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BTA Oil Producers, LLC

Lea County, NM (NAD 83)
Sec 1, T26-S, R32-E
8105 JV-P Mesa #18H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

03 November, 2017





Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well 8105 JV-P Mesa #18H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3340.0usft (Patterson #594)
Site:	Sec 1, T26-S, R32-E	MD Reference:	WELL @ 3340.0usft (Patterson #594)
Well:	8105 JV-P Mesa #18H	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 1, T26-S, R32-E			
Site Position:		Northing:	393,099.20 usft	Latitude:	32° 4' 43.446 N
From:	Map	Easting:	760,413.30 usft	Longitude:	103° 37' 33.646 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	8105 JV-P Mesa #18H					
Well Position	+N/-S	0.0 usft	Northing:	388,433.50 usft	Latitude:	32° 3' 57.234 N
	+E/-W	0.0 usft	Easting:	761,069.80 usft	Longitude:	103° 37' 26.372 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	3,315.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/3/2017	6.93	59.90	47,808.97474008

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	359.34	

Survey Program	Date	11/3/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	817.0	GYRO Survey (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
905.0	14,645.0	MWD Survey (Wellbore #1)	MWD default	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	388,433.50	761,069.80	32° 3' 57.234 N	103° 37' 26.372 W
100.0	0.24	211.29	100.0	-0.2	-0.1	388,433.32	761,069.69	32° 3' 57.232 N	103° 37' 26.374 W
200.0	0.33	176.35	200.0	-0.6	-0.2	388,432.85	761,069.60	32° 3' 57.228 N	103° 37' 26.375 W
300.0	0.34	159.26	300.0	-1.2	-0.1	388,432.29	761,069.72	32° 3' 57.222 N	103° 37' 26.373 W
400.0	0.17	139.68	400.0	-1.6	0.1	388,431.90	761,069.92	32° 3' 57.218 N	103° 37' 26.371 W
500.0	0.18	221.08	500.0	-1.8	0.1	388,431.67	761,069.92	32° 3' 57.216 N	103° 37' 26.371 W
600.0	0.32	178.72	600.0	-2.2	0.0	388,431.27	761,069.82	32° 3' 57.212 N	103° 37' 26.372 W
700.0	0.27	268.93	700.0	-2.5	-0.2	388,430.99	761,069.59	32° 3' 57.209 N	103° 37' 26.375 W
800.0	0.69	288.93	800.0	-2.3	-1.0	388,431.18	761,068.78	32° 3' 57.211 N	103° 37' 26.384 W
817.0	0.69	288.79	817.0	-2.3	-1.2	388,431.24	761,068.59	32° 3' 57.212 N	103° 37' 26.387 W
GYRO Tie-In @ 817.0' MD / 817.0' TVD									



