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

September 24, 2019

Oxy USA Inc
PO Box 4294
Houston, TX 77210-4294

Re:

S30, T22S, R33E Lea, NM
N 32.368929 W -103.608949

CLIENT: Oxy USA Inc
WELL: Avogato 30 31 State Com 24H
FIELD: Red Tank; Bone Spring, East

RIG: H&P 636
COUNTY: Lea
API NO: 30-025-45960
JOB NO: 19MLH0324

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
Sarah Almohsen FE	Avogato 30 31 State Com 24H Original Hole	1151.00 Ft 21038.00 Ft	to	August 6, 2019 September 5, 2019	to	TelePacer, SlimPulse 3rd Party Corrected

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Schlumberger

Well Reference:
S30, T22S, R33E Lea, NM
N 32.368929 W -103.608949

I, Sarah Almohsen certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of August 06, 2019 through September 05, 2019, conduct or supervise the taking of the TelePacer, SlimPulse & 3rd Party Corrected surveys from a depth of 1151.00 feet to a depth of 21038.00 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 Avogato 30 31 State Com 24H Well (Original Hole) API No. 30-025-45960 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
Sarah Almohsen
FE

Subscribed and Sworn to before me this 24 day of September (month) 2019 (yr)

My Commission expires:
6/14/2023

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

Jean-Paul Langlois
Notary Public in and for
STATE OF OKLAHOMA
Commission #19005988
Expires: June 14, 2023

Schlumberger

Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078'MD Survey
Geodetic Report
(Def Survey)

