



BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Sec 10, T25-S, R33-E

Vaca Draw 9418 10 Fed #19H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

17 January, 2020



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Vaca Draw 9418 10 Fed #19H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3401.0usft (Patterson #594)
Site:	Sec 10, T25-S, R33-E	MD Reference:	WELL @ 3401.0usft (Patterson #594)
Well:	Vaca Draw 9418 10 Fed #19H	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 10, T25-S, R33-E		
Site Position:		Northing:	414,940.60 usft
From:	Map	Easting:	779,261.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 8' 18.299 N
		Longitude:	103° 33' 52.777 W
		Grid Convergence:	0.41 °

Well	Vaca Draw 9418 10 Fed #19H		
Well Position	+N/-S	0.0 usft	Northing: 414,958.50 usft
	+E/-W	0.0 usft	Easting: 782,012.40 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 8' 18.281 N
		Longitude:	103° 33' 20.782 W
		Ground Level:	3,376.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	12/27/2019	6.58	59.73	47,746.50000000

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	10.02	

Survey Program	Date	1/17/2020			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
157.0	17,413.0	QES MWD Surveys (Wellbore #1)	OWSG (Rev2) 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	414,958.50	782,012.40	32° 8' 18.281 N	103° 33' 20.782 W
157.0	0.30	205.70	157.0	-0.4	-0.2	414,958.13	782,012.22	32° 8' 18.277 N	103° 33' 20.784 W
First MWD Survey @ 157.0' MD / 157.0' TVD									
343.0	0.40	163.00	343.0	-1.4	-0.2	414,957.07	782,012.20	32° 8' 18.267 N	103° 33' 20.785 W
523.0	0.60	149.60	523.0	-2.8	0.5	414,955.66	782,012.86	32° 8' 18.253 N	103° 33' 20.777 W
707.0	0.40	227.90	707.0	-4.1	0.5	414,954.39	782,012.87	32° 8' 18.240 N	103° 33' 20.777 W
895.0	0.60	203.60	895.0	-5.4	-0.4	414,953.05	782,011.99	32° 8' 18.227 N	103° 33' 20.788 W
1,083.0	0.40	339.80	1,083.0	-5.7	-1.0	414,952.77	782,011.37	32° 8' 18.224 N	103° 33' 20.795 W
1,273.0	0.30	37.00	1,273.0	-4.7	-1.0	414,953.79	782,011.44	32° 8' 18.234 N	103° 33' 20.794 W
1,462.0	0.40	254.60	1,462.0	-4.5	-1.3	414,954.01	782,011.10	32° 8' 18.237 N	103° 33' 20.798 W
1,493.0	0.50	259.00	1,493.0	-4.5	-1.5	414,953.95	782,010.86	32° 8' 18.236 N	103° 33' 20.801 W
1,632.0	2.20	91.40	1,631.9	-4.7	0.5	414,953.77	782,012.93	32° 8' 18.234 N	103° 33' 20.776 W



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Site:	Sec 10, T25-S, R33-E	MD Reference:	WELL @ 3401.0usft (Patterson #594)
Well:	Vaca Draw 9418 10 Fed #19H	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
