



BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Sec 22, T25-S, R33-E

Rojo 7811 22 Fed Com #24H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

06 February, 2020



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 22 Fed Com #24H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3372.0usft (Patterson #566)
Site:	Sec 22, T25-S, R33-E	MD Reference:	WELL @ 3372.0usft (Patterson #566)
Well:	Rojo 7811 22 Fed Com #24H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Lea County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		Sec 22, T25-S, R33-E			
Site Position:		Northing:	409,243.40 usft	Latitude:	32° 7' 21.790 N
From:	Map	Easting:	781,148.30 usft	Longitude:	103° 33' 31.310 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.41 °

Well	Rojo 7811 22 Fed Com #24H					
Well Position	+N/-S	0.0 usft	Northing:	404,381.50 usft	Latitude:	32° 6' 33.805 N
	+E/-W	0.0 usft	Easting:	779,387.30 usft	Longitude:	103° 33' 52.190 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,347.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	1/27/2020	6.57	59.72	47,706.20000000

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	3.35	

Survey Program	Date	2/6/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
234.0	17,369.0	QES MWD Surveys (Wellbore #1)	MWD	OWSG MWD - Standard	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	404,381.50	779,387.30	32° 6' 33.805 N	103° 33' 52.190 W
234.0	0.40	102.50	234.0	-0.2	0.8	404,381.32	779,388.09	32° 6' 33.803 N	103° 33' 52.180 W
First MWD Survey @ 234.0' MD / 234.0' TVD									
296.0	0.30	120.70	296.0	-0.3	1.1	404,381.19	779,388.45	32° 6' 33.801 N	103° 33' 52.176 W
357.0	0.40	102.00	357.0	-0.4	1.5	404,381.07	779,388.79	32° 6' 33.800 N	103° 33' 52.172 W
419.0	0.40	76.80	419.0	-0.4	1.9	404,381.07	779,389.21	32° 6' 33.800 N	103° 33' 52.167 W
480.0	0.60	71.90	480.0	-0.3	2.4	404,381.22	779,389.72	32° 6' 33.802 N	103° 33' 52.161 W
541.0	0.40	62.10	541.0	-0.1	2.9	404,381.42	779,390.22	32° 6' 33.804 N	103° 33' 52.156 W
603.0	0.40	2.80	603.0	0.2	3.1	404,381.74	779,390.42	32° 6' 33.807 N	103° 33' 52.153 W
664.0	0.40	325.60	664.0	0.6	3.0	404,382.12	779,390.31	32° 6' 33.810 N	103° 33' 52.154 W
725.0	0.70	298.50	725.0	1.0	2.6	404,382.48	779,389.86	32° 6' 33.814 N	103° 33' 52.160 W
824.0	1.30	292.20	824.0	1.7	1.0	404,383.19	779,388.29	32° 6' 33.821 N	103° 33' 52.178 W



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Site:	Sec 22, T25-S, R33-E	MD Reference:	WELL @ 3372.0usft (Patterson #566)
Well:	Rojo 7811 22 Fed Com #24H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
911.0	1.50	298.70	910.9	2.6	-0.9	404,384.11	779,386.38	32° 6' 33.830 N	103° 33' 52.200 W