Report Date:	September 06, 2019 - 11:33 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	181.033 ° (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 24H / Oxy Avogato 30-31 State Com 24H	**TVD Reference Datum:**	RKB=26.5'
Well:	Oxy Avogato 30-31 State Com 24H	**TVD Reference Elevation:**	3712.500 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3686.000 ft above MSL
UWI / API#:	Unknown / 30-025-45960	**Magnetic Declination:**	6.614 °
Survey Name:	Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078'MD	**Total Gravity Field Strength:**	998.4499mgn (9.80665 Based)
Survey Date:	August 02, 2019	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	213.545 ° / 10875.214 ft / 6.650 / 0.992	**Total Magnetic Field Strength:**	48062.900 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	60.088 °
Location Lat / Long:	N 32° 22' 8.14482", W 103° 36' 32.21729"	**Declination Date:**	August 04, 2019
Location Grid N/E Y/X:	N 498705.000 ftUS, E 764986.700 ftUS	**Magnetic Declination Model:**	IIFR1
CRS Grid Convergence Angle:	0.3878 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996638	**Grid Convergence Used:**	0.3878 °
Version / Patch:	2.10.782.0	**Total Corr Mag North->Grid North:**	6.2262 °
		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	498705.00	764986.70	N 32 22 8.14	W 103 36 32.22
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	498705.00	764986.70	N 32 22 8.14	W 103 36 32.22
	71.70	0.18	222.21	71.70	0.05	-0.05	-0.05	0.40	498704.95	764986.65	N 32 22 8.14	W 103 36 32.22
	131.30	0.20	213.97	131.30	0.21	-0.21	-0.17	0.06	498704.79	764986.53	N 32 22 8.14	W 103 36 32.22
	157.90	0.23	210.35	157.90	0.30	-0.29	-0.22	0.12	498704.71	764986.48	N 32 22 8.14	W 103 36 32.22
	185.20	0.26	201.52	185.20	0.40	-0.40	-0.27	0.18	498704.60	764986.43	N 32 22 8.14	W 103 36 32.22
	215.10	0.34	200.77	215.10	0.55	-0.54	-0.33	0.27	498704.48	764986.37	N 32 22 8.14	W 103 36 32.22
	245.30	0.37	196.16	245.30	0.73	-0.72	-0.39	0.14	498704.28	764986.31	N 32 22 8.14	W 103 36 32.22
	274.70	0.38	193.45	274.70	0.91	-0.91	-0.44	0.07	498704.09	764986.26	N 32 22 8.14	W 103 36 32.22
	306.20	0.42	188.52	306.20	1.13	-1.12	-0.48	0.17	498703.88	764986.22	N 32 22 8.13	W 103 36 32.22
	337.70	0.44	186.27	337.70	1.37	-1.36	-0.51	0.08	498703.64	764986.19	N 32 22 8.13	W 103 36 32.22
	369.20	0.44	184.35	369.19	1.61	-1.60	-0.53	0.05	498703.40	764986.17	N 32 22 8.13	W 103 36 32.22
	400.80	0.43	184.32	400.79	1.85	-1.84	-0.55	0.03	498703.16	764986.15	N 32 22 8.13	W 103 36 32.22
	432.30	0.40	184.58	432.29	2.07	-2.06	-0.57	0.10	498702.94	764986.13	N 32 22 8.12	W 103 36 32.22
	463.70	0.37	186.47	463.69	2.29	-2.27	-0.59	0.10	498702.73	764986.11	N 32 22 8.12	W 103 36 32.22
	495.20	0.34	189.47	495.19	2.48	-2.47	-0.61	0.11	498702.53	764986.09	N 32 22 8.12	W 103 36 32.22
	526.70	0.30	192.26	526.69	2.65	-2.64	-0.65	0.14	498702.36	764986.05	N 32 22 8.12	W 103 36 32.23
	558.20	0.29	197.61	558.19	2.81	-2.80	-0.69	0.09	498702.20	764986.01	N 32 22 8.12	W 103 36 32.23
	589.70	0.26	203.89	589.69	2.95	-2.94	-0.74	0.13	498702.06	764985.96	N 32 22 8.12	W 103 36 32.23
	621.20	0.22	216.10	621.19	3.07	-3.05	-0.81	0.21	498701.95	764985.89	N 32 22 8.11	W 103 36 32.23
	652.80	0.21	228.43	652.79	3.16	-3.14	-0.88	0.15	498701.86	764985.82	N 32 22 8.11	W 103 36 32.23
	684.30	0.21	242.37	684.29	3.22	-3.21	-0.98	0.16	498701.79	764985.72	N 32 22 8.11	W 103 36 32.23
	715.80	0.22	255.62	715.79	3.27	-3.25	-1.09	0.16	498701.75	764985.61	N 32 22 8.11	W 103 36 32.23
	747.40	0.24	266.39	747.39	3.29	-3.27	-1.21	0.15	498701.73	764985.49	N 32 22 8.11	W 103 36 32.23
	778.90	0.23	271.97	778.89	3.29	-3.27	-1.34	0.08	498701.73	764985.36	N 32 22 8.11	W 103 36 32.23
	810.40	0.23	280.68	810.39	3.28	-3.25	-1.47	0.11	498701.75	764985.23	N 32 22 8.11	W 103 36 32.23
	841.90	0.23	287.86	841.89	3.25	-3.22	-1.59	0.09	498701.78	764985.11	N 32 22 8.11	W 103 36 32.24
	873.40	0.25	298.08	873.39	3.20	-3.17	-1.71	0.15	498701.83	764984.99	N 32 22 8.11	W 103 36 32.24
	904.90	0.25	311.65	904.89	3.13	-3.09	-1.82	0.19	498701.91	764984.88	N 32 22 8.11	W 103 36 32.24
	936.50	0.26	317.51	936.49	3.03	-3.00	-1.92	0.09	498702.00	764984.78	N 32 22 8.12	W 103 36 32.24
	968.00	0.27	314.77	967.99	2.93	-2.89	-2.02	0.05	498702.11	764984.68	N 32 22 8.12	W 103 36 32.24
	999.50	0.24	295.62	999.49	2.85	-2.81	-2.14	0.29	498702.19	764984.56	N 32 22 8.12	W 103 36 32.24
Last Gyro	1009.30	0.26	285.24	1009.29	2.83	-2.79	-2.18	0.50	498702.21	764984.52	N 32 22 8.12	W 103 36 32.24
