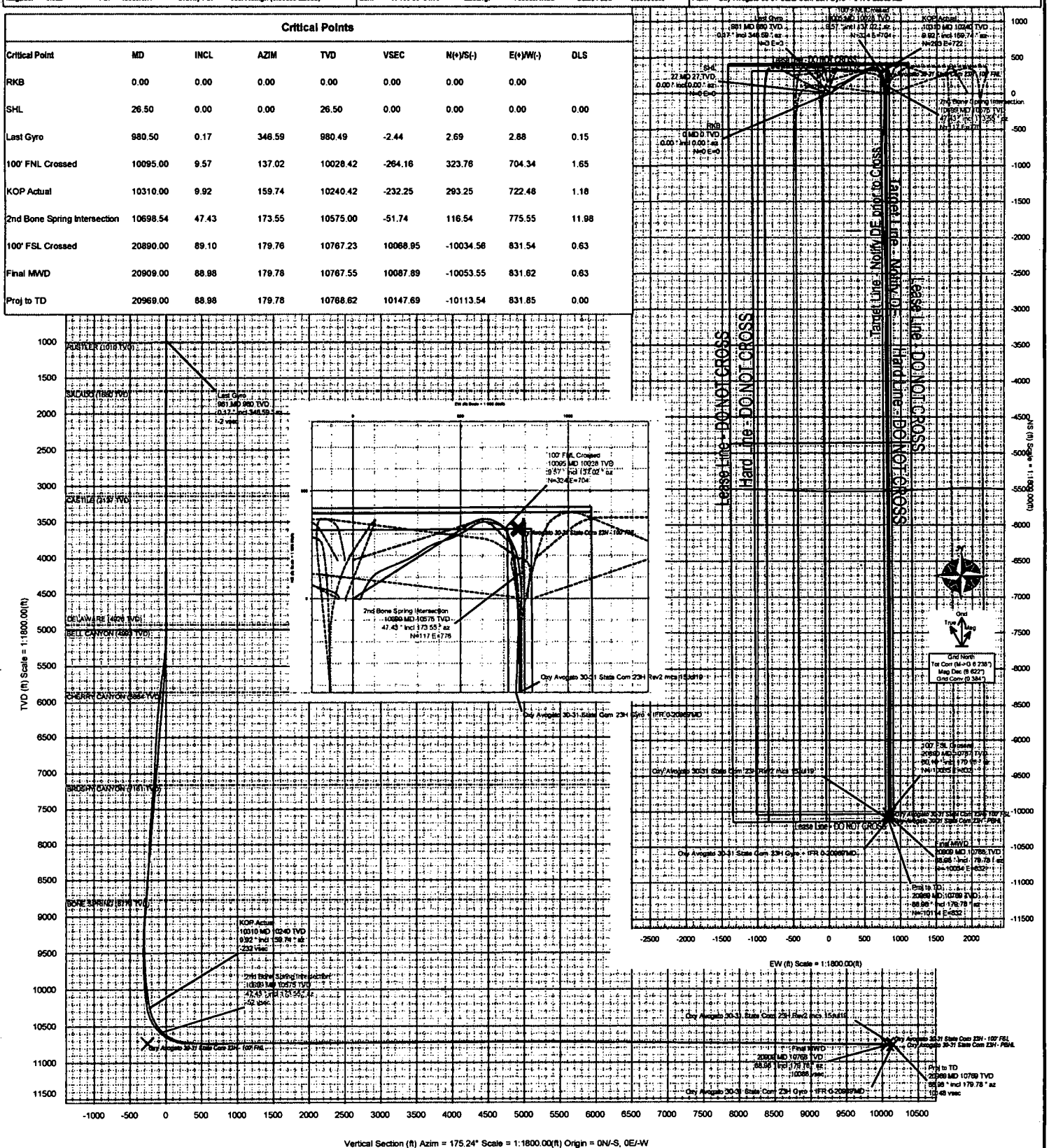
Schlumberger OXY

Borehole:	Well:	Field:	Structure:
Orignal Borehole	Oxy Avogato 30-31 State Com 23H	NM Lea County (NAD 83)	Oxy Avogato 30-31 State Com 23H

Gravity & Magnetic Parameters				Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet			Miscellaneous		
Model: IFR1	Dip: 60.089°	Date: 09-Aug-2019		Lat: N 32 22 8.17	Northing: 486634.67USft	Grid Conv: 0.3845°		Slot: Oxy Avogato 30-31 State Com 23H	TVD Ref: RKB=26.5'(3732.6ft above MSL)	
MagDec: 6.622°	FS: 48063.6nT	Gravity FS: 998.448mgn (9.80665 Based)		Lon: W 103 36 54.70	Easting: 763058.47USft	Scale Fact: 0.99996539		Plan: Oxy Avogato 30-31 State Com 23H Gyro + IFR 0-20969MD		

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00
Last Gyro	980.50	0.17	346.59	980.49	-2.44	2.69	2.88	0.15
100' FNL Crossed	10095.00	9.57	137.02	10028.42	-264.16	323.76	704.34	1.65
KOP Actual	10310.00	9.92	159.74	10240.42	-232.25	293.25	722.48	1.18
2nd Bone Spring Intersection	10698.54	47.43	173.55	10575.00	-51.74	116.54	775.55	11.98
100' FSL Crossed	20890.00	89.10	179.76	10767.23	10068.95	-10034.56	831.54	0.63
Final MWD	20909.00	88.98	179.78	10767.55	10087.89	-10053.55	831.62	0.63
Proj to TD	20969.00	88.98	179.78	10768.62	10147.69	-10113.54	831.85	0.00