1,004.0	1.50	295.00	1,003.9	3.7	-3.1	404,385.21	779,384.21	32° 6' 33.841 N	103° 33' 52.225 W
1,108.0	0.60	291.60	1,107.9	4.5	-4.8	404,385.98	779,382.47	32° 6' 33.849 N	103° 33' 52.245 W
1,158.0	0.90	296.70	1,157.9	4.8	-5.4	404,386.26	779,381.87	32° 6' 33.852 N	103° 33' 52.252 W
1,251.0	0.60	287.20	1,250.9	5.2	-6.5	404,386.73	779,380.75	32° 6' 33.857 N	103° 33' 52.265 W
1,344.0	2.60	137.10	1,343.9	3.8	-5.6	404,385.33	779,381.72	32° 6' 33.843 N	103° 33' 52.254 W
1,437.0	6.00	116.90	1,436.6	0.1	0.2	404,381.58	779,387.50	32° 6' 33.805 N	103° 33' 52.187 W
1,530.0	6.40	119.50	1,529.0	-4.7	9.0	404,376.83	779,396.34	32° 6' 33.758 N	103° 33' 52.085 W
1,623.0	6.30	120.30	1,621.5	-9.8	18.0	404,371.70	779,405.26	32° 6' 33.706 N	103° 33' 51.981 W
1,716.0	6.20	122.40	1,713.9	-15.1	26.6	404,366.44	779,413.91	32° 6' 33.654 N	103° 33' 51.881 W
1,809.0	5.80	124.50	1,806.4	-20.4	34.7	404,361.09	779,422.02	32° 6' 33.600 N	103° 33' 51.788 W
1,902.0	5.50	128.00	1,899.0	-25.8	42.1	404,355.68	779,429.40	32° 6' 33.546 N	103° 33' 51.702 W
1,995.0	5.20	131.20	1,991.5	-31.3	48.8	404,350.16	779,436.09	32° 6' 33.491 N	103° 33' 51.625 W
2,088.0	4.70	133.30	2,084.2	-36.7	54.7	404,344.77	779,442.03	32° 6' 33.437 N	103° 33' 51.556 W
2,181.0	4.70	133.30	2,176.9	-42.0	60.3	404,339.55	779,447.58	32° 6' 33.385 N	103° 33' 51.492 W
2,275.0	4.50	129.60	2,270.6	-46.9	65.9	404,334.55	779,453.22	32° 6' 33.335 N	103° 33' 51.427 W
2,368.0	4.50	129.40	2,363.3	-51.6	71.6	404,329.91	779,458.85	32° 6' 33.289 N	103° 33' 51.362 W
2,461.0	4.30	126.80	2,456.0	-56.0	77.2	404,325.51	779,464.46	32° 6' 33.245 N	103° 33' 51.297 W
2,554.0	4.30	124.30	2,548.8	-60.0	82.8	404,321.45	779,470.13	32° 6' 33.205 N	103° 33' 51.231 W
2,647.0	4.30	123.60	2,641.5	-63.9	88.6	404,317.56	779,475.92	32° 6' 33.166 N	103° 33' 51.164 W
2,740.0	4.10	123.20	2,734.3	-67.7	94.3	404,313.81	779,481.60	32° 6' 33.128 N	103° 33' 51.099 W
2,833.0	4.10	122.70	2,827.0	-71.3	99.9	404,310.19	779,487.18	32° 6' 33.092 N	103° 33' 51.034 W
2,926.0	3.80	122.20	2,919.8	-74.7	105.3	404,306.76	779,492.59	32° 6' 33.057 N	103° 33' 50.972 W
3,019.0	3.80	118.50	3,012.6	-77.9	110.6	404,303.64	779,497.91	32° 6' 33.026 N	103° 33' 50.910 W
3,112.0	3.80	112.50	3,105.4	-80.5	116.2	404,300.99	779,503.46	32° 6' 33.000 N	103° 33' 50.846 W
3,206.0	4.20	106.20	3,199.2	-82.7	122.3	404,298.84	779,509.64	32° 6' 32.978 N	103° 33' 50.774 W
3,299.0	4.50	99.50	3,291.9	-84.2	129.2	404,297.29	779,516.51	32° 6' 32.962 N	103° 33' 50.694 W
3,392.0	5.30	107.60	3,384.5	-86.1	136.9	404,295.39	779,524.21	32° 6' 32.943 N	103° 33' 50.605 W
3,485.0	5.40	109.50	3,477.1	-88.9	145.1	404,292.63	779,532.42	32° 6' 32.915 N	103° 33' 50.510 W
3,579.0	5.40	107.90	3,570.7	-91.7	153.5	404,289.79	779,540.80	32° 6' 32.886 N	103° 33' 50.412 W