	1151.00	0.06	239.38	1150.99	2.79	-2.75	-2.55	0.16	498702.25	764984.15	N 32 22 8.12	W 103 36 32.25
	1243.00	0.06	112.89	1242.99	2.84	-2.79	-2.55	0.12	498702.21	764984.15	N 32 22 8.12	W 103 36 32.25
	1423.00	0.00	6.22	1422.99	2.87	-2.83	-2.46	0.03	498702.17	764984.24	N 32 22 8.12	W 103 36 32.25
	1610.00	0.01	349.42	1609.99	2.86	-2.81	-2.46	0.01	498702.19	764984.24	N 32 22 8.12	W 103 36 32.25
	1801.00	0.01	252.45	1800.99	2.84	-2.80	-2.48	0.01	498702.20	764984.22	N 32 22 8.12	W 103 36 32.25
	1896.00	0.01	104.60	1895.99	2.85	-2.81	-2.48	0.02	498702.20	764984.22	N 32 22 8.12	W 103 36 32.25
	1990.00	0.01	227.70	1989.99	2.86	-2.81	-2.48	0.02	498702.19	764984.22	N 32 22 8.12	W 103 36 32.25
	2085.00	0.01	122.16	2084.99	2.87	-2.82	-2.48	0.02	498702.18	764984.22	N 32 22 8.12	W 103 36 32.25
	2180.00	0.01	85.30	2179.99	2.87	-2.83	-2.46	0.01	498702.17	764984.24	N 32 22 8.12	W 103 36 32.25
	2274.00	0.05	55.57	2273.99	2.85	-2.80	-2.42	0.04	498702.20	764984.28	N 32 22 8.12	W 103 36 32.25
	2369.00	0.06	117.83	2368.99	2.84	-2.80	-2.34	0.06	498702.20	764984.36	N 32 22 8.12	W 103 36 32.24
	2558.00	0.01	21.02	2557.99	2.87	-2.83	-2.25	0.03	498702.17	764984.45	N 32 22 8.12	W 103 36 32.24
	2653.00	0.01	262.60	2652.99	2.87	-2.83	-2.26	0.02	498702.17	764984.44	N 32 22 8.12	W 103 36 32.24
	2747.00	0.01	297.68	2746.99	2.86	-2.82	-2.27	0.01	498702.18	764984.43	N 32 22 8.12	W 103 36 32.24
	2842.00	0.01	7.12	2841.99	2.85	-2.81	-2.28	0.01	498702.19	764984.42	N 32 22 8.12	W 103 36 32.24
	2936.00	0.01	323.86	2935.99	2.84	-2.80	-2.28	0.01	498702.20	764984.42	N 32 22 8.12	W 103 36 32.24
	3125.00	0.06	63.44	3124.99	2.78	-2.74	-2.20	0.03	498702.26	764984.50	N 32 22 8.12	W 103 36 32.24
	3314.00	0.06	141.09	3313.99	2.81	-2.77	-2.05	0.04	498702.23	764984.65	N 32 22 8.12	W 103 36 32.24
	3409.00	0.06	80.03	3408.99	2.84	-2.80	-1.97	0.06	498702.20	764984.73	N 32 22 8.12	W 103 36 32.24
	3503.00	0.05	152.82	3502.99	2.86	-2.83	-1.90	0.07	498702.17	764984.80	N 32 22 8.12	W 103 36 32.24
	3598.00	0.05	23.51	3597.99	2.86	-2.83	-1.87	0.10	498702.17	764984.83	N 32 22 8.12	W 103 36 32.24
	3693.00	0.05	180.90	3692.99	2.87	-2.83	-1.85	0.10	498702.17	764984.85	N 32 22 8.12	W 103 36 32.24
	3787.00	0.05	146.19	3786.99	2.94	-2.91	-1.83	0.03	498702.09	764984.87	N 32 22 8.12	W 103 36 32.24
	3882.00	0.07	153.95	3881.99	3.03	-2.99	-1.78	0.02	498702.01	764984.92	N 32 22 8.12	W 103 36 32.24
	3976.00	0.12	102.31	3975.99	3.10	-3.07	-1.66	0.10	498701.93	764985.04	N 32 22 8.11	W 103 36 32.24
	4071.00	0.05	204.84	4070.99	3.15	-3.13	-1.58	0.15	498701.87	764985.12	N 32 22 8.11	W 103 36 32.24
	4164.00	0.01	217.84	4163.99	3.20	-3.17	-1.60	0.04	498701.83	764985.10	N 32 22 8.11	W 103 36 32.24
	4259.00	0.08	131.13	4258.99	3.25	-3.22	-1.56	0.08	498701.78	764985.14	N 32 22 8.11	W 103 36 32.24
	4353.00	0.01	108.00	4352.99	3.29	-3.26	-1.50	0.08	498701.74	764985.20	N 32 22 8.11	W 103 36 32.24
	4448.00	0.05	155.52	4447.99	3.33	-3.30	-1.48	0.05	498701.70	764985.22	N 32 22 8.11	W 103 36 32.23
	4542.00	0.01	0.42	4541.99	3.36	-3.33	-1.46	0.06	498701.67	764985.24	N 32 22 8.11	W 103 36 32.23
	4637.00	0.08	8.93	4636.99	3.29	-3.26	-1.45	0.07	498701.74	764985.25	N 32 22 8.11	W 103 36 32.23
	4731.00	0.05	268.29	4730.99	3.22	-3.20	-1.48	0.11	498701.80	764985.22	N 32 22 8.11	W 103 36 32.23
	4826.00	0.06	27.93	4825.99	3.18	-3.15	-1.50	0.10	498701.85	764985.20	N 32 22 8.11	W 103 36 32.24
	4920.00	0.08	36.80	4919.99	3.08	-3.06	-1.44	0.02	498701.94	764985.26	N 32 22 8.11	W 103 36 32.23
	5015.00	0.08	93.38	5014.99	3.03	-3.01	-1.33	0.08	498701.99	764985.37	N 32 22 8.12	W 103 36 32.23
	5109.00	0.06	67.23	5108.99	3.01	-2.99	-1.22	0.04	498702.01	764985.48	N 32 22 8.12	W 103 36 32.23
	5204.00	0.06	65.86	5203.99	2.97	-2.95	-1.13	0.00	498702.05	764985.57	N 32 22 8.12	W 103 36 32.23
	5298.00	0.05	9.63	5297.99	2.91	-2.89	-1.08	0.06	498702.11	764985.62	N 32 22 8.12	W 103 36 32.23
	5393.00	0.01	81.80	5392.99	2.87	-2.85	-1.06	0.05	498702.15	764985.64	N 32 22 8.12	W 103 36 32.23
	5487.00	0.05	226.76	5486.99	2.90	-2.88	-1.08	0.06	498702.12	764985.62	N 32 22 8.12	W 103 36 32.23
	5582.00	0.05	60.86	5581.99	2.91	-2.89	-1.08	0.10	498702.11	764985.62	N 32 22 8.12	W 103 36 32.23
	5677.00	0.05	199.98	5676.99	2.92	-2.91	-1.05	0.10	498702.09	764985.65	N 32 22 8.12	W 103 36 32.23
	5772.00	0.06	341.95	5771.99	2.92	-2.90	-1.08	0.11	498702.10	764985.62	N 32 22 8.12	W 103 36 32.23
	5866.00	0.05	81.70	5865.99	2.86	-2.84	-1.06	0.09	498702.16	764985.64	N 32 22 8.12	W 103 36 32.23

