

APR 02 2019

Intent ☐ As Drilled ☒**RECEIVED**API #
30-025-43871

Operator Name: BTA OIL PRODUCERS, LLC	Property Name: GRAMA 8817 16-9 FEDERAL COM	Well Number 5H
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Kick Off Point (KOP)

UL P	Section 16	Township 22S	Range 34E	Lot	Feet 200	From N/S S	Feet 335	From E/W E	County LEA
Latitude 32.384722					Longitude 103.467796			NAD 83	

First Take Point (FTP)

UL P	Section 16	Township 22	Range 34E	Lot	Feet 200	From N/S S	Feet 335	From E/W E	County LEA
Latitude 32.384722					Longitude 103.467796			NAD 83	

Last Take Point (LTP)

UL A	Section 9	Township 22S	Range 34E	Lot	Feet 204	From N/S N	Feet 335	From E/W E	County LEA
Latitude 32.412570					Longitude 103.467435			NAD 83	

Is this well the defining well for the Horizontal Spacing Unit? ☐ NOIs this well an infill well? ☐ YES

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-025-43426

Operator Name: BTA OIL PRODUCERS, LLC	Property Name: GRAMA 8817 16-9 FEDERAL COM	Well Number 2H
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KZ 06/29/2018



HOBBS OCD

APR 02 2019

RECEIVED

BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Sec 16, T22-S, R34-E

Grana 8817 16-9 Fed Com #5H

30-025-43871

Sidetrack #2

Design: Sidetrack #2

QES Survey Report

15 November, 2018





Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Grama 8817 16-9 Fed Com #5H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3504.0usft (Patterson #594)
Site:	Sec 16, T22-S, R34-E	MD Reference:	WELL @ 3504.0usft (Patterson #594)
Well:	Grama 8817 16-9 Fed Com #5H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	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 16, T22-S, R34-E		
Site Position:		Northing:	504,874.80 usft
From:	Map	Easting:	808,619.20 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 23' 5.986 N
		Longitude:	103° 28' 2.920 W
		Grid Convergence:	0.46 °

Well	Grama 8817 16-9 Fed Com #5H		
Well Position	+N/-S	0.0 usft	Northing: 504,874.80 usft
	+E/-W	0.0 usft	Easting: 808,619.20 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 23' 5.986 N
		Longitude:	103° 28' 2.920 W
		Ground Level:	3,479.0 usft

Wellbore	Sidetrack #2		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	10/19/2018	6.77
			Dip Angle (°)
			60.21
			Field Strength (nT)
			47,906.08035416

Design	Sidetrack #2		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	3,563.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			359.66

Survey Program	Date 11/15/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.0	1,690.0	MS Directional Surface Gyros (Wellbore #	Good_gyro
1,854.0	3,563.0	QES MWD Surveys (Wellbore #1)	OWSG (Rev2) MWD
3,650.0	20,560.0	Sidetrack #2 (Sidetrack #2)	OWSG (Rev2) MWD
			Description
			Good Gyro
			OWSG MWD - Standard
			OWSG MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.20	198.56	100.0	-0.2	-0.1	-0.2	0.20	0.20	0.00
200.0	0.08	151.72	200.0	-0.4	-0.1	-0.4	0.16	-0.12	-46.84
300.0	0.08	59.88	300.0	-0.4	0.0	-0.4	0.11	0.00	-91.84
400.0	0.27	4.09	400.0	-0.1	0.1	-0.1	0.23	0.19	-55.79
500.0	0.25	313.07	500.0	0.2	0.0	0.2	0.22	-0.02	-51.02
600.0	0.22	251.31	600.0	0.3	-0.4	0.3	0.24	-0.03	-61.76
700.0	0.19	238.99	700.0	0.2	-0.7	0.2	0.05	-0.03	-12.32
800.0	0.11	260.10	800.0	0.1	-1.0	0.1	0.10	-0.08	21.11