1,727.0	4.60	96.30	1,726.8	-5.2	6.1	414,953.31	782,018.55	32° 8' 18.229 N	103° 33' 20.711 W
1,820.0	5.80	96.20	1,819.4	-6.1	14.5	414,952.39	782,026.92	32° 8' 18.219 N	103° 33' 20.614 W
1,915.0	5.50	96.00	1,913.9	-7.1	23.8	414,951.40	782,036.22	32° 8' 18.209 N	103° 33' 20.506 W
2,010.0	5.30	94.20	2,008.5	-7.9	32.7	414,950.60	782,045.13	32° 8' 18.200 N	103° 33' 20.402 W
2,104.0	6.50	101.30	2,102.0	-9.3	42.3	414,949.24	782,054.67	32° 8' 18.186 N	103° 33' 20.291 W
2,199.0	6.20	101.40	2,196.4	-11.3	52.6	414,947.17	782,064.98	32° 8' 18.165 N	103° 33' 20.172 W
2,294.0	6.20	102.50	2,290.9	-13.5	62.6	414,945.05	782,075.01	32° 8' 18.143 N	103° 33' 20.055 W
2,389.0	6.00	102.80	2,385.3	-15.7	72.5	414,942.84	782,084.86	32° 8' 18.121 N	103° 33' 19.941 W
2,484.0	6.20	101.10	2,479.8	-17.8	82.3	414,940.75	782,094.74	32° 8' 18.099 N	103° 33' 19.826 W
2,578.0	5.90	100.90	2,573.3	-19.6	92.1	414,938.86	782,104.46	32° 8' 18.080 N	103° 33' 19.713 W
2,672.0	6.20	99.20	2,666.7	-21.4	101.8	414,937.13	782,114.22	32° 8' 18.062 N	103° 33' 19.600 W
2,767.0	6.20	99.00	2,761.2	-23.0	112.0	414,935.51	782,124.35	32° 8' 18.045 N	103° 33' 19.482 W
2,861.0	6.20	96.30	2,854.6	-24.3	122.0	414,934.16	782,134.41	32° 8' 18.031 N	103° 33' 19.365 W
2,956.0	6.50	94.80	2,949.0	-25.4	132.5	414,933.15	782,144.87	32° 8' 18.021 N	103° 33' 19.244 W
3,051.0	7.00	104.30	3,043.4	-27.2	143.4	414,931.27	782,155.83	32° 8' 18.001 N	103° 33' 19.116 W
3,145.0	7.10	102.80	3,136.7	-29.9	154.7	414,928.56	782,167.05	32° 8' 17.974 N	103° 33' 18.986 W
3,240.0	7.50	101.10	3,230.9	-32.4	166.5	414,926.07	782,178.86	32° 8' 17.948 N	103° 33' 18.849 W
3,335.0	7.70	98.10	3,325.1	-34.5	178.8	414,923.98	782,191.24	32° 8' 17.927 N	103° 33' 18.705 W
3,429.0	7.70	97.90	3,418.2	-36.3	191.3	414,922.23	782,203.72	32° 8' 17.908 N	103° 33' 18.560 W
3,523.0	7.50	98.30	3,511.4	-38.0	203.6	414,920.48	782,216.02	32° 8' 17.890 N	103° 33' 18.417 W
3,618.0	7.10	99.50	3,605.6	-39.9	215.6	414,918.61	782,227.95	32° 8' 17.871 N	103° 33' 18.279 W
3,712.0	6.90	98.10	3,698.9	-41.6	226.9	414,916.86	782,239.27	32° 8' 17.853 N	103° 33' 18.147 W
3,807.0	6.70	98.30	3,793.3	-43.2	238.0	414,915.25	782,250.40	32° 8' 17.836 N	103° 33' 18.018 W
3,902.0	6.20	101.60	3,887.7	-45.1	248.5	414,913.42	782,260.91	32° 8' 17.817 N	103° 33' 17.896 W
3,996.0	5.70	100.20	3,981.2	-46.9	258.1	414,911.57	782,270.48	32° 8' 17.798 N	103° 33' 17.785 W
4,091.0	5.50	102.30	4,075.7	-48.7	267.2	414,909.77	782,279.57	32° 8' 17.780 N	103° 33' 17.679 W
4,186.0	4.90	97.20	4,170.3	-50.2	275.6	414,908.29	782,288.04	32° 8' 17.764 N	103° 33' 17.581 W