Schlumberger

Oxy Avogato 30-31 State Com 23H Gyro + IFR 0-20969'MD Survey
Geodetic Report
(Def Survey)

Report Date:	August 27, 2019 - 09:49 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	175.237 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Avogato 30-31 State Com 23H / Oxy Avogato 30-31 State Com 23H	**TVD Reference Datum:**	RKB=26.5'
Well:	Oxy Avogato 30-31 State Com 23H	**TVD Reference Elevation:**	3732.600 ft above MSL
Borehole:	Orignal Borehole	**Seabed / Ground Elevation:**	3706.100 ft above MSL
UWI / API#:	Unknown / 30-025-45926	**Magnetic Declination:**	6.622 °
Survey Name:	Oxy Avogato 30-31 State Com 23H Gyro + IFR 0-20969'MD	**Total Gravity Field Strength:**	998.4480mgn (9.80665 Based)
Survey Date:	August 02, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	213.894 ° / 11303.364 ft / 6.673 / 1.050	**Total Magnetic Field Strength:**	48063.600 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.089 °
Location Lat / Long:	N 32° 22' 8.17051", W 103° 36' 54.70084"	**Declination Date:**	August 09, 2019
Location Grid N/E Y/X:	N 498694.600 ftUS, E 763058.400 ftUS	**Magnetic Declination Model:**	IFR1
CRS Grid Convergence Angle:	0.3845 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996539	**Grid Convergence Used:**	0.3845 °
Version / Patch:	2.10.782.0	**Total Corr Mag North->Grid North:**	6.2375 °
		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	498694.60	763058.40	N 32 22 8.17	W 103 36 54.70
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	498694.60	763058.40	N 32 22 8.17	W 103 36 54.70
	70.50	0.26	78.90	70.50	-0.01	0.02	0.10	0.59	498694.62	763058.50	N 32 22 8.17	W 103 36 54.70
	120.50	0.34	68.83	120.50	-0.07	0.09	0.35	0.19	498694.69	763058.75	N 32 22 8.17	W 103 36 54.70
	220.50	0.39	61.21	220.50	-0.29	0.37	0.92	0.07	498694.97	763059.32	N 32 22 8.17	W 103 36 54.69
	320.50	0.28	65.16	320.50	-0.51	0.63	1.44	0.11	498695.23	763059.84	N 32 22 8.18	W 103 36 54.68
	420.50	0.22	55.47	420.49	-0.69	0.84	1.82	0.07	498695.44	763060.22	N 32 22 8.18	W 103 36 54.68
	520.50	0.21	54.92	520.49	-0.88	1.06	2.13	0.01	498695.66	763060.53	N 32 22 8.18	W 103 36 54.68
	620.50	0.24	49.02	620.49	-1.09	1.30	2.44	0.04	498695.90	763060.84	N 32 22 8.18	W 103 36 54.67
	720.50	0.29	20.21	720.49	-1.45	1.68	2.68	0.14	498696.28	763061.08	N 32 22 8.19	W 103 36 54.67
	820.50	0.24	34.49	820.49	-1.84	2.09	2.89	0.08	498696.69	763061.29	N 32 22 8.19	W 103 36 54.67
	920.50	0.26	343.26	920.49	-2.22	2.48	2.94	0.22	498697.08	763061.34	N 32 22 8.19	W 103 36 54.67
Last Gyro	980.50	0.17	346.59	980.49	-2.44	2.69	2.88	0.15	498697.29	763061.28	N 32 22 8.20	W 103 36 54.67
	1147.00	0.20	32.70	1146.99	-2.92	3.18	2.98	0.09	498697.78	763061.38	N 32 22 8.20	W 103 36 54.67
	1239.00	0.18	198.75	1238.99	-2.91	3.18	3.02	0.41	498697.78	763061.42	N 32 22 8.20	W 103 36 54.67
	1330.00	0.16	74.19	1329.99	-2.81	3.07	3.10	0.33	498697.67	763061.50	N 32 22 8.20	W 103 36 54.66
	1422.00	0.11	222.30	1421.99	-2.77	3.04	3.16	0.28	498697.64	763061.56	N 32 22 8.20	W 103 36 54.66
	1517.00	0.12	162.45	1516.99	-2.61	2.88	3.13	0.12	498697.48	763061.53	N 32 22 8.20	W 103 36 54.66
	1610.00	0.20	222.50	1609.99	-2.41	2.67	3.05	0.19	498697.27	763061.45	N 32 22 8.20	W 103 36 54.67
	1705.00	0.20	54.29	1704.99	-2.38	2.64	3.08	0.42	498697.24	763061.47	N 32 22 8.20	W 103 36 54.66
	1894.00	0.18	293.81	1893.99	-2.69	2.96	3.07	0.17	498697.56	763061.47	N 32 22 8.20	W 103 36 54.66
	1989.00	0.12	264.88	1988.99	-2.76	3.01	2.84	0.10	498697.61	763061.24	N 32 22 8.20	W 103 36 54.67
	2084.00	0.18	300.94	2083.99	-2.85	3.08	2.61	0.11	498697.68	763061.01	N 32 22 8.20	W 103 36 54.67
	2178.00	0.20	215.27	2177.99	-2.81	3.02	2.39	0.28	498697.62	763060.79	N 32 22 8.20	W 103 36 54.67
	2273.00	0.12	195.35	2272.99	-2.59	2.79	2.27	0.10	498697.39	763060.67	N 32 22 8.20	W 103 36 54.67
	2368.00	0.12	57.39	2367.99	-2.54	2.74	2.32	0.24	498697.34	763060.72	N 32 22 8.20	W 103 36 54.67
	2462.00	0.16	61.95	2461.99	-2.64	2.86	2.52	0.04	498697.46	763060.92	N 32 22 8.20	W 103 36 54.67
	2557.00	0.11	87.75	2556.99	-2.69	2.92	2.73	0.08	498697.52	763061.13	N 32 22 8.20	W 103 36 54.67
	2652.00	0.05	106.86	2651.99	-2.67	2.92	2.86	0.07	498697.52	763061.26	N 32 22 8.20	W 103 36 54.67
	2746.00	0.08	128.79	2745.99	-2.61	2.86	2.95	0.04	498697.46	763061.35	N 32 22 8.20	W 103 36 54.67
	2936.00	0.16	87.37	2935.98	-2.51	2.79	3.32	0.06	498697.39	763061.72	N 32 22 8.20	W 103 36 54.66
	3030.00	0.23	290.43	3029.98	-2.58	2.86	3.27	0.41	498697.46	763061.67	N 32 22 8.20	W 103 36 54.66
	3125.00	0.12	210.93	3124.98	-2.58	2.85	3.04	0.25	498697.45	763061.44	N 32 22 8.20	W 103 36 54.67