Survey Report



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Site:	Sec 16, T22-S, R34-E	MD Reference:	WELL @ 3504.0usft (Patterson #594)
Well:	Grama 8817 16-9 Fed Com #5H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
900.0	0.03	78.53	900.0	0.1	-1.0	0.1	0.14	-0.08	178.43
1,000.0	0.07	170.48	1,000.0	0.0	-1.0	0.0	0.08	0.04	91.95
1,100.0	0.03	130.64	1,100.0	-0.1	-1.0	-0.1	0.05	-0.04	-39.84
1,200.0	0.27	101.40	1,200.0	-0.1	-0.7	-0.1	0.24	0.24	-29.24
1,300.0	0.41	84.48	1,300.0	-0.1	-0.1	-0.1	0.17	0.14	-16.92
1,400.0	0.41	58.72	1,400.0	0.1	0.5	0.1	0.18	0.00	-25.76
1,500.0	0.11	36.08	1,500.0	0.3	0.9	0.3	0.31	-0.30	-22.64
1,600.0	0.08	219.40	1,600.0	0.4	0.9	0.4	0.19	-0.03	-176.68
1,690.0	0.32	267.49	1,690.0	0.3	0.6	0.3	0.30	0.27	53.43
1,854.0	0.30	216.20	1,854.0	-0.1	-0.1	-0.1	0.16	-0.01	-31.27
2,044.0	0.30	219.50	2,044.0	-0.8	-0.7	-0.8	0.01	0.00	1.74
2,234.0	0.40	238.50	2,234.0	-1.6	-1.6	-1.6	0.08	0.05	10.00
2,424.0	0.50	232.00	2,424.0	-2.4	-2.8	-2.4	0.06	0.05	-3.42
2,614.0	0.50	231.10	2,614.0	-3.5	-4.1	-3.4	0.00	0.00	-0.47
2,803.0	0.60	253.60	2,803.0	-4.3	-5.7	-4.2	0.12	0.05	11.90
2,993.0	0.10	212.50	2,993.0	-4.7	-6.7	-4.6	0.28	-0.26	-21.63
3,183.0	0.40	126.70	3,183.0	-5.2	-6.3	-5.2	0.21	0.16	-45.16
3,373.0	0.40	79.80	3,373.0	-5.5	-5.1	-5.5	0.17	0.00	-24.68
ST2 Tie In									
3,563.0	0.80	84.20	3,562.9	-5.2	-3.1	-5.2	0.21	0.21	2.32
3,650.0	1.10	124.30	3,649.9	-5.7	-1.8	-5.6	0.82	0.34	46.09
3,709.0	4.10	163.50	3,708.9	-8.0	-0.8	-8.0	5.63	5.08	66.44
3,761.0	7.90	172.60	3,760.6	-13.3	0.2	-13.3	7.51	7.31	17.50
3,856.0	7.40	182.30	3,854.7	-25.9	0.8	-25.9	1.46	-0.53	10.21
3,952.0	7.00	178.60	3,950.0	-37.9	0.7	-37.9	0.64	-0.42	-3.85
4,047.0	6.20	177.00	4,044.3	-48.9	1.1	-48.9	0.86	-0.84	-1.68
4,141.0	4.90	174.00	4,137.9	-57.9	1.8	-57.9	1.42	-1.38	-3.19
4,236.0	4.90	173.10	4,232.6	-66.0	2.7	-66.0	0.08	0.00	-0.95
4,330.0	3.00	168.40	4,326.3	-72.4	3.7	-72.4	2.05	-2.02	-5.00
4,425.0	2.10	162.80	4,421.2	-76.5	4.7	-76.5	0.98	-0.95	-5.89
4,520.0	1.10	198.30	4,516.2	-79.0	4.9	-79.0	1.44	-1.05	37.37
4,615.0	1.20	216.00	4,611.2	-80.7	4.1	-80.7	0.39	0.11	18.63
4,710.0	1.40	215.50	4,706.2	-82.4	2.8	-82.4	0.21	0.21	-0.53
4,805.0	1.20	209.70	4,801.1	-84.2	1.6	-84.2	0.25	-0.21	-6.11
4,900.0	1.10	207.40	4,896.1	-85.9	0.7	-85.9	0.12	-0.11	-2.42
4,995.0	1.10	208.50	4,991.1	-87.5	-0.1	-87.5	0.02	0.00	1.16
5,091.0	0.70	200.60	5,087.1	-88.9	-0.8	-88.9	0.44	-0.42	-8.23
5,180.0	0.90	212.30	5,176.1	-90.0	-1.3	-90.0	0.29	0.22	13.15
5,239.0	0.90	189.50	5,235.1	-90.8	-1.7	-90.8	0.60	0.00	-38.64
5,334.0	0.90	184.40	5,330.0	-92.3	-1.8	-92.3	0.08	0.00	-5.37
5,428.0	0.50	185.10	5,424.0	-93.4	-1.9	-93.4	0.43	-0.43	0.74
5,523.0	0.50	113.90	5,519.0	-94.0	-1.6	-94.0	0.61	0.00	-74.95
5,618.0	0.60	102.50	5,614.0	-94.3	-0.7	-94.3	0.16	0.11	-12.00