Survey Report - Geographic



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Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3340.0usft (Patterson #594)
Site:	Sec 1, T26-S, R32-E	MD Reference:	WELL @ 3340.0usft (Patterson #594)
Well:	8105 JV-P Mesa #18H	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
905.0	0.80	286.90	905.0	-1.9	-2.3	388,431.59	761,067.50	32° 3' 57.215 N	103° 37' 26.399 W
1,095.0	0.60	303.60	1,095.0	-1.0	-4.4	388,432.53	761,065.40	32° 3' 57.225 N	103° 37' 26.424 W
1,285.0	0.90	54.40	1,285.0	0.4	-4.0	388,433.95	761,065.79	32° 3' 57.239 N	103° 37' 26.419 W
1,475.0	1.10	61.00	1,474.9	2.2	-1.2	388,435.70	761,068.60	32° 3' 57.256 N	103° 37' 26.386 W
1,665.0	0.90	54.50	1,664.9	4.0	1.6	388,437.45	761,071.41	32° 3' 57.273 N	103° 37' 26.353 W
1,855.0	0.80	54.50	1,854.9	5.6	3.9	388,439.09	761,073.70	32° 3' 57.289 N	103° 37' 26.327 W
2,045.0	0.90	45.20	2,044.9	7.4	6.0	388,440.91	761,075.84	32° 3' 57.307 N	103° 37' 26.302 W
2,235.0	0.80	41.40	2,234.8	9.5	8.0	388,442.96	761,077.78	32° 3' 57.327 N	103° 37' 26.279 W
2,425.0	0.50	33.80	2,424.8	11.1	9.3	388,444.64	761,079.11	32° 3' 57.344 N	103° 37' 26.263 W
2,615.0	0.30	32.20	2,614.8	12.3	10.0	388,445.75	761,079.84	32° 3' 57.355 N	103° 37' 26.255 W
2,805.0	0.40	24.80	2,804.8	13.3	10.6	388,446.77	761,080.38	32° 3' 57.365 N	103° 37' 26.248 W
2,994.0	0.80	3.60	2,993.8	15.2	10.9	388,448.69	761,080.74	32° 3' 57.384 N	103° 37' 26.244 W
3,184.0	0.90	355.30	3,183.8	18.0	10.9	388,451.50	761,080.70	32° 3' 57.411 N	103° 37' 26.244 W
3,374.0	1.50	56.10	3,373.7	20.9	12.8	388,454.37	761,082.65	32° 3' 57.440 N	103° 37' 26.221 W
3,564.0	1.10	55.10	3,563.7	23.3	16.4	388,456.80	761,086.21	32° 3' 57.464 N	103° 37' 26.180 W
3,754.0	1.90	63.90	3,753.6	25.7	20.7	388,459.23	761,090.53	32° 3' 57.487 N	103° 37' 26.129 W
3,944.0	1.00	263.50	3,943.6	26.9	21.9	388,460.43	761,091.71	32° 3' 57.499 N	103° 37' 26.116 W
4,134.0	0.60	161.10	4,133.6	25.8	20.6	388,459.30	761,090.39	32° 3' 57.488 N	103° 37' 26.131 W
4,324.0	1.30	145.90	4,323.6	23.1	22.1	388,456.58	761,091.92	32° 3' 57.461 N	103° 37' 26.114 W
4,515.0	1.30	124.00	4,514.5	20.1	25.1	388,453.57	761,094.93	32° 3' 57.431 N	103° 37' 26.079 W
4,702.0	1.20	89.00	4,701.5	18.9	28.8	388,452.42	761,098.64	32° 3' 57.419 N	103° 37' 26.036 W
4,870.0	2.40	146.50	4,869.4	16.0	32.5	388,449.52	761,102.34	32° 3' 57.390 N	103° 37' 25.993 W
5,059.0	6.20	164.80	5,057.8	2.9	37.4	388,436.36	761,107.21	32° 3' 57.260 N	103° 37' 25.937 W
5,249.0	6.20	166.00	5,246.7	-17.0	42.6	388,416.51	761,112.38	32° 3' 57.063 N	103° 37' 25.879 W
5,439.0	6.10	167.40	5,435.6	-36.8	47.3	388,396.70	761,117.06	32° 3' 56.867 N	103° 37' 25.826 W
5,629.0	6.20	167.90	5,624.5	-56.7	51.6	388,376.81	761,121.42	32° 3' 56.670 N	103° 37' 25.777 W