	3220.00	0.12	88.05	3219.98	-2.50	2.76	3.09	0.22	498697.36	763061.49	N 32 22 8.20	W 103 36 54.66
	3314.00	0.23	306.46	3313.98	-2.62	2.88	3.04	0.35	498697.48	763061.44	N 32 22 8.20	W 103 36 54.67
	3409.00	0.11	159.07	3408.98	-2.65	2.91	2.92	0.35	498697.51	763061.32	N 32 22 8.20	W 103 36 54.67
	3504.00	0.22	142.76	3503.98	-2.41	2.68	3.06	0.12	498697.28	763061.46	N 32 22 8.20	W 103 36 54.66
	3693.00	0.55	126.54	3692.98	-1.51	1.85	4.01	0.18	498696.45	763062.41	N 32 22 8.19	W 103 36 54.65
	3788.00	1.21	120.24	3787.97	-0.63	1.07	5.24	0.70	498695.67	763063.64	N 32 22 8.18	W 103 36 54.64
	3882.00	1.64	109.32	3881.94	0.49	0.13	7.37	0.54	498694.73	763065.77	N 32 22 8.17	W 103 36 54.61
	3977.00	2.10	103.24	3976.89	1.58	-0.72	10.35	0.53	498693.88	763068.75	N 32 22 8.16	W 103 36 54.58
	4071.00	1.58	92.45	4070.84	2.27	-1.17	13.32	0.66	498693.43	763071.72	N 32 22 8.16	W 103 36 54.55
	4166.00	2.11	93.80	4165.79	2.70	-1.34	16.37	0.56	498693.26	763074.77	N 32 22 8.16	W 103 36 54.51
	4261.00	2.66	88.19	4260.71	3.07	-1.39	20.32	0.63	498693.21	763078.72	N 32 22 8.16	W 103 36 54.48
	4355.00	2.10	90.76	4354.63	3.35	-1.34	24.22	0.61	498693.26	763082.62	N 32 22 8.16	W 103 36 54.42
	4450.00	1.93	91.65	4449.57	3.70	-1.41	27.56	0.18	498693.19	763085.96	N 32 22 8.15	W 103 36 54.38
	4544.00	1.78	104.96	4543.52	4.37	-1.84	30.55	0.48	498692.76	763088.95	N 32 22 8.15	W 103 36 54.34
	4639.00	1.36	107.50	4638.48	5.29	-2.56	33.05	0.45	498692.04	763091.45	N 32 22 8.14	W 103 36 54.32
	4734.00	0.41	91.58	4733.47	5.76	-2.90	34.47	1.02	498691.70	763092.87	N 32 22 8.14	W 103 36 54.30
	4828.00	0.23	10.28	4827.47	5.61	-2.73	34.84	0.47	498691.87	763093.24	N 32 22 8.14	W 103 36 54.29
	4923.00	0.13	32.07	4922.47	5.34	-2.45	34.93	0.13	498692.15	763093.33	N 32 22 8.14	W 103 36 54.29
	5018.00	0.95	359.58	5017.46	4.47	-1.57	34.98	0.89	498693.03	763093.38	N 32 22 8.15	W 103 36 54.29
	5113.00	2.40	12.38	5112.42	1.78	1.16	35.40	1.57	498695.76	763093.80	N 32 22 8.18	W 103 36 54.29
	5207.00	4.31	20.83	5206.25	-3.28	6.38	37.08	2.09	498700.98	763095.48	N 32 22 8.23	W 103 36 54.27
	5302.00	5.59	21.47	5300.90	-10.65	14.03	40.04	1.35	498708.63	763098.44	N 32 22 8.31	W 103 36 54.23
	5397.00	7.22	22.45	5395.30	-20.11	23.85	44.02	1.72	498718.45	763102.42	N 32 22 8.40	W 103 36 54.19
	5491.00	8.36	26.03	5488.43	-31.24	35.45	49.27	1.32	498730.05	763107.67	N 32 22 8.52	W 103 36 54.12
	5586.00	9.03	26.95	5582.34	-43.51	48.30	55.68	0.72	498742.90	763114.08	N 32 22 8.64	W 103 36 54.05
	5681.00	9.64	29.09	5676.08	-56.46	61.90	62.93	0.74	498756.50	763121.33	N 32 22 8.78	W 103 36 53.96
	5775.00	9.21	33.74	5768.82	-68.88	75.03	70.93	0.93	498769.63	763129.33	N 32 22 8.91	W 103 36 53.87
	5870.00	9.17	34.66	5862.60	-80.68	87.58	79.46	0.16	498782.18	763137.86	N 32 22 9.03	W 103 36 53.77
	5964.00	9.41	40.47	5955.37	-91.88	99.59	88.71	1.03	498794.18	763147.10	N 32 22 9.15	W 103 36 53.66
	6059.00	9.08	48.11	6049.13	-101.87	110.50	99.33	1.34	498805.10	763157.73	N 32 22 9.26	W 103 36 53.53
	6154.00	9.20	55.88	6142.93	-110.12	119.77	111.20	1.30	498814.36	763169.59	N 32 22 9.35	W 103 36 53.40
	6249.00	9.31	61.58	6236.70	-116.93	127.68	124.24	0.97	498822.28	763182.64	N 32 22 9.43	W 103 36 53.24
	6343.00	9.39	67.29	6329.45	-122.34	134.26	138.00	0.99	498828.86	763196.40	N 32 22 9.49	W 103 36 53.08
	6529.00	9.36	67.16	6512.97	-131.71	145.99	165.94	0.02	498840.59	763224.33	N 32 22 9.60	W 103 36 52.75
	6623.00	9.41	66.51	6605.71	-136.55	152.02	180.03	0.12	498846.62	763238.43	N 32 22 9.66	W 103 36 52.59
	6812.00	9.67	67.31	6792.09	-146.40	164.30	208.85	0.15	498858.90	763267.24	N 32 22 9.78	W 103 36 52.25
	6907.00	9.77	67.50	6885.73	-151.31	170.47	223.66	0.11	498865.06	763282.05	N 32 22 9.84	W 103 36 52.08
	7002.00	9.83	66.34	6979.34	-156.39	176.81	238.53	0.22	498871.40	763296.92	N 32 22 9.90	W 103 36 51.91
	7096.00	9.55	64.00	7072.00	-161.81	183.44	252.89	0.51	498878.04	763311.28	N 32 22 9.97	W 103 36 51.74
	7191.00	9.50	61.73	7165.69	-167.79	190.61	266.88	0.40	498885.21	763325.27	N 32 22 10.04	W 103 36 51.57
	7286.00	10.17	60.61	7259.30	-174.42	198.44	281.09	0.73	498893.03	763339.48	N 32 22 10.12	W 103 36 51.41
	7380.00	10.01	58.43	7351.84	-181.56	206.79	295.28	0.44	498901.38	763353.67	N 32 22 10.20	W 103 36 51.24
	7475.00	10.05	55.67	7445.39	-189.37	215.79	309.16	0.51	498910.38	763367.55	N 32 22 10.29	W 103 36 51.08
	7570.00	10.11	55.41	7538.93	-197.61	225.20	322.87	0.08	498919.79	763381.26	N 32 22 10.38	W 103 36 50.92
	7664.00	10.13	57.87	7631.46	-205.51	234.28	336.66	0.46	498928.87	763395.05	N 32 22 10.47	W 103 36 50.76