4,281.0	4.90	92.00	4,265.0	-50.9	283.7	414,907.64	782,296.12	32° 8' 17.757 N	103° 33' 17.487 W
4,376.0	5.70	96.00	4,359.6	-51.5	292.5	414,907.01	782,304.87	32° 8' 17.750 N	103° 33' 17.385 W
4,471.0	5.80	95.80	4,454.1	-52.5	301.9	414,906.03	782,314.34	32° 8' 17.740 N	103° 33' 17.275 W
4,565.0	6.10	105.10	4,547.6	-54.3	311.5	414,904.25	782,323.89	32° 8' 17.722 N	103° 33' 17.164 W
4,659.0	7.20	111.60	4,640.9	-57.7	321.8	414,900.78	782,334.18	32° 8' 17.687 N	103° 33' 17.045 W
4,754.0	8.00	115.30	4,735.1	-62.7	333.3	414,895.76	782,345.70	32° 8' 17.636 N	103° 33' 16.911 W
4,849.0	8.10	116.70	4,829.2	-68.6	345.3	414,889.93	782,357.65	32° 8' 17.578 N	103° 33' 16.773 W
4,944.0	5.80	110.60	4,923.5	-73.3	355.7	414,885.23	782,368.13	32° 8' 17.530 N	103° 33' 16.651 W
5,039.0	5.20	110.10	5,018.0	-76.4	364.3	414,882.06	782,376.66	32° 8' 17.498 N	103° 33' 16.552 W
5,133.0	4.40	111.10	5,111.7	-79.2	371.6	414,879.30	782,384.03	32° 8' 17.471 N	103° 33' 16.467 W
5,227.0	4.30	96.70	5,205.4	-80.9	378.5	414,877.59	782,390.89	32° 8' 17.453 N	103° 33' 16.387 W
5,322.0	4.70	91.10	5,300.1	-81.4	385.9	414,877.10	782,398.32	32° 8' 17.448 N	103° 33' 16.301 W
5,416.0	5.00	102.80	5,393.8	-82.4	393.8	414,876.12	782,406.17	32° 8' 17.438 N	103° 33' 16.210 W
5,511.0	5.10	103.90	5,488.4	-84.3	401.9	414,874.19	782,414.30	32° 8' 17.418 N	103° 33' 16.115 W
5,606.0	4.70	104.30	5,583.1	-86.3	409.8	414,872.21	782,422.17	32° 8' 17.398 N	103° 33' 16.024 W
5,701.0	4.80	101.40	5,677.8	-88.0	417.4	414,870.47	782,429.84	32° 8' 17.380 N	103° 33' 15.935 W
5,796.0	4.70	102.30	5,772.4	-89.6	425.1	414,868.85	782,437.54	32° 8' 17.363 N	103° 33' 15.846 W
5,891.0	4.30	103.90	5,867.1	-91.3	432.4	414,867.17	782,444.80	32° 8' 17.346 N	103° 33' 15.761 W
5,985.0	4.30	104.30	5,960.9	-93.1	439.2	414,865.45	782,451.63	32° 8' 17.329 N	103° 33' 15.682 W
6,080.0	4.20	97.90	6,055.6	-94.4	446.1	414,864.09	782,458.53	32° 8' 17.315 N	103° 33' 15.602 W
6,175.0	3.80	102.50	6,150.4	-95.6	452.7	414,862.93	782,465.05	32° 8' 17.303 N	103° 33' 15.526 W
6,270.0	3.60	99.30	6,245.2	-96.7	458.7	414,861.77	782,471.07	32° 8' 17.291 N	103° 33' 15.456 W
6,365.0	3.60	97.40	6,340.0	-97.6	464.6	414,860.90	782,476.97	32° 8' 17.282 N	103° 33' 15.388 W
6,458.0	4.40	99.90	6,432.8	-98.6	471.0	414,859.91	782,483.38	32° 8' 17.272 N	103° 33' 15.313 W
6,553.0	4.20	98.30	6,527.5	-99.7	478.0	414,858.78	782,490.41	32° 8' 17.260 N	103° 33' 15.232 W
6,648.0	4.50	99.00	6,622.2	-100.8	485.1	414,857.70	782,497.53	32° 8' 17.249 N	103° 33' 15.149 W
6,743.0	4.30	102.10	6,717.0	-102.1	492.3	414,856.37	782,504.70	32° 8' 17.235 N	103° 33' 15.066 W