3,672.0	5.50	109.20	3,663.3	-94.5	161.9	404,286.98	779,549.18	32° 6' 32.858 N	103° 33' 50.315 W
3,765.0	5.10	109.20	3,755.9	-97.3	170.0	404,284.16	779,557.29	32° 6' 32.829 N	103° 33' 50.221 W
3,858.0	4.60	108.30	3,848.6	-99.9	177.4	404,281.63	779,564.73	32° 6' 32.804 N	103° 33' 50.135 W
3,951.0	4.10	108.80	3,941.3	-102.1	184.1	404,279.38	779,571.42	32° 6' 32.781 N	103° 33' 50.057 W
4,044.0	5.00	127.50	4,034.0	-105.7	190.5	404,275.85	779,577.78	32° 6' 32.746 N	103° 33' 49.984 W
4,137.0	4.70	128.20	4,126.7	-110.5	196.7	404,271.02	779,583.99	32° 6' 32.697 N	103° 33' 49.912 W
4,230.0	4.80	122.00	4,219.4	-114.9	203.0	404,266.60	779,590.29	32° 6' 32.653 N	103° 33' 49.839 W
4,324.0	5.20	121.30	4,313.0	-119.2	210.0	404,262.31	779,597.26	32° 6' 32.610 N	103° 33' 49.758 W
4,417.0	4.90	117.80	4,405.6	-123.2	217.1	404,258.26	779,604.38	32° 6' 32.570 N	103° 33' 49.676 W
4,510.0	5.50	117.30	4,498.3	-127.1	224.6	404,254.37	779,611.85	32° 6' 32.531 N	103° 33' 49.589 W
4,603.0	6.20	120.60	4,590.8	-131.7	232.8	404,249.77	779,620.13	32° 6' 32.485 N	103° 33' 49.493 W
4,696.0	6.90	121.30	4,683.2	-137.2	241.9	404,244.31	779,629.23	32° 6' 32.430 N	103° 33' 49.388 W
4,790.0	4.90	120.80	4,776.7	-142.2	250.2	404,239.32	779,637.50	32° 6' 32.380 N	103° 33' 49.292 W
4,883.0	4.50	118.30	4,869.4	-145.9	256.8	404,235.56	779,644.13	32° 6' 32.342 N	103° 33' 49.216 W
4,976.0	3.70	116.90	4,962.1	-149.0	262.7	404,232.47	779,650.02	32° 6' 32.311 N	103° 33' 49.147 W
5,069.0	3.80	115.00	5,054.9	-151.7	268.2	404,229.81	779,655.49	32° 6' 32.285 N	103° 33' 49.084 W
5,162.0	3.70	115.00	5,147.7	-154.3	273.7	404,227.24	779,661.00	32° 6' 32.259 N	103° 33' 49.020 W
5,255.0	4.00	114.50	5,240.5	-156.9	279.4	404,224.62	779,666.67	32° 6' 32.232 N	103° 33' 48.955 W
5,348.0	4.00	115.30	5,333.3	-159.6	285.3	404,221.89	779,672.55	32° 6' 32.205 N	103° 33' 48.886 W
5,441.0	4.00	116.90	5,426.1	-162.5	291.1	404,219.04	779,678.38	32° 6' 32.176 N	103° 33' 48.819 W
5,534.0	3.70	119.00	5,518.8	-165.4	296.6	404,216.12	779,683.90	32° 6' 32.147 N	103° 33' 48.755 W
5,627.0	3.50	113.90	5,611.7	-168.0	301.8	404,213.51	779,689.12	32° 6' 32.121 N	103° 33' 48.694 W
5,721.0	3.50	116.90	5,705.5	-170.4	307.0	404,211.05	779,694.30	32° 6' 32.096 N	103° 33' 48.634 W
5,814.0	3.70	115.90	5,798.3	-173.0	312.2	404,208.46	779,699.53	32° 6' 32.070 N	103° 33' 48.574 W
5,907.0	2.00	133.60	5,891.2	-175.5	316.1	404,206.03	779,703.40	32° 6' 32.046 N	103° 33' 48.529 W



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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
6,000.0	1.80	143.60	5,984.1	-177.8	318.1	404,203.73	779,705.45	32° 6' 32.023 N	103° 33' 48.505 W	
6,093.0	1.40	154.50	6,077.1	-180.0	319.5	404,201.53	779,706.80	32° 6' 32.001 N	103° 33' 48.490 W	