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 ° ' ")
	7759.00	9.97	63.28	7725.01	-212.43	242.42	351.08	1.01	498937.01	763409.47	N 32 22 10.55	W 103 36 50.59
	7948.00	10.08	70.02	7911.13	-222.89	255.43	381.24	0.82	498950.02	763439.63	N 32 22 10.67	W 103 36 50.24
	8043.00	9.92	71.24	8004.69	-227.05	260.90	396.80	0.28	498955.49	763455.19	N 32 22 10.73	W 103 36 50.05
	8137.00	10.11	72.24	8097.25	-230.86	266.02	412.33	0.27	498960.61	763470.71	N 32 22 10.78	W 103 36 49.87
	8232.00	10.21	70.49	8190.76	-234.88	271.37	428.20	0.34	498965.96	763486.59	N 32 22 10.83	W 103 36 49.69
	8327.00	10.05	69.50	8284.28	-239.27	277.09	443.90	0.25	498971.68	763502.29	N 32 22 10.88	W 103 36 49.50
	8421.00	10.26	67.37	8376.81	-244.07	283.18	459.31	0.46	498977.77	763517.70	N 32 22 10.94	W 103 36 49.32
	8516.00	9.85	65.22	8470.35	-249.44	289.84	474.50	0.59	498984.43	763532.88	N 32 22 11.01	W 103 36 49.15
	8611.00	10.13	63.46	8563.91	-255.32	296.98	489.35	0.44	498991.57	763547.73	N 32 22 11.08	W 103 36 48.97
	8706.00	10.10	61.12	8657.44	-261.83	304.74	504.12	0.43	498999.33	763562.50	N 32 22 11.15	W 103 36 48.80
	8800.00	9.99	59.24	8750.00	-268.77	312.89	518.34	0.37	499007.48	763576.72	N 32 22 11.23	W 103 36 48.63
	8895.00	9.53	55.73	8843.62	-276.25	321.53	531.92	0.79	499016.12	763590.30	N 32 22 11.32	W 103 36 48.47
	8989.00	9.87	54.91	8936.28	-284.16	330.55	544.95	0.39	499025.13	763603.33	N 32 22 11.40	W 103 36 48.32
	9084.00	9.66	58.30	9029.90	-291.88	339.41	558.39	0.64	499034.00	763616.77	N 32 22 11.49	W 103 36 48.16
	9179.00	9.82	62.19	9123.53	-298.66	347.38	572.34	0.71	499041.97	763630.72	N 32 22 11.57	W 103 36 48.00
	9273.00	9.91	73.96	9216.15	-303.38	353.38	587.20	2.14	499047.95	763645.58	N 32 22 11.63	W 103 36 47.83
	9368.00	9.23	85.57	9309.84	-304.93	356.21	602.66	2.15	499050.79	763661.04	N 32 22 11.65	W 103 36 47.65
	9462.00	8.75	93.23	9402.69	-303.90	356.39	617.31	1.37	499050.97	763675.69	N 32 22 11.66	W 103 36 47.48
	9557.00	7.87	99.66	9496.69	-301.27	354.89	630.94	1.35	499049.47	763689.32	N 32 22 11.64	W 103 36 47.32
	9652.00	8.41	97.74	9590.73	-298.15	352.86	644.24	0.64	499047.45	763702.61	N 32 22 11.62	W 103 36 47.16
	9746.00	8.32	102.66	9683.73	-294.62	350.44	657.68	0.77	499045.03	763716.06	N 32 22 11.59	W 103 36 47.01
	9841.00	8.35	111.18	9777.73	-289.55	346.44	670.82	1.30	499041.03	763729.20	N 32 22 11.55	W 103 36 46.85
	9936.00	9.18	119.29	9871.63	-282.29	340.24	683.86	1.56	499034.83	763742.24	N 32 22 11.49	W 103 36 46.70
	10031.00	9.82	130.93	9965.33	-272.24	331.23	696.59	2.13	499025.82	763754.97	N 32 22 11.40	W 103 36 46.55
100' FNL Crossed	*10095.00*	*9.57*	*137.02*	*10028.42*	*-264.16*	*323.76*	*704.34*	*1.65*	*499018.35*	*763762.72*	*N 32 22 11.33*	*W 103 36 46.46*
	10125.00	9.49	139.97	10058.01	-260.18	320.04	707.64	1.65	499014.63	763766.01	N 32 22 11.29	W 103 36 46.43
	10220.00	9.58	151.56	10151.70	-246.54	307.09	716.44	2.02	499001.68	763774.81	N 32 22 11.16	W 103 36 46.32
	10273.00	9.83	157.83	10203.96	-238.28	299.11	720.21	1.98	498993.70	763778.58	N 32 22 11.08	W 103 36 46.28
KOP Actual	10310.00	9.92	159.74	10240.42	-232.25	293.25	722.48	1.18	498987.84	763780.86	N 32 22 11.02	W 103 36 46.25
	10405.00	21.81	153.83	10331.65	-207.85	269.65	733.14	12.61	498964.24	763791.51	N 32 22 10.79	W 103 36 46.13
	10499.00	29.11	155.81	10416.46	-169.97	233.07	750.23	7.82	498927.67	763808.60	N 32 22 10.43	W 103 36 45.94
	10594.00	35.53	168.65	10498.80	-120.65	184.82	765.17	9.66	498879.42	763823.54	N 32 22 9.95	W 103 36 45.77
	10689.00	46.33	173.12	10568.48	-58.70	123.45	774.75	11.77	498818.05	763833.12	N 32 22 9.34	W 103 36 45.66
2nd Bone Spring Intersection	*10698.54*	*47.43*	*173.55*	*10575.00*	*-51.74*	*116.54*	*775.55*	*11.98*	*498811.14*	*763833.93*	*N 32 22 9.27*	*W 103 36 45.65*
	10783.00	57.22	176.78	10626.57	15.01	50.01	781.06	11.98	498744.61	763839.43	N 32 22 8.61	W 103 36 45.59