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 ° ' ")
	5960.00	0.05	356.98	5959.99	2.82	-2.80	-1.02	0.07	498702.20	764985.68	N 32 22 8.12	W 103 36 32.23
	6055.00	0.05	293.83	6054.99	2.76	-2.74	-1.06	0.06	498702.26	764985.64	N 32 22 8.12	W 103 36 32.23
	6149.00	0.11	12.58	6148.99	2.65	-2.63	-1.08	0.12	498702.37	764985.62	N 32 22 8.12	W 103 36 32.23
	6244.00	0.24	280.89	6243.98	2.50	-2.47	-1.24	0.26	498702.53	764985.46	N 32 22 8.12	W 103 36 32.23
	6319.00	0.73	329.81	6318.98	2.03	-2.01	-1.63	0.75	498702.99	764985.07	N 32 22 8.13	W 103 36 32.24
	6519.00	1.90	329.40	6518.93	-1.88	1.95	-3.96	0.59	498706.95	764982.74	N 32 22 8.16	W 103 36 32.26
	6718.00	5.00	337.14	6717.54	-12.62	12.78	-9.01	1.57	498717.78	764977.69	N 32 22 8.27	W 103 36 32.32
	6827.00	7.48	340.72	6825.89	-23.62	23.86	-13.20	2.30	498728.86	764973.50	N 32 22 8.38	W 103 36 32.37
	7001.00	8.86	339.03	6998.12	-46.66	47.06	-21.73	0.80	498752.06	764964.97	N 32 22 8.61	W 103 36 32.47
	7096.00	7.31	339.58	7092.17	-59.07	59.56	-26.46	1.63	498764.56	764960.24	N 32 22 8.74	W 103 36 32.52
	7191.00	7.49	337.73	7186.38	-70.38	70.95	-30.91	0.31	498775.95	764955.79	N 32 22 8.85	W 103 36 32.57
	7286.00	7.43	334.14	7280.58	-81.55	82.21	-35.84	0.49	498787.21	764950.76	N 32 22 8.96	W 103 36 32.63
	7380.00	7.73	329.31	7373.76	-92.35	93.12	-41.82	0.75	498798.11	764944.88	N 32 22 9.07	W 103 36 32.70
	7474.00	7.56	326.34	7466.92	-102.81	103.70	-48.47	0.46	498808.69	764938.23	N 32 22 9.17	W 103 36 32.77
	7569.00	8.10	323.61	7561.03	-113.26	114.29	-55.91	0.69	498819.28	764930.80	N 32 22 9.28	W 103 36 32.86
	7664.00	8.03	322.18	7655.10	-123.74	124.92	-63.95	0.22	498829.91	764922.76	N 32 22 9.39	W 103 36 32.95
	7758.00	7.97	322.20	7748.18	-133.93	135.25	-71.97	0.06	498840.25	764914.74	N 32 22 9.49	W 103 36 33.05
	7853.00	7.99	321.49	7842.26	-144.16	145.62	-80.11	0.11	498850.62	764906.59	N 32 22 9.59	W 103 36 33.14
	8042.00	8.04	321.04	8029.41	-164.41	166.18	-96.60	0.04	498871.17	764890.10	N 32 22 9.80	W 103 36 33.33
	8231.00	7.97	321.08	8216.57	-184.58	186.65	-113.15	0.04	498891.64	764873.56	N 32 22 10.00	W 103 36 33.52
	8326.00	8.38	325.12	8310.61	-195.24	197.45	-121.24	0.74	498902.45	764865.46	N 32 22 10.11	W 103 36 33.62
	8421.00	8.36	327.53	8404.60	-206.60	208.96	-128.91	0.37	498913.95	764857.80	N 32 22 10.22	W 103 36 33.70
	8515.00	8.17	328.18	8497.62	-217.91	220.40	-136.10	0.23	498925.39	764850.61	N 32 22 10.33	W 103 36 33.79
	8610.00	8.29	326.52	8591.64	-229.23	231.85	-143.44	0.28	498936.84	764843.27	N 32 22 10.45	W 103 36 33.87
	8705.00	8.40	324.84	8685.64	-240.47	243.23	-151.21	0.28	498948.23	764835.50	N 32 22 10.56	W 103 36 33.96
	8799.00	8.29	327.09	8778.64	-251.63	254.54	-158.85	0.37	498959.53	764827.86	N 32 22 10.67	W 103 36 34.05
	8894.00	8.18	332.38	8872.68	-263.24	266.27	-165.70	0.81	498971.26	764821.01	N 32 22 10.79	W 103 36 34.13
	8988.00	7.82	333.48	8965.75	-274.78	277.92	-171.66	0.42	498982.91	764815.05	N 32 22 10.91	W 103 36 34.20
	9083.00	7.73	333.75	9059.87	-286.19	289.43	-177.37	0.10	498994.42	764809.34	N 32 22 11.02	W 103 36 34.26
	9272.00	5.19	299.66	9247.72	-301.59	305.07	-190.42	2.38	499010.06	764796.28	N 32 22 11.18	W 103 36 34.41
	9367.00	4.90	277.37	9342.37	-304.10	307.72	-198.18	2.07	499012.71	764788.52	N 32 22 11.20	W 103 36 34.50
	9461.00	4.68	271.06	9436.04	-304.54	308.31	-206.00	0.61	499013.29	764780.71	N 32 22 11.21	W 103 36 34.59
	9556.00	4.74	258.84	9530.72	-303.71	307.62	-213.72	1.06	499012.61	764772.98	N 32 22 11.20	W 103 36 34.68
	9650.00	5.14	255.58	9624.37	-301.77	305.82	-221.61	0.52	499010.81	764765.10	N 32 22 11.19	W 103 36 34.78
	9745.00	5.58	255.71	9718.95	-299.42	303.62	-230.21	0.46	499008.61	764756.50	N 32 22 11.16	W 103 36 34.88
	9840.00	5.00	251.72	9813.55	-296.83	301.18	-238.62	0.72	499006.17	764748.09	N 32 22 11.14	W 103 36 34.98
	9934.00	5.15	248.48	9907.18	-293.86	298.35	-246.43	0.34	499003.34	764740.28	N 32 22 11.11	W 103 36 35.07