6,186.0	1.50	149.30	6,170.1	-182.0	320.6	404,199.46	779,707.91	32° 6' 31.981 N	103° 33' 48.477 W	
6,279.0	0.40	240.70	6,263.1	-183.2	321.0	404,198.25	779,708.25	32° 6' 31.969 N	103° 33' 48.473 W	
6,372.0	0.60	252.30	6,356.1	-183.6	320.2	404,197.95	779,707.50	32° 6' 31.966 N	103° 33' 48.482 W	
6,465.0	0.60	268.80	6,449.1	-183.7	319.3	404,197.79	779,706.55	32° 6' 31.964 N	103° 33' 48.493 W	
6,558.0	0.60	259.10	6,542.0	-183.8	318.3	404,197.69	779,705.59	32° 6' 31.963 N	103° 33' 48.504 W	
6,652.0	0.70	260.70	6,636.0	-184.0	317.2	404,197.50	779,704.54	32° 6' 31.961 N	103° 33' 48.517 W	
6,745.0	1.10	167.00	6,729.0	-185.0	316.9	404,196.54	779,704.18	32° 6' 31.952 N	103° 33' 48.521 W	
6,838.0	1.60	173.70	6,822.0	-187.1	317.2	404,194.38	779,704.52	32° 6' 31.930 N	103° 33' 48.517 W	
6,931.0	0.70	118.00	6,915.0	-188.7	317.9	404,192.82	779,705.17	32° 6' 31.915 N	103° 33' 48.510 W	
7,024.0	0.70	105.80	7,008.0	-189.1	318.9	404,192.40	779,706.21	32° 6' 31.911 N	103° 33' 48.497 W	
7,117.0	0.60	115.00	7,101.0	-189.5	319.9	404,192.04	779,707.20	32° 6' 31.907 N	103° 33' 48.486 W	
7,210.0	0.60	125.70	7,194.0	-190.0	320.7	404,191.55	779,708.04	32° 6' 31.902 N	103° 33' 48.476 W	
7,304.0	0.60	149.80	7,288.0	-190.7	321.4	404,190.84	779,708.69	32° 6' 31.895 N	103° 33' 48.469 W	
7,397.0	0.60	156.80	7,381.0	-191.5	321.8	404,189.97	779,709.12	32° 6' 31.887 N	103° 33' 48.464 W	
7,490.0	0.50	176.00	7,474.0	-192.4	322.0	404,189.12	779,709.34	32° 6' 31.878 N	103° 33' 48.461 W	
7,583.0	0.70	199.90	7,567.0	-193.3	321.9	404,188.18	779,709.18	32° 6' 31.869 N	103° 33' 48.463 W	
7,670.0	0.90	221.00	7,653.9	-194.3	321.3	404,187.16	779,708.55	32° 6' 31.859 N	103° 33' 48.471 W	
7,763.0	1.00	218.30	7,746.9	-195.5	320.3	404,185.97	779,707.57	32° 6' 31.847 N	103° 33' 48.482 W	
7,856.0	1.00	227.50	7,839.9	-196.7	319.2	404,184.79	779,706.47	32° 6' 31.835 N	103° 33' 48.495 W	
7,949.0	1.00	211.50	7,932.9	-198.0	318.1	404,183.55	779,705.44	32° 6' 31.823 N	103° 33' 48.507 W	
8,042.0	1.00	211.00	8,025.9	-199.3	317.3	404,182.16	779,704.60	32° 6' 31.810 N	103° 33' 48.517 W	
8,135.0	1.10	211.80	8,118.9	-200.8	316.4	404,180.71	779,703.71	32° 6' 31.795 N	103° 33' 48.527 W	
8,228.0	0.70	325.60	8,211.9	-201.1	315.6	404,180.42	779,702.92	32° 6' 31.792 N	103° 33' 48.537 W	
8,321.0	0.80	321.90	8,304.9	-200.1	314.9	404,181.40	779,702.20	32° 6' 31.802 N	103° 33' 48.545 W	
8,414.0	1.10	22.50	8,397.8	-198.8	314.8	404,182.73	779,702.14	32° 6' 31.815 N	103° 33' 48.546 W	
8,507.0	1.30	30.30	8,490.8	-197.0	315.7	404,184.47	779,703.01	32° 6' 31.833 N	103° 33' 48.535 W	
8,600.0	1.30	40.10	8,583.8	-195.3	316.9	404,186.18	779,704.23	32° 6' 31.849 N	103° 33' 48.521 W	