	10878.00	68.93	184.77	10671.06	98.34	-33.72	779.66	12.63	498660.89	763838.03	N 32 22 7.79	W 103 36 45.61
	10973.00	77.93	185.43	10699.70	187.43	-123.79	771.61	11.60	498570.82	763829.98	N 32 22 6.89	W 103 36 45.71
	11067.00	84.17	181.38	10714.32	279.28	-216.41	766.12	7.88	498478.20	763824.50	N 32 22 5.98	W 103 36 45.79
	11174.00	84.76	182.06	10724.64	385.10	-322.86	762.93	0.84	498371.75	763821.30	N 32 22 4.93	W 103 36 45.83
	11269.00	85.85	183.46	10732.41	478.96	-417.43	758.37	1.86	498277.18	763816.74	N 32 22 3.99	W 103 36 45.89
	11363.00	87.78	183.81	10737.64	571.80	-511.09	752.42	2.09	498183.53	763810.79	N 32 22 3.06	W 103 36 45.97
	11458.00	91.50	185.21	10738.23	665.54	-605.78	744.95	4.18	498088.84	763803.32	N 32 22 2.13	W 103 36 46.06
	11552.00	91.40	183.78	10735.85	758.29	-699.46	737.58	1.52	497995.17	763795.96	N 32 22 1.20	W 103 36 46.16
	11647.00	90.74	181.64	10734.08	852.46	-794.33	733.09	2.36	497900.30	763791.47	N 32 22 0.26	W 103 36 46.22
	11742.00	91.16	179.57	10732.51	947.02	-889.30	732.09	2.22	497805.33	763790.48	N 32 21 59.32	W 103 36 46.24
	11836.00	92.02	178.71	10729.90	1040.77	-983.26	733.50	1.29	497711.38	763791.87	N 32 21 58.39	W 103 36 46.23
	11931.00	90.71	181.55	10727.63	1135.38	-1078.22	733.28	3.29	497616.42	763791.66	N 32 21 57.45	W 103 36 46.24
	12026.00	90.60	180.88	10726.55	1229.86	-1173.18	731.27	0.71	497521.45	763789.64	N 32 21 56.51	W 103 36 46.27
	12120.00	89.81	178.59	10726.21	1323.56	-1267.18	731.71	2.58	497427.47	763790.08	N 32 21 55.58	W 103 36 46.27
	12215.00	89.19	178.71	10727.04	1418.39	-1362.15	733.94	0.66	497332.50	763792.32	N 32 21 54.64	W 103 36 46.25
	12309.00	89.68	177.85	10727.97	1512.25	-1456.10	736.76	1.05	497238.55	763795.14	N 32 21 53.71	W 103 36 46.23
	12499.00	89.33	178.38	10729.61	1702.00	-1645.99	743.01	0.33	497048.67	763801.39	N 32 21 51.83	W 103 36 46.17
	12594.00	89.68	177.07	10730.43	1796.91	-1740.91	746.79	1.43	496953.75	763805.18	N 32 21 50.90	W 103 36 46.13
	12689.00	89.50	176.96	10731.11	1891.86	-1835.78	751.73	0.22	496858.89	763810.10	N 32 21 49.96	W 103 36 46.08
	12783.00	89.88	177.58	10731.62	1985.80	-1929.67	756.21	0.77	496765.00	763814.58	N 32 21 49.03	W 103 36 46.04
	12878.00	90.33	177.18	10731.44	2080.73	-2024.57	760.55	0.63	496670.10	763818.92	N 32 21 48.09	W 103 36 45.99
	13067.00	90.60	176.89	10729.91	2269.63	-2213.31	770.33	0.21	496481.37	763828.70	N 32 21 46.22	W 103 36 45.89
	13257.00	90.74	177.14	10727.69	2459.53	-2403.04	780.22	0.15	496291.65	763838.59	N 32 21 44.34	W 103 36 45.79
	13351.00	90.81	176.89	10726.42	2553.47	-2496.90	785.12	0.28	496197.79	763843.49	N 32 21 43.41	W 103 36 45.74
	13540.00	90.47	178.99	10724.31	2742.24	-2685.76	791.91	1.13	496008.94	763850.28	N 32 21 41.54	W 103 36 45.68
	13635.00	90.12	179.46	10723.62	2837.01	-2780.75	793.19	0.62	495913.95	763851.56	N 32 21 40.60	W 103 36 45.67
	13730.00	90.85	179.94	10723.01	2931.72	-2875.74	793.69	0.92	495818.96	763852.06	N 32 21 39.66	W 103 36 45.67
	13922.00	90.74	181.52	10720.35	3122.81	-3067.70	791.25	0.82	495627.01	763849.62	N 32 21 37.76	W 103 36 45.72
	14013.00	90.85	181.31	10719.09	3213.27	-3158.67	789.00	0.26	495536.05	763847.37	N 32 21 36.86	W 103 36 45.75
	14203.00	90.74	180.82	10716.45	3402.27	-3348.61	785.47	0.26	495346.11	763843.84	N 32 21 34.98	W 103 36 45.81
	14297.00	90.05	181.65	10715.80	3495.73	-3442.58	783.28	1.32	495252.14	763841.65	N 32 21 34.06	W 103 36 45.84
	14487.00	90.19	179.16	10715.40	3684.91	-3632.56	781.60	1.42	495062.17	763839.97	N 32 21 32.18	W 103 36 45.87
	14676.00	89.99	179.66	10715.11	3873.41	-3821.55	783.55	0.28	494873.19	763841.92	N 32 21 30.31	W 103 36 45.87
	14771.00	90.09	178.29	10715.04	3968.21	-3916.53	785.25	1.45	494778.21	763843.62	N 32 21 29.37	W 103 36 45.85
	14865.00	91.43	179.41	10713.79	4062.01	-4010.50	787.13	1.86	494684.25	763845.51	N 32 21 28.44	W 103 36 45.84
	15054.00	89.85	179.40	10711.68	4250.49	-4199.47	789.10	0.84	494495.28	763847.47	N 32 21 26.57	W 103 36 45.83