5,819.0	3.50	175.80	5,813.8	-72.5	54.2	388,360.99	761,123.99	32° 3' 56.513 N	103° 37' 25.748 W
6,008.0	3.20	178.30	6,002.5	-83.5	54.8	388,349.97	761,124.57	32° 3' 56.404 N	103° 37' 25.742 W
6,198.0	3.20	180.20	6,192.2	-94.1	54.9	388,339.36	761,124.71	32° 3' 56.299 N	103° 37' 25.741 W
6,388.0	3.30	179.50	6,381.9	-104.9	54.9	388,328.59	761,124.74	32° 3' 56.192 N	103° 37' 25.742 W
6,578.0	3.30	179.00	6,571.6	-115.8	55.1	388,317.66	761,124.88	32° 3' 56.084 N	103° 37' 25.741 W
6,768.0	3.20	178.50	6,761.3	-126.6	55.3	388,306.89	761,125.12	32° 3' 55.978 N	103° 37' 25.739 W
6,957.0	3.30	180.60	6,950.0	-137.3	55.4	388,296.18	761,125.20	32° 3' 55.872 N	103° 37' 25.739 W
7,147.0	3.10	178.80	7,139.7	-147.9	55.5	388,285.57	761,125.25	32° 3' 55.767 N	103° 37' 25.739 W
7,337.0	3.30	192.00	7,329.4	-158.4	54.4	388,275.09	761,124.22	32° 3' 55.663 N	103° 37' 25.752 W
7,526.0	4.50	183.80	7,518.0	-171.1	52.8	388,262.37	761,122.60	32° 3' 55.537 N	103° 37' 25.772 W
7,716.0	4.60	186.90	7,707.4	-186.1	51.4	388,247.36	761,121.19	32° 3' 55.389 N	103° 37' 25.789 W
7,906.0	4.40	190.40	7,896.8	-200.9	49.2	388,232.63	761,118.96	32° 3' 55.243 N	103° 37' 25.816 W
8,095.0	4.00	189.70	8,085.3	-214.5	46.7	388,219.00	761,116.54	32° 3' 55.108 N	103° 37' 25.846 W
8,284.0	3.80	188.70	8,273.8	-227.2	44.7	388,206.32	761,114.48	32° 3' 54.983 N	103° 37' 25.871 W
8,479.0	3.60	184.40	8,468.4	-239.7	43.2	388,193.82	761,113.03	32° 3' 54.859 N	103° 37' 25.888 W
8,669.0	4.00	167.60	8,658.0	-252.1	44.2	388,181.40	761,114.00	32° 3' 54.737 N	103° 37' 25.878 W
8,859.0	3.70	165.80	8,847.6	-264.5	47.1	388,168.99	761,116.92	32° 3' 54.613 N	103° 37' 25.845 W
9,049.0	1.20	170.00	9,037.4	-272.4	49.0	388,161.08	761,118.77	32° 3' 54.535 N	103° 37' 25.824 W
9,143.0	1.10	155.60	9,131.4	-274.2	49.5	388,159.29	761,119.32	32° 3' 54.517 N	103° 37' 25.818 W
9,252.0	4.80	350.40	9,240.3	-270.7	49.2	388,162.84	761,118.99	32° 3' 54.552 N	103° 37' 25.821 W
9,347.0	19.40	7.40	9,332.9	-251.0	50.6	388,182.52	761,120.37	32° 3' 54.747 N	103° 37' 25.804 W
9,442.0	30.10	6.70	9,419.1	-211.6	55.4	388,221.94	761,125.19	32° 3' 55.137 N	103° 37' 25.745 W
9,537.0	35.00	6.20	9,499.1	-160.8	61.1	388,272.71	761,130.92	32° 3' 55.639 N	103° 37' 25.674 W
9,632.0	43.40	3.20	9,572.7	-101.0	65.9	388,332.50	761,135.69	32° 3' 56.230 N	103° 37' 25.614 W
9,727.0	51.70	357.20	9,636.8	-31.0	65.9	388,402.47	761,135.69	32° 3' 56.923 N	103° 37' 25.609 W
9,791.6	54.62	357.34	9,675.5	20.6	63.4	388,454.11	761,133.23	32° 3' 57.434 N	103° 37' 25.634 W
330' FSL Crossed @ 9791.6' MD / 9675.5' TVD									
9,822.0	56.00	357.40	9,692.8	45.6	62.3	388,479.08	761,132.08	32° 3' 57.681 N	103° 37' 25.645 W
9,917.0	60.80	354.30	9,742.6	126.2	56.4	388,559.74	761,126.17	32° 3' 58.480 N	103° 37' 25.708 W