8,693.0	1.10	38.90	8,676.8	-193.8	318.2	404,187.69	779,705.47	32° 6' 31.864 N	103° 33' 48.507 W	
8,786.0	0.70	31.80	8,769.8	-192.6	319.0	404,188.86	779,706.33	32° 6' 31.876 N	103° 33' 48.496 W	
8,879.0	0.60	13.20	8,862.8	-191.7	319.4	404,189.82	779,706.74	32° 6' 31.885 N	103° 33' 48.492 W	
8,973.0	0.40	10.60	8,956.8	-190.9	319.6	404,190.62	779,706.91	32° 6' 31.893 N	103° 33' 48.490 W	
9,066.0	0.90	135.00	9,049.8	-191.1	320.2	404,190.42	779,707.49	32° 6' 31.891 N	103° 33' 48.483 W	
9,159.0	1.10	172.30	9,142.7	-192.5	320.8	404,189.02	779,708.12	32° 6' 31.877 N	103° 33' 48.476 W	
9,252.0	0.70	205.20	9,235.7	-193.9	320.7	404,187.62	779,708.00	32° 6' 31.863 N	103° 33' 48.477 W	
9,345.0	1.30	226.80	9,328.7	-195.1	319.7	404,186.39	779,706.99	32° 6' 31.851 N	103° 33' 48.489 W	
9,438.0	1.10	229.80	9,421.7	-196.4	318.2	404,185.09	779,705.54	32° 6' 31.839 N	103° 33' 48.506 W	
9,531.0	0.70	199.90	9,514.7	-197.5	317.4	404,183.98	779,704.66	32° 6' 31.828 N	103° 33' 48.516 W	
9,624.0	0.20	218.00	9,607.7	-198.2	317.1	404,183.32	779,704.37	32° 6' 31.821 N	103° 33' 48.520 W	
9,717.0	0.40	40.30	9,700.7	-198.1	317.2	404,183.44	779,704.48	32° 6' 31.822 N	103° 33' 48.518 W	
9,810.0	0.40	70.20	9,793.7	-197.7	317.7	404,183.80	779,704.99	32° 6' 31.826 N	103° 33' 48.512 W	
9,904.0	0.40	331.00	9,887.7	-197.3	317.8	404,184.19	779,705.14	32° 6' 31.830 N	103° 33' 48.511 W	
9,997.0	1.00	272.50	9,980.7	-197.0	316.9	404,184.51	779,704.18	32° 6' 31.833 N	103° 33' 48.522 W	
10,090.0	1.00	345.10	10,073.7	-196.2	315.9	404,185.33	779,703.16	32° 6' 31.841 N	103° 33' 48.534 W	
10,182.0	1.00	343.10	10,165.6	-194.6	315.4	404,186.88	779,702.72	32° 6' 31.856 N	103° 33' 48.539 W	
10,276.0	1.10	32.40	10,259.6	-193.1	315.7	404,188.42	779,702.96	32° 6' 31.872 N	103° 33' 48.536 W	
10,369.0	0.60	30.80	10,352.6	-191.9	316.4	404,189.59	779,703.69	32° 6' 31.883 N	103° 33' 48.527 W	
10,463.0	0.30	337.50	10,446.6	-191.3	316.5	404,190.24	779,703.85	32° 6' 31.890 N	103° 33' 48.525 W	
10,556.0	0.40	88.30	10,539.6	-191.0	316.8	404,190.48	779,704.08	32° 6' 31.892 N	103° 33' 48.522 W	
10,649.0	0.60	118.50	10,632.6	-191.2	317.5	404,190.26	779,704.83	32° 6' 31.890 N	103° 33' 48.514 W	
10,743.0	1.10	159.80	10,726.6	-192.3	318.3	404,189.18	779,705.58	32° 6' 31.879 N	103° 33' 48.505 W	
10,836.0	1.10	190.40	10,819.6	-194.0	318.4	404,187.46	779,705.72	32° 6' 31.862 N	103° 33' 48.504 W	
10,929.0	0.40	164.90	10,912.6	-195.2	318.3	404,186.27	779,705.65	32° 6' 31.850 N	103° 33' 48.505 W	
11,023.0	0.40	114.10	11,006.6	-195.7	318.7	404,185.82	779,706.03	32° 6' 31.846 N	103° 33' 48.500 W	



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 22 Fed Com #24H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3372.0usft (Patterson #566)