	10029.00	5.92	239.49	10001.74	-289.66	294.30	-254.62	1.22	498999.28	764732.09	N 32 22 11.07	W 103 36 35.16
	10124.00	5.89	238.55	10096.24	-284.48	289.26	-263.00	0.11	498994.25	764723.71	N 32 22 11.02	W 103 36 35.26
2nd BS Intersection	*10153.92*	*5.83*	*236.61*	*10126.00*	*-282.79*	*287.63*	*-265.58*	*0.69*	*498992.62*	*764721.13*	*N 32 22 11.01*	*W 103 36 35.29*
	10218.00	5.73	232.33	10189.75	-278.95	283.88	-270.83	0.69	498988.87	764715.88	N 32 22 10.97	W 103 36 35.35
	10313.00	5.99	230.32	10284.26	-272.75	277.82	-278.40	0.35	498982.81	764708.31	N 32 22 10.91	W 103 36 35.44
KOP Actual	10390.00	6.43	224.09	10360.81	-266.98	272.16	-284.49	1.04	498977.15	764702.22	N 32 22 10.86	W 103 36 35.51
	10485.00	12.79	178.47	10454.54	-252.56	257.79	-287.92	9.96	498962.78	764698.79	N 32 22 10.71	W 103 36 35.55
	10580.00	22.40	173.97	10545.00	-224.02	229.21	-285.73	10.21	498934.20	764700.98	N 32 22 10.43	W 103 36 35.53
	10675.00	33.46	173.85	10628.80	-179.84	185.03	-281.01	11.64	498890.03	764705.70	N 32 22 9.99	W 103 36 35.48
	10769.00	40.57	171.87	10703.81	-123.97	128.93	-273.90	7.67	498833.93	764712.81	N 32 22 9.44	W 103 36 35.40
	10864.00	52.68	176.31	10768.95	-55.56	60.38	-267.07	13.19	498765.38	764719.64	N 32 22 8.76	W 103 36 35.33
	10959.00	64.27	174.84	10818.54	24.91	-20.21	-260.77	12.27	498684.79	764725.94	N 32 22 7.96	W 103 36 35.26
	11053.00	72.07	175.92	10853.47	111.68	-107.12	-253.77	8.37	498597.88	764732.94	N 32 22 7.10	W 103 36 35.18
	11148.00	78.64	179.19	10879.09	202.95	-198.48	-249.90	5.84	498508.53	764736.81	N 32 22 6.20	W 103 36 35.15
	11242.00	80.55	180.60	10897.67	295.06	-290.60	-249.74	4.41	498414.41	764736.97	N 32 22 5.29	W 103 36 35.15
	11337.00	87.23	179.86	10907.78	389.45	-385.01	-250.11	7.07	498320.01	764736.60	N 32 22 4.35	W 103 36 35.16
	11402.00	88.91	179.32	10909.97	454.39	-449.97	-249.65	2.71	498255.05	764737.06	N 32 22 3.71	W 103 36 35.16
	11446.00	88.90	180.22	10910.81	498.38	-493.96	-249.47	2.05	498211.06	764737.24	N 32 22 3.27	W 103 36 35.16
	11541.00	89.17	180.97	10912.41	593.38	-588.94	-250.46	0.84	498116.08	764736.25	N 32 22 2.33	W 103 36 35.18
	11635.00	89.04	181.54	10913.68	687.35	-682.90	-252.51	0.62	498022.12	764734.19	N 32 22 1.40	W 103 36 35.22
	11730.00	89.21	182.07	10915.33	782.33	-777.85	-255.51	0.59	497927.18	764731.20	N 32 22 0.47	W 103 36 35.26
	11824.00	88.73	181.87	10917.02	876.30	-871.77	-258.74	0.55	497833.26	764727.97	N 32 21 59.54	W 103 36 35.30
	12013.00	89.31	181.40	10920.25	1065.26	-1060.67	-264.13	0.39	497644.37	764722.58	N 32 21 57.67	W 103 36 35.38
	12107.00	89.31	180.71	10921.38	1159.25	-1154.65	-265.86	0.73	497550.40	764720.85	N 32 21 56.74	W 103 36 35.41
	12202.00	89.28	179.72	10922.55	1254.23	-1249.64	-266.22	1.04	497455.41	764720.49	N 32 21 55.80	W 103 36 35.42
	12391.00	89.31	179.58	10924.88	1443.16	-1438.62	-265.06	0.08	497266.43	764721.65	N 32 21 53.93	W 103 36 35.42
	12485.00	89.48	179.53	10925.87	1537.13	-1532.61	-264.33	0.19	497172.44	764722.38	N 32 21 53.00	W 103 36 35.42
	12580.00	89.17	179.31	10926.99	1632.08	-1627.60	-263.37	0.40	497077.46	764723.34	N 32 21 52.06	W 103 36 35.42
	12674.00	89.24	178.78	10928.29	1726.02	-1721.58	-261.80	0.57	496983.49	764724.91	N 32 21 51.13	W 103 36 35.41
	12863.00	89.28	179.11	10930.73	1914.87	-1910.53	-258.32	0.18	496794.54	764728.39	N 32 21 49.26	W 103 36 35.38
	12958.00	89.72	179.44	10931.56	2009.83	-2005.52	-257.12	0.58	496699.55	764729.59	N 32 21 48.32	W 103 36 35.37
	13053.00	89.90	179.27	10931.88	2104.78	-2100.51	-256.05	0.26	496604.56	764730.68	N 32 21 47.38	W 103 36 35.37
	13147.00	90.17	178.69	10931.82	2198.72	-2194.49	-254.38	0.68	496510.58	764732.33	N 32 21 46.45	W 103 36 35.36
	13242.00	89.90	177.13	10931.76	2293.58	-2289.43	-250.91	1.67	496415.65	764735.79	N 32 21 45.51	W 103 36 35.32
	13336.00	89.72	177.56	10932.07	2387.38	-2383.33	-246.56	0.50	496321.76	764740.15	N 32 21 44.58	W 103 36 35.28
	13525.00	89.72	178.12	10933.00	2576.09	-2572.19	-239.44	0.30	496132.90	764747.27	N 32 21 42.71	W 103 36 35.21