6,838.0	4.50	99.50	6,811.7	-103.5	499.5	414,855.01	782,511.85	32° 8' 17.221 N	103° 33' 14.982 W



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Site:	Sec 10, T25-S, R33-E	MD Reference:	WELL @ 3401.0usft (Patterson #594)
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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
6,932.0	4.30	101.40	6,905.4	-104.8	506.5	414,853.70	782,518.95	32° 8' 17.208 N	103° 33' 14.900 W
7,027.0	4.20	102.50	7,000.1	-106.3	513.4	414,852.25	782,525.83	32° 8' 17.193 N	103° 33' 14.820 W
7,122.0	4.00	103.20	7,094.9	-107.8	520.1	414,850.74	782,532.46	32° 8' 17.177 N	103° 33' 14.743 W
7,216.0	3.80	104.10	7,188.7	-109.3	526.3	414,849.23	782,538.67	32° 8' 17.162 N	103° 33' 14.671 W
7,311.0	3.90	106.20	7,283.5	-110.9	532.4	414,847.56	782,544.82	32° 8' 17.145 N	103° 33' 14.600 W
7,405.0	3.80	106.70	7,377.3	-112.7	538.5	414,845.77	782,550.88	32° 8' 17.127 N	103° 33' 14.529 W
7,500.0	4.90	98.80	7,472.0	-114.3	545.5	414,844.25	782,557.90	32° 8' 17.111 N	103° 33' 14.448 W
7,595.0	5.40	95.10	7,566.6	-115.3	554.0	414,843.23	782,566.37	32° 8' 17.101 N	103° 33' 14.350 W
7,689.0	4.90	100.60	7,660.2	-116.4	562.3	414,842.10	782,574.72	32° 8' 17.089 N	103° 33' 14.252 W
7,783.0	5.00	100.00	7,753.9	-117.9	570.3	414,840.65	782,582.70	32° 8' 17.074 N	103° 33' 14.160 W
7,878.0	4.50	98.10	7,848.5	-119.1	578.1	414,839.40	782,590.46	32° 8' 17.061 N	103° 33' 14.070 W
7,973.0	4.40	103.00	7,943.3	-120.4	585.3	414,838.06	782,597.70	32° 8' 17.047 N	103° 33' 13.986 W
8,068.0	4.10	103.60	8,038.0	-122.1	592.2	414,836.44	782,604.56	32° 8' 17.031 N	103° 33' 13.906 W
8,162.0	4.20	104.40	8,131.7	-123.7	598.8	414,834.79	782,611.16	32° 8' 17.014 N	103° 33' 13.829 W
8,256.0	4.30	101.30	8,225.5	-125.3	605.5	414,833.25	782,617.95	32° 8' 16.998 N	103° 33' 13.751 W
8,351.0	4.20	100.70	8,320.2	-126.6	612.5	414,831.90	782,624.86	32° 8' 16.984 N	103° 33' 13.670 W
8,446.0	4.00	102.50	8,415.0	-128.0	619.1	414,830.54	782,631.51	32° 8' 16.970 N	103° 33' 13.593 W
8,540.0	5.20	100.60	8,508.7	-129.5	626.5	414,829.05	782,638.90	32° 8' 16.955 N	103° 33' 13.507 W
8,634.0	5.60	99.70	8,602.3	-131.0	635.2	414,827.49	782,647.61	32° 8' 16.939 N	103° 33' 13.406 W
8,728.0	5.30	98.80	8,695.8	-132.4	644.0	414,826.05	782,656.42	32° 8' 16.924 N	103° 33' 13.304 W
8,823.0	5.00	102.00	8,790.5	-134.0	652.4	414,824.52	782,664.80	32° 8' 16.908 N	103° 33' 13.206 W
8,911.0	4.90	101.30	8,878.1	-135.5	659.8	414,822.99	782,672.24	32° 8' 16.893 N	103° 33' 13.120 W
9,005.0	4.70	100.60	8,971.8	-137.0	667.6	414,821.49	782,679.96	32° 8' 16.877 N	103° 33' 13.030 W