Site:	Sec 22, T25-S, R33-E	MD Reference:	WELL @ 3372.0usft (Patterson #566)
Well:	Rojo 7811 22 Fed Com #24H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,116.0	1.30	113.70	11,099.6	-196.2	320.0	404,185.26	779,707.29	32° 6' 31.840 N	103° 33' 48.485 W
11,209.0	1.70	139.60	11,192.5	-197.7	321.9	404,183.79	779,709.15	32° 6' 31.825 N	103° 33' 48.464 W
11,302.0	0.20	145.00	11,285.5	-198.9	322.8	404,182.60	779,710.14	32° 6' 31.814 N	103° 33' 48.453 W
11,395.0	1.80	234.50	11,378.5	-199.9	321.7	404,181.62	779,709.04	32° 6' 31.804 N	103° 33' 48.465 W
11,488.0	3.40	242.80	11,471.4	-202.0	318.1	404,179.51	779,705.40	32° 6' 31.783 N	103° 33' 48.508 W
11,581.0	1.80	277.20	11,564.3	-203.1	314.2	404,178.43	779,701.50	32° 6' 31.773 N	103° 33' 48.553 W
11,674.0	2.00	295.90	11,657.3	-202.2	311.3	404,179.33	779,698.59	32° 6' 31.782 N	103° 33' 48.587 W
11,767.0	2.20	297.30	11,750.2	-200.6	308.2	404,180.85	779,695.54	32° 6' 31.797 N	103° 33' 48.622 W
11,789.0	2.10	289.40	11,772.2	-200.3	307.5	404,181.18	779,694.79	32° 6' 31.801 N	103° 33' 48.631 W
11,852.0	2.20	279.70	11,835.1	-199.7	305.2	404,181.77	779,692.51	32° 6' 31.807 N	103° 33' 48.658 W
11,909.0	2.60	310.80	11,892.1	-198.7	303.2	404,182.80	779,690.45	32° 6' 31.817 N	103° 33' 48.681 W
12,004.0	11.80	12.10	11,986.3	-187.8	303.6	404,193.74	779,690.86	32° 6' 31.925 N	103° 33' 48.676 W
12,098.0	24.50	10.60	12,075.5	-159.1	309.2	404,222.41	779,696.48	32° 6' 32.208 N	103° 33' 48.608 W
12,193.0	38.30	10.60	12,156.4	-110.6	318.3	404,270.94	779,705.56	32° 6' 32.688 N	103° 33' 48.498 W
12,288.0	52.80	3.50	12,222.7	-43.5	326.0	404,338.05	779,713.34	32° 6' 33.352 N	103° 33' 48.403 W
12,383.0	67.50	357.40	12,269.9	38.7	326.4	404,420.16	779,713.66	32° 6' 34.164 N	103° 33' 48.392 W
12,460.8	74.45	1.28	12,295.3	112.1	325.6	404,493.64	779,712.86	32° 6' 34.891 N	103° 33' 48.395 W
Cross 330' FSL@ 12460.8' MD / 12295.3' TVD									
12,478.0	76.00	2.10	12,299.7	128.8	326.1	404,510.27	779,713.35	32° 6' 35.056 N	103° 33' 48.388 W
12,573.0	86.60	3.20	12,314.0	222.4	330.4	404,603.94	779,717.70	32° 6' 35.982 N	103° 33' 48.330 W
12,668.0	88.80	3.70	12,317.8	317.2	336.1	404,698.68	779,723.41	32° 6' 36.919 N	103° 33' 48.255 W
12,695.0	88.80	3.50	12,318.4	344.1	337.8	404,725.62	779,725.11	32° 6' 37.186 N	103° 33' 48.233 W
12,789.0	89.10	4.10	12,320.1	437.9	344.0	404,819.40	779,731.34	32° 6' 38.113 N	103° 33' 48.153 W
12,884.0	88.20	4.10	12,322.4	532.6	350.8	404,914.13	779,738.13	32° 6' 39.050 N	103° 33' 48.066 W
12,978.0	87.70	3.00	12,325.7	626.4	356.6	405,007.89	779,743.95	32° 6' 39.978 N	103° 33' 47.991 W
13,073.0	87.10	1.90	12,330.0	721.2	360.7	405,102.70	779,748.00	32° 6' 40.916 N	103° 33' 47.936 W
