.41	10466.96	7198.13	7191.93	-307.30	0.21	448284.90	739565.31	N 32 13 50.83	W 103 41 32.13
	17797.00	90.45	358.25	10465.19	7387.12	7380.84	-312.81	0.12	448473.81	739559.80	N 32 13 52.70	W 103 41 32.18
	17891.00	90.38	358.64	10464.51	7481.12	7474.80	-315.38	0.42	448567.77	739557.25	N 32 13 53.63	W 103 41 32.21
	17986.00	90.38	358.27	10463.88	7576.11	7569.77	-317.92	0.39	448662.72	739554.69	N 32 13 54.57	W 103 41 32.23
	18081.00	90.41	358.52	10463.23	7671.11	7664.73	-320.58	0.27	448757.68	739552.03	N 32 13 55.51	W 103 41 32.25
	18175.00	90.52	358.38	10462.46	7765.11	7758.69	-323.13	0.19	448851.64	739549.49	N 32 13 56.44	W 103 41 32.28
	18270.00	90.55	358.13	10461.58	7860.10	7853.64	-326.02	0.27	448946.59	739546.60	N 32 13 57.38	W 103 41 32.30
	18364.00	90.52	358.47	10460.70	7954.10	7947.59	-328.81	0.36	449040.54	739543.81	N 32 13 58.31	W 103 41 32.33
	18458.00	90.48	358.64	10459.88	8048.09	8041.56	-331.26	0.09	449134.50	739541.36	N 32 13 59.24	W 103 41 32.35
	18553.00	90.48	358.24	10459.08	8143.09	8136.52	-333.93	0.32	449229.45	739538.69	N 32 14 0.18	W 103 41 32.38
	18648.00	90.59	358.33	10458.20	8238.08	8231.47	-336.77	0.14	449324.40	739535.84	N 32 14 1.12	W 103 41 32.40
	18742.00	90.58	358.31	10457.25	8332.08	8325.43	-339.53	0.02	449418.35	739533.09	N 32 14 2.05	W 103 41 32.43
	18837.00	90.34	358.44	10456.49	8427.07	8420.38	-342.22	0.29	449513.30	739530.39	N 32 14 2.99	W 103 41 32.45
	18931.00	90.34	0.32	10455.93	8521.04	8514.37	-343.24	2.00	449607.29	739529.38	N 32 14 3.92	W 103 41 32.46
	19026.00	90.34	0.28	10455.37	8615.97	8609.37	-342.76	0.06	449702.28	739529.86	N 32 14 4.86	W 103 41 32.45
	19214.00	90.58	0.02	10453.86	8803.85	8797.36	-342.30	0.18	449890.26	739530.32	N 32 14 6.72	W 103 41 32.43
	19309.00	90.34	0.39	10453.10	8898.79	8892.36	-341.98	0.46	449985.26	739530.66	N 32 14 7.66	W 103 41 32.42
	19404.00	90.59	0.49	10452.33	8993.71	8987.35	-341.23	0.27	450080.24	739531.39	N 32 14 8.60	W 103 41 32.40
	19498.00	90.34	0.19	10451.58	9087.63	9081.35	-340.67	0.41	450174.24	739531.94	N 32 14 9.53	W 103 41 32.39
	19593.00	90.55	0.26	10450.84	9182.57	9176.35	-340.30	0.23	450269.23	739532.32	N 32 14 10.47	W 103 41 32.38
	19687.00	90.52	0.31	10449.98	9276.50	9270.34	-339.83	0.06	450363.22	739532.79	N 32 14 11.40	W 103 41 32.37
	19782.00	90.24	0.28	10449.33	9371.42	9365.34	-339.34	0.30	450458.21	739533.27	N 32 14 12.34	W 103 41 32.35
	19876.00	90.55	0.73	10448.69	9465.34	9459.33	-338.51	0.58	450552.20	739534.10	N 32 14 13.27	W 103 41 32.34
	19971.00	90.10	0.75	10448.15	9560.24	9554.32	-337.29	0.47	450647.18	739535.33	N 32 14 14.21	W 103 41 32.32
	20065.00	89.69	0.37	10448.32	9654.16	9648.32	-336.37	0.59	450741.17	739536.25	N 32 14 15.14	W 103 41 32.30
	20160.00	89.73	0.61	10448.80	9749.07	9743.31	-335.56	0.26	450836.17	739537.06	N 32 14 16.08	W 103 41 32.28
	20254.00	89.93	0.51	10449.08	9842.99	9837.31	-334.64	0.24	450930.16	739537.98	N 32 14 17.01	W 103 41 32.27
	20349.00	89.93	0.22	10449.19	9937.92	9932.30	-334.03	0.31	451025.15	739538.58	N 32 14 17.95	W 103 41 32.25
	20443.00	90.21	360.00	10449.08	10031.86	10026.30	-333.85	0.38	451119.14	739538.77	N 32 14 18.88	W 103 41 32.24
Final MWD Survey	20465.00	90.21	0.16	10449.00	10053.85	10048.30	-333.82	0.68	451141.14	739538.79	N 32 14 19.09	W 103 41 32.24
Proj to Bit	20505.00	90.21	0.15	10448.85	10093.82	10088.30	-333.72	0.00	451181.14	739538.90	N 32 14 19.49	W 103 41 32.24

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	1/98.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-20,505'
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-20,505'
	1	26.500	10738.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-
	1	10738.000	20505.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Mesa Verde BS Unit 5 Gyro+MWD 0-

Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

March 30, 2018

Oxy USA Inc.

Re:

17, 24 South, 32 East, Lea NM
-32.21101 -103.69140

CLIENT: Oxy USA Inc.
WELL: Mesa Verde BS Unit 5H
FIELD: Bone Spring

RIG: H&P 617
COUNTY: Lea
API NO: 30-025-44185
JOB NO: 18MLD2313

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements, a division of Schlumberger Technology Corporation (P-5 No. 754900).
Other information required by your office is as follows.

Name & Title of Surveyor	Drainhole Number	Surveyed Depths	Dates Performed	Type of Survey
Tyler Matthews FE	Mesa Verde BS Unit 5H Original Hole	10787.00 Ft to 20465.00 Ft	March 16, 2018 to March 24, 2018	SlimPulse

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Field Service Manager

Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

Well Reference:
17, 24 South, 32 East, Lea NM
-32.21101 -103.69140

I, Tyler Matthews certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of March 16, 2018 through March 24, 2018, conduct or supervise the taking of the SlimPulse surveys from a depth of 10787.00 feet to a depth of 20465.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of Oxy USA Inc. for the Mesa Verde BS Unit 5H Well (Original Hole) API No. 30-025-44185 in New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

Tyler Matthews

By
Tyler Matthews
FE

Subscribed and Sworn to before me this 3rd day of April (month) 2018 (yr)

My Commission expires:

2-16-2022

D. Adams (signature)

Notary Public

Adams County Colorado

(County State)

DONNA ADAMS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184007893
MY COMMISSION EXPIRES FEBRUARY 16, 2022

Schlumberger

OXY

OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Oxy Mesa Verde BS Unit 5	NM Lea County (NAD 83)	Oxy Mesa Verde BS Unit 5

Gravity & Magnetic Parameters

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet

Miscellaneous