	15149.00	90.19	179.35	10711.65	4345.24	-4294.47	790.13	0.36	494400.29	763848.50	N 32 21 25.63	W 103 36 45.83
	15244.00	90.09	178.72	10711.42	4440.03	-4389.45	791.73	0.67	494305.31	763850.10	N 32 21 24.69	W 103 36 45.81
	15338.00	89.92	178.29	10711.41	4533.88	-4483.42	794.19	0.49	494211.34	763852.56	N 32 21 23.76	W 103 36 45.79
	15433.00	89.64	179.40	10711.77	4628.69	-4578.40	796.10	1.21	494116.37	763854.47	N 32 21 22.82	W 103 36 45.78
	15528.00	87.75	179.59	10713.94	4723.40	-4673.37	796.94	2.00	494021.41	763855.31	N 32 21 21.88	W 103 36 45.78
	15622.00	91.12	179.89	10714.86	4817.09	-4767.35	797.36	3.60	493927.43	763855.74	N 32 21 20.95	W 103 36 45.78
	15717.00	90.67	179.09	10713.38	4911.82	-4862.33	798.21	0.97	493832.45	763856.58	N 32 21 20.01	W 103 36 45.78
	15841.00	89.50	178.88	10713.20	5035.55	-4986.31	800.41	0.96	493708.47	763858.78	N 32 21 18.78	W 103 36 45.76
	15911.00	89.57	179.19	10713.76	5105.39	-5056.30	801.59	0.45	493638.49	763859.96	N 32 21 18.09	W 103 36 45.75
	16005.00	89.53	179.63	10714.50	5199.14	-5150.29	802.55	0.47	493544.50	763860.92	N 32 21 17.16	W 103 36 45.75
	16100.00	89.53	178.99	10715.28	5293.90	-5245.28	803.70	0.67	493449.52	763862.07	N 32 21 16.22	W 103 36 45.74
	16194.00	89.67	179.32	10715.94	5387.68	-5339.26	805.08	0.38	493355.53	763863.45	N 32 21 15.29	W 103 36 45.73
	16289.00	89.39	179.39	10716.72	5482.43	-5434.25	806.15	0.30	493260.54	763864.52	N 32 21 14.35	W 103 36 45.73
	16383.00	89.46	179.19	10717.66	5576.19	-5528.24	807.32	0.23	493166.56	763865.69	N 32 21 13.42	W 103 36 45.72
	16477.00	89.43	179.55	10718.57	5669.94	-5622.23	808.35	0.38	493072.57	763866.72	N 32 21 12.49	W 103 36 45.72
	16571.00	89.39	179.88	10719.54	5763.65	-5716.23	808.82	0.35	492978.58	763867.19	N 32 21 11.56	W 103 36 45.72
	16760.00	89.57	179.52	10721.25	5952.06	-5905.22	809.81	0.21	492789.60	763868.18	N 32 21 9.69	W 103 36 45.72
	16854.00	89.60	179.61	10721.93	6045.79	-5999.21	810.52	0.10	492695.61	763868.89	N 32 21 8.76	W 103 36 45.72
	16949.00	89.63	179.29	10722.57	6140.54	-6094.20	811.43	0.34	492600.62	763869.80	N 32 21 7.82	W 103 36 45.72
	17043.00	89.67	179.51	10723.15	6234.29	-6188.20	812.42	0.24	492506.63	763870.79	N 32 21 6.89	W 103 36 45.71
	17138.00	89.63	179.40	10723.73	6329.03	-6283.19	813.32	0.12	492411.64	763871.69	N 32 21 5.95	W 103 36 45.71
	17232.00	89.32	179.64	10724.59	6422.76	-6377.18	814.11	0.42	492317.65	763872.48	N 32 21 5.02	W 103 36 45.71
	17326.00	89.33	179.73	10725.70	6516.47	-6471.18	814.63	0.10	492223.66	763873.00	N 32 21 4.09	W 103 36 45.71
	17420.00	89.53	179.78	10726.63	6610.17	-6565.17	815.03	0.22	492129.67	763873.40	N 32 21 3.16	W 103 36 45.71
	17609.00	89.32	179.50	10728.53	6798.61	-6754.16	816.22	0.19	491940.69	763874.59	N 32 21 1.29	W 103 36 45.71
	17704.00	89.67	179.32	10729.37	6893.35	-6849.15	817.19	0.41	491845.70	763875.56	N 32 21 0.35	W 103 36 45.71
	17798.00	89.63	179.39	10729.94	6987.11	-6943.14	818.25	0.09	491751.71	763876.62	N 32 20 59.42	W 103 36 45.71
	17987.00	89.60	179.17	10731.21	7175.63	-7132.12	820.63	0.12	491562.74	763879.00	N 32 20 57.55	W 103 36 45.69
	18081.00	89.57	179.44	10731.89	7269.39	-7226.11	821.77	0.29	491468.75	763880.14	N 32 20 56.62	W 103 36 45.69
	18175.00	89.77	179.66	10732.43	7363.12	-7320.11	822.50	0.32	491374.76	763880.87	N 32 20 55.69	W 103 36 45.69
	18270.00	89.63	179.72	10732.93	7457.84	-7415.10	823.02	0.16	491279.77	763881.39	N 32 20 54.75	W 103 36 45.69
	18364.00	89.39	179.72	10733.73	7551.54	-7509.10	823.48	0.26	491185.78	763881.85	N 32 20 53.82	W 103 36 45.69
	18553.00	89.60	179.63	10735.40	7739.97	-7698.09	824.55	0.12	490996.79	763882.92	N 32 20 51.95	W 103 36 45.69
	18647.00	89.70	179.38	10735.97	7833.71	-7792.08	825.38	0.31	490902.80	763883.75	N 32 20 51.02	W 103 36 45.69
	18741.00	89.74	179.15	10736.43	7927.48	-7886.07	826.60	0.23	490808.82	763884.97	N 32 20 50.09	W 103 36 45.68