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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
10,012.0	67.70	356.20	9,783.8	211.5	49.3	388,644.96	761,119.13	32° 3' 59.323 N	103° 37' 25.783 W
10,107.0	74.90	358.10	9,814.3	301.3	44.9	388,734.77	761,114.69	32° 4' 0.212 N	103° 37' 25.828 W
10,202.0	87.10	2.00	9,829.1	394.9	45.0	388,828.40	761,114.83	32° 4' 1.139 N	103° 37' 25.819 W
10,325.0	90.00	0.90	9,832.2	517.8	48.1	388,951.31	761,117.94	32° 4' 2.355 N	103° 37' 25.773 W
10,515.0	92.00	0.20	9,828.9	707.8	50.0	389,141.26	761,119.76	32° 4' 4.234 N	103° 37' 25.738 W
10,705.0	90.50	0.10	9,824.8	897.7	50.5	389,331.21	761,120.26	32° 4' 6.114 N	103° 37' 25.717 W
10,894.0	90.10	357.20	9,823.8	1,086.6	46.0	389,520.13	761,115.81	32° 4' 7.984 N	103° 37' 25.755 W
11,083.0	89.00	356.50	9,825.3	1,275.3	35.6	389,708.84	761,105.42	32° 4' 9.852 N	103° 37' 25.861 W
11,273.0	91.60	356.70	9,824.3	1,465.0	24.4	389,898.48	761,094.16	32° 4' 11.729 N	103° 37' 25.977 W
11,463.0	90.70	358.50	9,820.5	1,654.8	16.4	390,088.27	761,086.20	32° 4' 13.608 N	103° 37' 26.055 W
11,652.0	88.90	357.10	9,821.1	1,843.6	9.1	390,277.12	761,078.95	32° 4' 15.477 N	103° 37' 26.125 W
11,842.0	92.20	356.90	9,819.3	2,033.3	-0.8	390,466.82	761,069.01	32° 4' 17.355 N	103° 37' 26.226 W
12,031.0	91.90	358.10	9,812.5	2,222.0	-9.0	390,655.52	761,060.77	32° 4' 19.223 N	103° 37' 26.308 W
12,126.0	88.80	358.30	9,812.0	2,317.0	-12.0	390,750.46	761,057.78	32° 4' 20.162 N	103° 37' 26.335 W
12,221.0	89.50	358.50	9,813.4	2,411.9	-14.7	390,845.41	761,055.13	32° 4' 21.102 N	103° 37' 26.359 W
12,316.0	91.10	358.30	9,812.9	2,506.9	-17.3	390,940.37	761,052.48	32° 4' 22.042 N	103° 37' 26.382 W
12,411.0	92.10	358.00	9,810.2	2,601.8	-20.4	391,035.28	761,049.41	32° 4' 22.981 N	103° 37' 26.411 W
12,506.0	89.30	358.30	9,809.1	2,696.7	-23.5	391,130.21	761,046.35	32° 4' 23.921 N	103° 37' 26.439 W
12,601.0	90.40	358.10	9,809.3	2,791.7	-26.4	391,225.16	761,043.36	32° 4' 24.861 N	103° 37' 26.466 W
12,696.0	92.40	358.10	9,807.0	2,886.6	-29.6	391,320.08	761,040.21	32° 4' 25.800 N	103° 37' 26.496 W
12,790.0	89.90	358.50	9,805.1	2,980.5	-32.4	391,414.01	761,037.43	32° 4' 26.730 N	103° 37' 26.521 W
12,886.0	91.10	358.30	9,804.3	3,076.5	-35.1	391,509.97	761,034.75	32° 4' 27.680 N	103° 37' 26.545 W
12,980.0	88.20	0.10	9,804.8	3,170.4	-36.4	391,603.94	761,033.43	32° 4' 28.610 N	103° 37' 26.553 W
13,075.0	90.00	0.20	9,806.3	3,265.4	-36.1	391,698.93	761,033.68	32° 4' 29.550 N	103° 37' 26.543 W