	13714.00	90.31	178.93	10932.95	2764.90	-2761.12	-234.57	0.53	495943.97	764752.14	N 32 21 40.84	W 103 36 35.17
	13904.00	89.90	179.21	10932.60	2954.79	-2951.10	-231.49	0.26	495754.01	764755.22	N 32 21 38.96	W 103 36 35.15
	14092.00	89.35	179.00	10933.63	3142.68	-3139.07	-228.55	0.31	495566.04	764758.16	N 32 21 37.10	W 103 36 35.13
	14187.00	89.90	178.37	10934.45	3237.60	-3234.04	-226.37	0.88	495471.07	764760.34	N 32 21 36.16	W 103 36 35.11
	14282.00	89.62	177.61	10934.85	3332.46	-3328.98	-223.04	0.85	495376.14	764763.67	N 32 21 35.22	W 103 36 35.08
	14471.00	90.21	178.91	10935.13	3521.24	-3517.89	-217.30	0.76	495187.24	764769.41	N 32 21 33.35	W 103 36 35.03
	14660.00	91.03	178.25	10933.08	3710.05	-3706.82	-212.62	0.56	494998.31	764774.09	N 32 21 31.48	W 103 36 34.99
	14755.00	88.70	177.41	10933.31	3804.89	-3801.74	-209.02	2.61	494903.39	764777.69	N 32 21 30.54	W 103 36 34.95
	14944.00	90.34	180.75	10934.89	3993.74	-3990.68	-205.99	1.97	494714.46	764780.72	N 32 21 28.67	W 103 36 34.93
	15133.00	90.41	180.03	10933.66	4182.73	-4179.67	-207.27	0.38	494525.48	764779.43	N 32 21 26.80	W 103 36 34.96
	15228.00	90.31	181.13	10933.06	4277.72	-4274.66	-208.24	1.16	494430.49	764778.47	N 32 21 25.86	W 103 36 34.98
	15322.00	90.34	181.02	10932.53	4371.72	-4368.64	-210.00	0.12	494336.51	764776.71	N 32 21 24.93	W 103 36 35.01
	15511.00	90.31	181.53	10931.45	4560.71	-4557.59	-214.21	0.27	494147.57	764772.50	N 32 21 23.06	W 103 36 35.07
	15700.00	90.31	181.33	10930.43	4749.71	-4746.53	-218.92	0.11	493958.64	764767.79	N 32 21 21.19	W 103 36 35.14
	15794.00	90.17	181.48	10930.04	4843.70	-4840.50	-221.23	0.22	493864.67	764765.48	N 32 21 20.26	W 103 36 35.18
	15983.00	90.10	181.33	10929.59	5032.70	-5029.44	-225.86	0.09	493675.74	764760.85	N 32 21 18.40	W 103 36 35.25
	16078.00	90.17	181.32	10929.37	5127.70	-5124.42	-228.06	0.07	493580.76	764758.65	N 32 21 17.46	W 103 36 35.28
	16173.00	90.86	181.19	10928.51	5222.69	-5219.39	-230.14	0.74	493485.79	764756.57	N 32 21 16.52	W 103 36 35.31
	16267.00	89.76	181.13	10928.01	5316.69	-5313.37	-232.04	1.17	493391.82	764754.67	N 32 21 15.59	W 103 36 35.34
	16457.00	89.86	181.04	10928.64	5506.69	-5503.33	-235.64	0.07	493201.86	764751.07	N 32 21 13.71	W 103 36 35.40
	16648.00	89.86	181.24	10929.10	5695.69	-5692.30	-239.40	0.11	493012.91	764747.31	N 32 21 11.84	W 103 36 35.46
	16835.00	89.79	181.42	10929.67	5884.68	-5881.24	-243.79	0.10	492823.97	764742.92	N 32 21 9.97	W 103 36 35.52
	16930.00	90.24	181.22	10929.65	5979.68	-5976.22	-245.97	0.52	492728.99	764740.73	N 32 21 9.03	W 103 36 35.56
	17025.00	89.55	181.06	10929.82	6074.68	-6071.20	-247.86	0.75	492634.02	764738.84	N 32 21 8.09	W 103 36 35.59
	17214.00	90.72	179.04	10929.38	6263.64	-6260.19	-248.03	1.24	492445.04	764738.68	N 32 21 6.22	W 103 36 35.60
	17403.00	93.13	179.07	10923.03	6452.41	-6449.04	-244.91	1.28	492256.19	764741.79	N 32 21 4.35	W 103 36 35.58
	17498.00	93.16	178.86	10917.82	6547.20	-6543.88	-243.20	0.22	492161.35	764743.51	N 32 21 3.41	W 103 36 35.57
	17592.00	90.24	178.18	10915.03	6641.06	-6637.80	-240.77	3.19	492067.44	764745.93	N 32 21 2.48	W 103 36 35.55
	17687.00	88.18	178.46	10916.34	6735.94	-6732.74	-237.99	2.19	491972.50	764748.72	N 32 21 1.54	W 103 36 35.52
	17876.00	88.62	179.26	10921.62	6924.73	-6921.63	-234.23	0.48	491783.62	764752.48	N 32 20 59.67	W 103 36 35.49
	17971.00	91.31	178.97	10921.67	7019.66	-7016.61	-232.76	2.85	491688.64	764753.95	N 32 20 58.73	W 103 36 35.48
	18065.00	88.80	178.17	10921.58	7113.57	-7110.57	-230.42	2.80	491594.68	764756.29	N 32 20 57.80	W 103 36 35.46
	18160.00	88.97	179.72	10923.43	7208.49	-7205.53	-228.67	1.64	491499.72	764758.04	N 32 20 56.86	W 103 36 35.45
	18255.00	90.86	179.45	10923.57	7303.45	-7300.53	-227.98	2.01	491404.73	764758.73	N 32 20 55.92	W 103 36 35.45
	18349.00	87.94	179.18	10924.56	7397.39	-7394.50	-226.86	3.12	491310.76	764759.85	N 32 20 54.99	W 103 36 35.44