9,100.0	4.80	99.70	9,066.5	-138.4	675.3	414,820.11	782,687.70	32° 8' 16.863 N	103° 33' 12.940 W
9,194.0	4.70	101.40	9,160.1	-139.8	683.0	414,818.68	782,695.36	32° 8' 16.849 N	103° 33' 12.851 W
9,289.0	4.30	95.60	9,254.9	-140.9	690.3	414,817.57	782,702.72	32° 8' 16.837 N	103° 33' 12.766 W
9,383.0	4.10	101.10	9,348.6	-141.9	697.1	414,816.58	782,709.52	32° 8' 16.827 N	103° 33' 12.687 W
9,478.0	3.60	101.10	9,443.4	-143.2	703.4	414,815.35	782,715.78	32° 8' 16.814 N	103° 33' 12.614 W
9,573.0	3.80	100.00	9,538.2	-144.3	709.4	414,814.23	782,721.81	32° 8' 16.803 N	103° 33' 12.544 W
9,668.0	3.30	99.20	9,633.0	-145.3	715.2	414,813.24	782,727.61	32° 8' 16.792 N	103° 33' 12.477 W
9,763.0	2.80	95.60	9,727.9	-145.9	720.2	414,812.58	782,732.62	32° 8' 16.785 N	103° 33' 12.419 W
9,858.0	4.50	90.20	9,822.7	-146.2	726.3	414,812.34	782,738.65	32° 8' 16.783 N	103° 33' 12.348 W
9,953.0	4.70	88.80	9,917.4	-146.1	733.9	414,812.41	782,746.27	32° 8' 16.783 N	103° 33' 12.260 W
10,048.0	4.20	87.60	10,012.1	-145.9	741.2	414,812.64	782,753.64	32° 8' 16.784 N	103° 33' 12.174 W
10,142.0	4.40	97.40	10,105.8	-146.2	748.3	414,812.32	782,760.65	32° 8' 16.781 N	103° 33' 12.093 W
10,237.0	3.70	98.60	10,200.6	-147.1	754.9	414,811.39	782,767.30	32° 8' 16.771 N	103° 33' 12.015 W
10,332.0	5.00	97.00	10,295.3	-148.1	762.0	414,810.43	782,774.44	32° 8' 16.761 N	103° 33' 11.932 W
10,427.0	4.40	94.10	10,390.0	-148.8	769.8	414,809.66	782,782.18	32° 8' 16.753 N	103° 33' 11.842 W
10,521.0	4.40	96.50	10,483.7	-149.5	777.0	414,808.99	782,789.36	32° 8' 16.746 N	103° 33' 11.759 W
10,616.0	4.20	94.40	10,578.4	-150.2	784.1	414,808.32	782,796.45	32° 8' 16.739 N	103° 33' 11.677 W
10,710.0	4.70	99.90	10,672.2	-151.1	791.3	414,807.39	782,803.68	32° 8' 16.729 N	103° 33' 11.593 W
10,805.0	4.70	101.80	10,766.8	-152.6	798.9	414,805.92	782,811.32	32° 8' 16.714 N	103° 33' 11.504 W
10,899.0	5.90	99.20	10,860.4	-154.1	807.5	414,804.36	782,819.86	32° 8' 16.698 N	103° 33' 11.405 W
10,994.0	5.80	101.60	10,954.9	-155.9	817.0	414,802.62	782,829.38	32° 8' 16.680 N	103° 33' 11.294 W
11,089.0	4.80	105.10	11,049.5	-157.9	825.5	414,800.62	782,837.92	32° 8' 16.660 N	103° 33' 11.195 W
11,184.0	5.70	107.60	11,144.1	-160.3	833.9	414,798.16	782,846.25	32° 8' 16.635 N	103° 33' 11.098 W
11,278.0	5.90	103.60	11,237.7	-162.9	843.0	414,795.61	782,855.40	32° 8' 16.609 N	103° 33' 10.992 W
11,372.0	5.90	98.10	11,331.2	-164.7	852.5	414,793.79	782,864.88	32° 8' 16.590 N	103° 33' 10.882 W
11,468.0	4.80	92.70	11,426.7	-165.6	861.4	414,792.91	782,873.78	32° 8' 16.581 N	103° 33' 10.779 W