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 ° ' ")
	18836.00	89.39	178.70	10737.15	8022.28	-7981.05	828.38	0.60	490713.84	763886.75	N 32 20 49.15	W 103 36 45.67
	18930.00	89.53	179.17	10738.04	8116.08	-8075.03	830.13	0.52	490619.86	763888.50	N 32 20 48.22	W 103 36 45.66
	19118.00	88.95	181.54	10740.53	8303.30	-8263.00	828.97	1.30	490431.90	763887.34	N 32 20 46.36	W 103 36 45.68
	19213.00	88.77	181.58	10742.42	8397.70	-8357.94	826.38	0.19	490336.96	763884.75	N 32 20 45.42	W 103 36 45.72
	19307.00	89.08	181.48	10744.19	8491.12	-8451.89	823.87	0.35	490243.01	763882.24	N 32 20 44.49	W 103 36 45.76
	19401.00	89.01	181.67	10745.75	8584.53	-8545.85	821.29	0.22	490149.07	763879.66	N 32 20 43.56	W 103 36 45.80
	19496.00	89.02	181.11	10747.39	8678.97	-8640.80	818.98	0.59	490054.11	763877.35	N 32 20 42.62	W 103 36 45.83
	19590.00	89.32	180.19	10748.75	8772.54	-8734.79	817.92	1.03	489960.13	763876.29	N 32 20 41.69	W 103 36 45.85
	19684.00	89.12	179.67	10750.03	8866.21	-8828.78	818.03	0.59	489866.15	763876.40	N 32 20 40.76	W 103 36 45.86
	19779.00	89.22	179.49	10751.40	8960.93	-8923.76	818.73	0.22	489771.16	763877.10	N 32 20 39.82	W 103 36 45.86
	19873.00	89.02	179.32	10752.85	9054.67	-9017.75	819.70	0.28	489677.18	763878.07	N 32 20 38.89	W 103 36 45.85
	19967.00	89.19	178.81	10754.32	9148.45	-9111.72	821.24	0.57	489583.21	763879.61	N 32 20 37.96	W 103 36 45.84
	20061.00	89.08	179.29	10755.74	9242.23	-9205.70	822.80	0.52	489489.24	763881.17	N 32 20 37.03	W 103 36 45.83
	20155.00	89.36	179.85	10757.02	9335.95	-9299.69	823.50	0.67	489395.25	763881.87	N 32 20 36.10	W 103 36 45.83
	20249.00	89.29	179.76	10758.12	9429.65	-9393.68	823.82	0.12	489301.26	763882.19	N 32 20 35.17	W 103 36 45.83
	20344.00	89.19	178.84	10759.38	9524.40	-9488.66	824.98	0.97	489206.28	763883.35	N 32 20 34.23	W 103 36 45.83
	20438.00	89.26	179.25	10760.65	9618.18	-9582.64	826.55	0.44	489112.31	763884.92	N 32 20 33.30	W 103 36 45.82
	20532.00	88.81	179.58	10762.24	9711.92	-9676.62	827.51	0.59	489018.33	763885.88	N 32 20 32.37	W 103 36 45.81
	20627.00	89.02	179.59	10764.04	9806.63	-9771.60	828.20	0.22	488923.35	763886.57	N 32 20 31.43	W 103 36 45.81
	20721.00	89.29	178.54	10765.42	9900.41	-9865.58	829.73	1.15	488829.38	763888.10	N 32 20 30.50	W 103 36 45.80
	20815.00	89.57	179.69	10766.36	9994.19	-9959.56	831.18	1.26	488735.40	763889.55	N 32 20 29.57	W 103 36 45.79
100' FSL Crossed	*20890.00*	*89.10*	*179.76*	*10767.23*	*10068.95*	*-10034.56*	*831.54*	*0.63*	*488660.41*	*763889.91*	*N 32 20 28.83*	*W 103 36 45.79*
Final MWD	20909.00	88.98	179.78	10767.55	10087.89	-10053.55	831.62	0.63	488641.41	763889.99	N 32 20 28.64	W 103 36 45.79
Proj to TD	20969.00	88.98	179.78	10768.62	10147.69	-10113.54	831.85	0.00	488581.43	763890.22	N 32 20 28.04	W 103 36 45.80