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 ° ' ")
	18444.00	87.94	179.50	10927.97	7492.29	-7489.44	-225.78	0.34	491215.83	764760.94	N 32 20 54.05	W 103 36 35.44
	18539.00	84.49	178.95	10934.24	7587.02	-7584.21	-224.48	3.68	491121.06	764762.23	N 32 20 53.12	W 103 36 35.43
	18633.00	88.07	179.09	10940.34	7680.75	-7677.98	-222.88	3.81	491027.29	764763.83	N 32 20 52.19	W 103 36 35.42
	18728.00	90.17	178.71	10941.80	7775.67	-7772.94	-221.06	2.25	490932.33	764765.65	N 32 20 51.25	W 103 36 35.41
	18822.00	90.62	178.45	10941.15	7869.58	-7866.91	-218.73	0.55	490838.37	764767.98	N 32 20 50.32	W 103 36 35.39
	18917.00	89.69	178.23	10940.90	7964.47	-7961.87	-215.97	1.01	490743.41	764770.73	N 32 20 49.38	W 103 36 35.36
	19089.00	90.15	179.02	10941.14	8136.32	-8133.82	-211.85	0.53	490571.47	764774.86	N 32 20 47.68	W 103 36 35.33
	19184.00	90.39	179.24	10940.69	8231.26	-8228.81	-210.40	0.34	490476.48	764776.30	N 32 20 46.74	W 103 36 35.32
	19373.00	89.67	178.74	10940.59	8420.14	-8417.78	-207.07	0.46	490287.52	764779.63	N 32 20 44.87	W 103 36 35.29
	19467.00	89.74	178.84	10941.07	8514.07	-8511.76	-205.09	0.13	490193.55	764781.62	N 32 20 43.94	W 103 36 35.28
	19562.00	89.50	178.38	10941.70	8608.98	-8606.72	-202.78	0.55	490098.58	764783.92	N 32 20 43.00	W 103 36 35.26
	19656.00	89.77	179.34	10942.30	8702.91	-8700.70	-200.81	1.06	490004.61	764785.79	N 32 20 42.07	W 103 36 35.25
	19845.00	89.32	179.44	10943.80	8891.83	-8889.69	-198.90	0.24	489815.63	764787.81	N 32 20 40.20	W 103 36 35.24
	20035.00	87.40	180.27	10949.24	9081.70	-9079.60	-198.42	1.10	489625.73	764788.29	N 32 20 38.32	W 103 36 35.25
	20224.00	86.23	182.63	10959.74	9270.38	-9268.23	-203.19	1.39	489437.10	764783.51	N 32 20 36.45	W 103 36 35.32
	20318.00	87.29	182.72	10965.05	9364.19	-9361.97	-207.57	1.13	489343.36	764779.14	N 32 20 35.52	W 103 36 35.38
	20413.00	92.42	182.94	10965.29	9459.12	-9456.83	-212.26	5.40	489248.51	764774.45	N 32 20 34.59	W 103 36 35.44
	20507.00	93.55	182.50	10960.40	9552.95	-9550.59	-216.72	1.29	489154.75	764769.99	N 32 20 33.66	W 103 36 35.50
	20602.00	92.14	180.35	10955.68	9647.82	-9645.44	-219.07	2.70	489059.91	764767.63	N 32 20 32.72	W 103 36 35.53
	20697.00	90.80	178.51	10953.25	9742.74	-9740.39	-218.13	2.40	488964.95	764768.58	N 32 20 31.78	W 103 36 35.53
	20792.00	87.95	177.05	10954.28	9837.57	-9835.31	-214.45	3.37	488870.05	764772.26	N 32 20 30.84	W 103 36 35.49
	20886.00	88.50	178.44	10957.20	9931.37	-9929.18	-210.75	1.59	488776.17	764775.95	N 32 20 29.91	W 103 36 35.46
	20981.00	89.15	179.59	10959.14	10026.29	-10024.15	-209.12	1.39	488681.21	764777.59	N 32 20 28.97	W 103 36 35.45
100' FSL Crossing	*20997.00*	*89.11*	*179.63*	*10959.39*	*10042.28*	*-10040.15*	*-209.01*	*0.35*	*488665.21*	*764777.70*	*N 32 20 28.81*	*W 103 36 35.45*
Final MWD	21038.00	89.01	179.73	10960.06	10083.27	-10081.14	-208.78	0.35	488624.22	764777.92	N 32 20 28.41	W 103 36 35.45
Proj to TD	21078.00	89.01	179.73	10960.75	10123.25	-10121.13	-208.59	0.00	488584.23	764778.11	N 32 20 28.01	W 103 36 35.45