11,562.0	4.70	96.00	11,520.4	-166.2	869.1	414,792.32	782,881.53	32° 8' 16.574 N	103° 33' 10.688 W
11,656.0	4.30	97.60	11,614.1	-167.0	876.5	414,791.45	782,888.86	32° 8' 16.565 N	103° 33' 10.603 W
11,751.0	3.60	101.60	11,708.9	-168.1	882.9	414,790.38	782,895.31	32° 8' 16.554 N	103° 33' 10.528 W
11,857.0	3.40	111.80	11,814.7	-170.0	889.1	414,788.54	782,901.49	32° 8' 16.535 N	103° 33' 10.457 W
11,975.0	3.20	106.90	11,932.5	-172.2	895.5	414,786.29	782,907.89	32° 8' 16.513 N	103° 33' 10.383 W
12,070.0	15.60	8.80	12,026.3	-160.3	900.0	414,798.22	782,912.41	32° 8' 16.630 N	103° 33' 10.329 W



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Vaca Draw 9418 10 Fed #19H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3401.0usft (Patterson #594)
Site:	Sec 10, T25-S, R33-E	MD Reference:	WELL @ 3401.0usft (Patterson #594)
Well:	Vaca Draw 9418 10 Fed #19H	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
12,165.0	32.10	3.20	12,112.9	-122.2	903.4	414,836.31	782,915.80	32° 8' 17.007 N	103° 33' 10.286 W
12,260.0	43.30	359.10	12,188.0	-64.2	904.3	414,894.28	782,916.70	32° 8' 17.581 N	103° 33' 10.271 W
12,355.0	50.60	358.40	12,252.8	5.1	902.8	414,963.64	782,915.16	32° 8' 18.267 N	103° 33' 10.283 W
12,450.0	59.50	358.40	12,307.1	82.9	900.6	415,041.40	782,912.99	32° 8' 19.037 N	103° 33' 10.302 W
12,489.2	63.92	358.49	12,325.7	117.4	899.7	415,075.89	782,912.05	32° 8' 19.378 N	103° 33' 10.310 W
330' FSL Crossed @ 12489.2' MD / 12325.7' TVD									
12,545.0	70.20	358.60	12,347.5	168.7	898.3	415,127.24	782,910.75	32° 8' 19.886 N	103° 33' 10.321 W
12,640.0	86.10	1.10	12,366.9	261.4	898.2	415,219.91	782,910.56	32° 8' 20.803 N	103° 33' 10.315 W
12,735.0	93.50	1.10	12,367.2	356.3	900.0	415,314.82	782,912.38	32° 8' 21.742 N	103° 33' 10.286 W
12,850.0	92.30	1.60	12,361.4	471.1	902.7	415,429.64	782,915.09	32° 8' 22.878 N	103° 33' 10.245 W
12,944.0	91.00	4.60	12,358.7	565.0	907.8	415,523.45	782,920.17	32° 8' 23.806 N	103° 33' 10.178 W
13,040.0	91.00	4.10	12,357.0	660.7	915.1	415,619.16	782,927.45	32° 8' 24.753 N	103° 33' 10.085 W
13,135.0	90.40	3.40	12,355.9	755.4	921.3	415,713.95	782,933.67	32° 8' 25.690 N	103° 33' 10.005 W
13,230.0	90.00	0.70	12,355.6	850.4	924.7	415,808.88	782,937.06	32° 8' 26.629 N	103° 33' 9.957 W
13,325.0	89.80	0.90	12,355.7	945.4	926.0	415,903.87	782,938.39	32° 8' 27.569 N	103° 33' 9.934 W
13,419.0	90.00	1.80	12,355.9	1,039.3	928.2	415,997.84	782,940.60	32° 8' 28.499 N	103° 33' 9.900 W
13,514.0	90.00	1.20	12,355.9	1,134.3	930.7	416,092.81	782,943.09	32° 8' 29.439 N	103° 33' 9.863 W