13,167.0	86.00	0.70	12,335.7	815.0	362.8	405,196.50	779,750.13	32° 6' 41.844 N	103° 33' 47.903 W
13,262.0	86.40	359.80	12,342.0	909.8	363.2	405,291.29	779,750.54	32° 6' 42.782 N	103° 33' 47.891 W
13,357.0	87.20	358.80	12,347.3	1,004.6	362.1	405,386.14	779,749.39	32° 6' 43.720 N	103° 33' 47.896 W
13,452.0	91.50	358.20	12,348.4	1,099.6	359.6	405,481.07	779,746.90	32° 6' 44.660 N	103° 33' 47.917 W
13,546.0	91.00	357.90	12,346.3	1,193.5	356.4	405,575.00	779,743.70	32° 6' 45.589 N	103° 33' 47.947 W
13,641.0	90.60	356.70	12,345.0	1,288.4	351.9	405,669.88	779,739.23	32° 6' 46.529 N	103° 33' 47.991 W
13,736.0	91.00	356.80	12,343.7	1,383.2	346.5	405,764.72	779,733.84	32° 6' 47.467 N	103° 33' 48.046 W
13,831.0	90.90	357.20	12,342.1	1,478.1	341.6	405,859.57	779,728.87	32° 6' 48.406 N	103° 33' 48.096 W
13,926.0	89.00	356.80	12,342.2	1,572.9	336.6	405,954.44	779,723.90	32° 6' 49.346 N	103° 33' 48.145 W
14,021.0	89.80	357.20	12,343.2	1,667.8	331.6	406,049.30	779,718.93	32° 6' 50.285 N	103° 33' 48.195 W
14,115.0	89.40	356.10	12,343.8	1,761.6	326.1	406,143.14	779,713.43	32° 6' 51.214 N	103° 33' 48.251 W
14,210.0	88.20	354.00	12,345.8	1,856.3	317.9	406,237.76	779,705.24	32° 6' 52.150 N	103° 33' 48.339 W
14,305.0	87.10	351.90	12,349.7	1,950.5	306.3	406,331.95	779,693.59	32° 6' 53.083 N	103° 33' 48.467 W
14,400.0	89.20	354.40	12,352.8	2,044.7	295.0	406,426.21	779,682.27	32° 6' 54.017 N	103° 33' 48.590 W
14,495.0	88.90	356.30	12,354.3	2,139.4	287.3	406,520.88	779,674.57	32° 6' 54.954 N	103° 33' 48.672 W
14,591.0	88.90	358.60	12,356.2	2,235.3	283.0	406,616.76	779,670.30	32° 6' 55.903 N	103° 33' 48.714 W
14,686.0	89.30	359.00	12,357.7	2,330.2	281.0	406,711.73	779,668.31	32° 6' 56.843 N	103° 33' 48.729 W
14,781.0	89.90	359.30	12,358.3	2,425.2	279.6	406,806.72	779,666.90	32° 6' 57.783 N	103° 33' 48.737 W
14,875.0	89.30	358.80	12,359.0	2,519.2	278.0	406,900.70	779,665.34	32° 6' 58.713 N	103° 33' 48.748 W
14,971.0	90.00	358.40	12,359.6	2,615.2	275.7	406,996.67	779,663.00	32° 6' 59.663 N	103° 33' 48.767 W
15,066.0	90.70	359.50	12,359.0	2,710.2	274.0	407,091.65	779,661.26	32° 7' 0.603 N	103° 33' 48.779 W
15,161.0	92.60	2.30	12,356.3	2,805.1	275.4	407,186.59	779,662.75	32° 7' 1.542 N	103° 33' 48.754 W
15,256.0	92.00	5.10	12,352.5	2,899.8	281.6	407,281.30	779,668.87	32° 7' 2.479 N	103° 33' 48.675 W
15,351.0	90.50	6.50	12,350.4	2,994.3	291.2	407,375.79	779,678.47	32° 7' 3.413 N	103° 33' 48.556 W
15,446.0	88.50	7.90	12,351.2	3,088.5	303.1	407,470.03	779,690.37	32° 7' 4.345 N	103° 33' 48.409 W
15,540.0	88.40	8.30	12,353.8	3,181.6	316.3	407,563.06	779,703.61	32° 7' 5.265 N	103° 33' 48.248 W
15,635.0	86.90	7.90	12,357.7	3,275.5	329.7	407,657.03	779,716.99	32° 7' 6.194 N	103° 33' 48.084 W