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	Orignal Borehole / Oxy Avogato 30-31 State Com 23H Gyro + IFR 0-20969'MD
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Orignal Borehole / Oxy Avogato 30-31 State Com 23H Gyro + IFR 0-20969'MD
	1	26.500	980.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Orignal Borehole / Oxy Avogato 30-31 State Com 23H Gyro + IFR
	1	980.500	20969.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Orignal Borehole / Oxy Avogato 30-31 State Com 23H Gyro + IFR

Oilfield Services, Central U.S. Land
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

August 26, 2019

Oxy USA Incoporated
P.O. BOX 4294
HOUSTON, TX 77210-4294

Re:

S30, T22S, R33E, LEA NM
N 32.36894 W -103.61519

CLIENT: Oxy USA Incorporated
WELL: Avogato 30-31 State Com 23H
FIELD: Red Tank; Bone Spring, East

RIG: H&P 636
COUNTY: LEA
API NO: 30-025-45926
JOB NO: 19MLH0256

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
Raja A. Hakeem Raja Shahreen FE	AVOGATO 30-31 STATE 23H Original Hole	1147.00 Ft 20909.00 Ft	to	August 12, 2019 August 26, 2019	to	Telepacer, SlimPulse Third Party Corrected

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:
S30, T22S, R33E, LEA NM
N 32.36894 W -103.61519

I, RAJA A. HAKEEM RAJA SHAHREEN certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of August 12, 2019 through August 26, 2019, conduct or supervise the taking of the Telepacer, SlimPulse & Third Party Corrected surveys from a depth of 1147.00 feet to a depth of 20909.00 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 WTP LIMITED PARTNERSHIP for the AVOGATO 30-31 STATE 23H Well (Original Hole) API No. 30-025-45926 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.

By
RAJA A. HAKEEM RAJA SHAHREEN
FE

Subscribed and Sworn to before me this 16 day of September (month) 2019 (yr)

My Commission expires:
6/14/2023

Jean-Paul Langlois (signature)
Notary Public
Comanche, Oklahoma
(County State)

Jean-Paul Langlois
Notary Public in and for
STATE OF OKLAHOMA
Commission #19005986
Expires: June 14, 2023