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 3 *** 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	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078'MD
	1	26.500	26.500	Act Stns	30.000	30.000	GYD_GC+DROP+OH-Depth Only	Original Borehole / Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078'MD
	1	26.500	1009.300	Act Stns	30.000	30.000	GYD_GC+DROP+OH	Original Borehole / Oxy Avogato 30-31 State Com 24H Gyro +
	1	1009.300	1423.000	Act Stns	30.000	30.000	B001Mb_MWD+HRGM	Original Borehole / Oxy Avogato 30-31 State Com 24H Gyro +
	1	1423.000	21078.000	Act Stns	30.000	30.000	A010Mb_MWD+IFR1+SAG+MS	Original Borehole / Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078'MD

Schlumberger

OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Oxy Avogato 30-31 State Com 24H	NM Lea County (NAD 83)	Oxy Avogato 30-31 State Com 24H

Gravity & Magnetic Parameters					Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous		
Model:	IFR1	Dip: 60.088°	Date:	04-Aug-2019	Lat:	N 32 22 8.14	Northing:	438705flUS	Grid Conv:	0.3878°	Slot:	Oxy Avogato 30-31 State Com 24H
MagDec:	6.814°	FS: 48042.9nT	Gravity FS:	998.45mgn (9.80665 Based)	Lon:	W 103 38 32.22	Easting:	784988.77flUS	Scale Fact:	0.99996638	Plan:	Oxy Avogato 30-31 State Com 24H Gyro + MWD 0-21078MD

TVD Ref: RKB=26.5'(3712.5ft above MSL)

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	1009.30	0.26	285.24	1009.29	2.83	-2.79	-2.18	0.50
2nd BS Intersection	10153.92	5.83	238.61	10126.00	-282.79	287.63	-265.58	0.69
KOP Actual	10390.00	6.43	224.09	10360.81	-266.98	272.16	-284.49	1.04
100' FSL Crossing	20997.00	89.11	179.63	10959.39	10042.28	-10040.15	-209.01	0.35
Final MWD	21038.00	89.01	179.73	10960.06	10083.27	-10081.14	-208.78	0.35
Proj to TD	21078.00	89.01	179.73	10960.75	10123.25	-10121.13	-208.59	0.00