13,609.0	87.00	1.20	12,358.4	1,229.2	932.7	416,187.74	782,945.08	32° 8' 30.378 N	103° 33' 9.832 W
13,703.0	87.50	359.50	12,362.9	1,323.1	933.3	416,281.63	782,945.65	32° 8' 31.307 N	103° 33' 9.817 W
13,798.0	87.80	358.30	12,366.8	1,418.0	931.4	416,376.53	782,943.83	32° 8' 32.246 N	103° 33' 9.830 W
13,892.0	88.00	1.20	12,370.2	1,512.0	931.0	416,470.46	782,943.42	32° 8' 33.175 N	103° 33' 9.827 W
13,987.0	87.50	0.90	12,373.9	1,606.9	932.8	416,565.37	782,945.16	32° 8' 34.115 N	103° 33' 9.799 W
14,081.0	87.00	1.20	12,378.5	1,700.7	934.5	416,659.24	782,946.88	32° 8' 35.043 N	103° 33' 9.771 W
14,176.0	87.70	359.70	12,382.9	1,795.6	935.2	416,754.13	782,947.63	32° 8' 35.982 N	103° 33' 9.754 W
14,271.0	87.70	359.70	12,386.7	1,890.6	934.7	416,849.06	782,947.13	32° 8' 36.922 N	103° 33' 9.752 W
14,366.0	88.70	357.90	12,389.6	1,985.5	932.7	416,943.98	782,945.14	32° 8' 37.861 N	103° 33' 9.767 W
14,461.0	88.20	356.50	12,392.2	2,080.3	928.1	417,038.83	782,940.50	32° 8' 38.800 N	103° 33' 9.813 W
14,556.0	89.90	355.80	12,393.8	2,175.1	921.7	417,133.60	782,934.12	32° 8' 39.738 N	103° 33' 9.880 W
14,651.0	90.90	354.70	12,393.1	2,269.8	913.9	417,228.27	782,926.26	32° 8' 40.675 N	103° 33' 9.963 W
14,745.0	90.90	357.00	12,391.7	2,363.5	907.1	417,322.01	782,919.46	32° 8' 41.604 N	103° 33' 10.034 W
14,840.0	89.30	356.70	12,391.5	2,458.4	901.8	417,416.86	782,914.24	32° 8' 42.542 N	103° 33' 10.087 W
14,935.0	89.90	356.20	12,392.1	2,553.2	896.0	417,511.67	782,908.35	32° 8' 43.481 N	103° 33' 10.147 W
15,030.0	89.40	358.60	12,392.7	2,648.1	891.6	417,606.57	782,904.04	32° 8' 44.420 N	103° 33' 10.189 W
15,124.0	90.00	356.80	12,393.2	2,742.0	887.9	417,700.49	782,900.27	32° 8' 45.350 N	103° 33' 10.225 W
15,220.0	89.80	356.90	12,393.4	2,837.8	882.6	417,796.34	782,895.00	32° 8' 46.299 N	103° 33' 10.279 W
15,315.0	89.20	357.20	12,394.2	2,932.7	877.7	417,891.21	782,890.11	32° 8' 47.238 N	103° 33' 10.328 W
15,410.0	89.30	359.50	12,395.5	3,027.7	875.0	417,986.16	782,887.37	32° 8' 48.178 N	103° 33' 10.351 W
15,505.0	89.20	358.40	12,396.7	3,122.6	873.2	418,081.13	782,885.63	32° 8' 49.118 N	103° 33' 10.364 W
15,600.0	89.90	2.10	12,397.5	3,217.6	873.6	418,176.11	782,886.05	32° 8' 50.057 N	103° 33' 10.351 W
15,695.0	92.50	10.00	12,395.5	3,312.0	883.6	418,270.48	782,896.05	32° 8' 50.991 N	103° 33' 10.227 W
15,790.0	92.80	13.90	12,391.1	3,404.8	903.3	418,363.30	782,915.69	32° 8' 51.908 N	103° 33' 9.990 W
15,885.0	90.00	9.00	12,388.7	3,497.8	922.1	418,456.35	782,934.53	32° 8' 52.827 N	103° 33' 9.763 W
15,980.0	89.20	3.70	12,389.4	3,592.2	932.6	418,550.73	782,945.04	32° 8' 53.760 N	103° 33' 9.633 W