15,730.0	85.50	5.80	12,364.0	3,369.6	341.0	407,751.13	779,728.29	32° 7' 7.124 N	103° 33' 47.945 W
15,824.0	83.40	3.20	12,373.0	3,462.9	348.3	407,844.39	779,735.64	32° 7' 8.046 N	103° 33' 47.852 W



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 22 Fed Com #24H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3372.0usft (Patterson #566)
Site:	Sec 22, T25-S, R33-E	MD Reference:	WELL @ 3372.0usft (Patterson #566)
Well:	Rojo 7811 22 Fed Com #24H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,919.0	83.70	359.80	12,383.7	3,557.2	350.8	407,938.74	779,738.11	32° 7' 8.980 N	103° 33' 47.815 W
16,015.0	85.70	356.50	12,392.6	3,652.8	347.7	408,034.26	779,735.02	32° 7' 9.925 N	103° 33' 47.843 W
16,110.0	89.90	354.20	12,396.2	3,747.4	340.0	408,128.85	779,727.32	32° 7' 10.862 N	103° 33' 47.925 W
16,204.0	89.80	356.50	12,396.5	3,841.0	332.4	408,222.54	779,719.70	32° 7' 11.789 N	103° 33' 48.006 W
16,300.0	89.30	358.40	12,397.2	3,936.9	328.1	408,318.43	779,715.43	32° 7' 12.739 N	103° 33' 48.048 W
16,369.0	90.50	359.00	12,397.4	4,005.9	326.6	408,387.41	779,713.87	32° 7' 13.421 N	103° 33' 48.060 W
16,464.0	91.00	359.10	12,396.1	4,100.9	325.0	408,482.39	779,712.29	32° 7' 14.361 N	103° 33' 48.070 W
16,559.0	91.80	0.20	12,393.8	4,195.9	324.4	408,577.36	779,711.71	32° 7' 15.301 N	103° 33' 48.069 W
16,654.0	92.80	0.20	12,390.0	4,290.8	324.7	408,672.28	779,712.04	32° 7' 16.240 N	103° 33' 48.058 W
16,748.0	91.80	359.80	12,386.2	4,384.7	324.7	408,766.21	779,712.04	32° 7' 17.170 N	103° 33' 48.050 W
16,843.0	91.60	0.20	12,383.4	4,479.7	324.7	408,861.16	779,712.04	32° 7' 18.109 N	103° 33' 48.042 W
16,938.0	89.80	359.80	12,382.2	4,574.7	324.7	408,956.15	779,712.04	32° 7' 19.049 N	103° 33' 48.034 W
17,033.0	90.00	359.80	12,382.4	4,669.7	324.4	409,051.15	779,711.71	32° 7' 19.989 N	103° 33' 48.030 W
17,095.9	90.47	0.40	12,382.1	4,732.6	324.5	409,114.05	779,711.82	32° 7' 20.612 N	103° 33' 48.023 W
Cross 330' FNL@ 17095.9' MD / 12382.1' TVD									
17,127.0	90.70	0.70	12,381.8	4,763.6	324.8	409,145.15	779,712.12	32° 7' 20.919 N	103° 33' 48.017 W
17,222.0	87.70	359.00	12,383.1	4,858.6	324.6	409,240.12	779,711.87	32° 7' 21.859 N	103° 33' 48.012 W
17,317.0	87.80	359.00	12,386.9	4,953.5	322.9	409,335.04	779,710.22	32° 7' 22.799 N	103° 33' 48.024 W
17,369.0	87.80	359.00	12,388.9	5,005.5	322.0	409,386.99	779,709.31	32° 7' 23.313 N	103° 33' 48.030 W
TD @ 17369.0' MD / 12388.9' TVD									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
234.0	234.0	-0.2	0.8	First MWD Survey @ 234.0' MD / 234.0' TVD
12,460.8	12,295.3	112.1	325.6	Cross 330' FSL@ 12460.8' MD / 12295.3' TVD
17,095.9	12,382.1	4,732.6	324.5	Cross 330' FNL@ 17095.9' MD / 12382.1' TVD
17,369.0	12,388.9	5,005.5	322.0	TD @ 17369.0' MD / 12388.9' TVD