13,170.0	92.10	359.40	9,804.6	3,360.4	-36.4	391,793.90	761,033.35	32° 4' 30.489 N	103° 37' 26.539 W
13,265.0	89.50	0.80	9,803.3	3,455.4	-36.3	391,888.88	761,033.52	32° 4' 31.429 N	103° 37' 26.530 W
13,360.0	90.80	1.30	9,803.0	3,550.4	-34.5	391,983.86	761,035.26	32° 4' 32.369 N	103° 37' 26.503 W
13,455.0	92.40	1.10	9,800.4	3,645.3	-32.6	392,078.80	761,037.25	32° 4' 33.308 N	103° 37' 26.472 W
13,550.0	89.90	359.40	9,798.5	3,740.3	-32.1	392,173.77	761,037.66	32° 4' 34.248 N	103° 37' 26.460 W
13,645.0	90.80	359.70	9,797.9	3,835.3	-32.9	392,268.77	761,036.91	32° 4' 35.188 N	103° 37' 26.462 W
13,740.0	91.50	358.80	9,796.0	3,930.2	-34.1	392,363.74	761,035.67	32° 4' 36.128 N	103° 37' 26.469 W
13,835.0	89.00	358.50	9,795.6	4,025.2	-36.4	392,458.70	761,033.43	32° 4' 37.068 N	103° 37' 26.487 W
13,930.0	89.40	358.50	9,796.9	4,120.2	-38.9	392,553.66	761,030.95	32° 4' 38.008 N	103° 37' 26.509 W
14,025.0	90.70	357.80	9,796.8	4,215.1	-41.9	392,648.61	761,027.88	32° 4' 38.948 N	103° 37' 26.538 W
14,120.0	91.80	357.60	9,794.7	4,310.0	-45.7	392,743.51	761,024.07	32° 4' 39.887 N	103° 37' 26.575 W
14,215.0	90.00	359.00	9,793.2	4,404.9	-48.5	392,838.45	761,021.25	32° 4' 40.827 N	103° 37' 26.600 W
14,309.0	91.90	358.80	9,791.7	4,498.9	-50.4	392,932.41	761,019.45	32° 4' 41.756 N	103° 37' 26.614 W
14,404.0	89.20	358.30	9,790.8	4,593.9	-52.8	393,027.37	761,017.04	32° 4' 42.696 N	103° 37' 26.635 W
14,499.0	90.60	358.80	9,790.9	4,688.8	-55.2	393,122.34	761,014.64	32° 4' 43.636 N	103° 37' 26.655 W
14,535.6	91.02	358.34	9,790.4	4,725.4	-56.1	393,158.92	761,013.73	32° 4' 43.998 N	103° 37' 26.663 W
330' FNL Crossed @ 14535.6' MD / 9790.4' TVD									
14,595.0	91.70	357.60	9,789.0	4,784.8	-58.2	393,218.27	761,011.62	32° 4' 44.586 N	103° 37' 26.683 W
14,645.0	91.70	357.60	9,787.5	4,834.7	-60.3	393,268.20	761,009.53	32° 4' 45.080 N	103° 37' 26.703 W

TD @ 14645.0' MD / 9787.5' TVD



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Site:	Sec 1, T26-S, R32-E	MD Reference:	WELL @ 3340.0usft (Patterson #594)
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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
817.0	817.0	-2.3	-1.2	GYRO Tie-In @ 817.0' MD / 817.0' TVD
9,791.6	9,675.5	20.6	63.4	330' FSL Crossed @ 9791.6' MD / 9675.5' TVD
14,535.6	9,790.4	4,725.4	-56.1	330' FNL Crossed @ 14535.6' MD / 9790.4' TVD
14,645.0	9,787.5	4,834.7	-60.3	TD @ 14645.0' MD / 9787.5' TVD

Checked By: _____ Approved By: _____ Date: _____