16,075.0	89.10	358.10	12,390.8	3,687.2	934.1	418,645.67	782,946.53	32° 8' 54.700 N	103° 33' 9.608 W
16,170.0	90.80	353.90	12,390.9	3,781.9	927.5	418,740.41	782,939.90	32° 8' 55.638 N	103° 33' 9.677 W
16,264.0	89.00	352.30	12,391.1	3,875.2	916.2	418,833.72	782,928.61	32° 8' 56.562 N	103° 33' 9.800 W
16,359.0	90.80	353.90	12,391.2	3,969.5	904.8	418,928.03	782,917.20	32° 8' 57.496 N	103° 33' 9.925 W
16,454.0	91.50	354.40	12,389.3	4,064.0	895.1	419,022.51	782,907.52	32° 8' 58.431 N	103° 33' 10.030 W
16,549.0	92.90	354.90	12,385.7	4,158.5	886.3	419,117.03	782,898.67	32° 8' 59.367 N	103° 33' 10.125 W
16,643.0	92.90	357.00	12,380.9	4,252.2	879.6	419,210.67	782,892.04	32° 9' 0.294 N	103° 33' 10.194 W
16,738.0	91.50	359.10	12,377.3	4,347.0	876.4	419,305.53	782,888.81	32° 9' 1.233 N	103° 33' 10.223 W
16,834.0	90.40	0.00	12,375.7	4,443.0	875.7	419,401.51	782,888.05	32° 9' 2.183 N	103° 33' 10.224 W
16,929.0	90.50	358.10	12,374.9	4,538.0	874.1	419,496.49	782,886.48	32° 9' 3.123 N	103° 33' 10.234 W
17,023.0	91.40	0.20	12,373.4	4,632.0	872.7	419,590.46	782,885.09	32° 9' 4.053 N	103° 33' 10.243 W
17,119.0	89.70	3.50	12,372.5	4,727.9	875.8	419,686.39	782,888.18	32° 9' 5.002 N	103° 33' 10.199 W



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Vaca Draw 9418 10 Fed #19H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3401.0usft (Patterson #594)
Site:	Sec 10, T25-S, R33-E	MD Reference:	WELL @ 3401.0usft (Patterson #594)
Well:	Vaca Draw 9418 10 Fed #19H	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
17,130.9	89.67	3.59	12,372.5	4,739.8	876.5	419,698.27	782,888.92	32° 9' 5.119 N	103° 33' 10.189 W
330' FNL Crossed @ 17130.9' MD / 12372.5' TVD									
17,214.0	89.50	4.20	12,373.1	4,822.7	882.2	419,781.18	782,894.56	32° 9' 5.939 N	103° 33' 10.116 W
17,308.0	89.00	3.40	12,374.3	4,916.5	888.4	419,874.96	782,900.79	32° 9' 6.867 N	103° 33' 10.036 W
17,375.0	89.30	2.00	12,375.3	4,983.4	891.6	419,941.88	782,903.95	32° 9' 7.529 N	103° 33' 9.994 W
17,413.0	89.30	2.00	12,375.8	5,021.4	892.9	419,979.85	782,905.27	32° 9' 7.905 N	103° 33' 9.975 W
TD @ 17413.0' MD / 12375.8' TVD									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
157.0	157.0	-0.4	-0.2	First MWD Survey @ 157.0' MD / 157.0' TVD	
12,489.2	12,325.7	117.4	899.7	330' FSL Crossed @ 12489.2' MD / 12325.7' TVD	
17,130.9	12,372.5	4,739.8	876.5	330' FNL Crossed @ 17130.9' MD / 12372.5' TVD	
17,413.0	12,375.8	5,021.4	892.9	TD @ 17413.0' MD / 12375.8' TVD	

Checked By: _____	Approved By: _____	Date: _____
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