Survey Report



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Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,714.0	0.40	106.90	5,710.0	-94.5	0.1	-94.5	0.21	-0.21	4.58	
5,809.0	0.50	104.10	5,805.0	-94.7	0.8	-94.7	0.11	0.11	-2.95	
5,904.0	0.40	100.50	5,900.0	-94.9	1.5	-94.9	0.11	-0.11	-3.79	
5,999.0	0.30	99.00	5,995.0	-95.0	2.1	-95.0	0.11	-0.11	-1.58	
6,092.0	0.40	81.00	6,088.0	-95.0	2.7	-95.0	0.16	0.11	-19.35	
6,186.0	0.30	94.20	6,182.0	-94.9	3.2	-94.9	0.14	-0.11	14.04	
6,279.0	0.40	78.40	6,275.0	-94.9	3.8	-94.9	0.15	0.11	-16.99	
6,374.0	1.30	176.80	6,370.0	-95.9	4.2	-95.9	1.49	0.95	103.58	
6,469.0	1.60	176.70	6,465.0	-98.3	4.3	-98.3	0.32	0.32	-0.11	
6,564.0	1.60	180.90	6,559.9	-100.9	4.4	-101.0	0.12	0.00	4.42	
6,659.0	1.50	183.20	6,654.9	-103.5	4.3	-103.5	0.12	-0.11	2.42	
6,754.0	1.60	185.80	6,749.9	-106.1	4.1	-106.1	0.13	0.11	2.74	
6,849.0	1.70	187.70	6,844.8	-108.8	3.8	-108.8	0.12	0.11	2.00	
6,944.0	1.80	189.80	6,939.8	-111.6	3.3	-111.7	0.13	0.11	2.21	
7,039.0	1.10	186.10	7,034.8	-114.0	3.0	-114.0	0.74	-0.74	-3.89	
7,134.0	1.20	183.20	7,129.7	-115.9	2.8	-115.9	0.12	0.11	-3.05	
7,229.0	1.20	190.50	7,224.7	-117.9	2.6	-117.9	0.16	0.00	7.68	
7,324.0	1.30	193.70	7,319.7	-119.9	2.1	-119.9	0.13	0.11	3.37	
7,419.0	1.40	195.60	7,414.7	-122.1	1.6	-122.1	0.12	0.11	2.00	
7,514.0	1.60	198.60	7,509.6	-124.5	0.8	-124.5	0.23	0.21	3.16	
7,609.0	1.50	206.00	7,604.6	-126.8	-0.1	-126.8	0.24	-0.11	7.79	
7,704.0	1.40	213.90	7,699.6	-128.9	-1.3	-128.9	0.24	-0.11	8.32	
7,799.0	1.60	216.90	7,794.5	-130.9	-2.8	-130.9	0.23	0.21	3.16	
7,893.0	1.50	222.20	7,888.5	-132.9	-4.4	-132.9	0.19	-0.11	5.64	
7,988.0	1.40	225.90	7,983.5	-134.6	-6.1	-134.6	0.14	-0.11	3.89	
8,083.0	1.60	231.30	8,078.4	-136.3	-7.9	-136.2	0.26	0.21	5.68	
8,178.0	0.40	177.40	8,173.4	-137.4	-8.9	-137.4	1.48	-1.26	-56.74	
8,273.0	0.40	172.40	8,268.4	-138.1	-8.9	-138.0	0.04	0.00	-5.26	
8,368.0	0.40	189.10	8,363.4	-138.7	-8.9	-138.7	0.12	0.00	17.58	
8,463.0	0.40	218.80	8,458.4	-139.3	-9.2	-139.3	0.22	0.00	31.26	
8,557.0	0.40	234.10	8,552.4	-139.8	-9.6	-139.7	0.11	0.00	16.28	
8,652.0	0.40	268.80	8,647.4	-140.0	-10.2	-139.9	0.25	0.00	36.53	
8,747.0	0.70	274.60	8,742.4	-139.9	-11.1	-139.9	0.32	0.32	6.11	
8,842.0	0.60	295.30	8,837.4	-139.7	-12.2	-139.6	0.27	-0.11	21.79	
8,937.0	0.40	290.00	8,932.4	-139.3	-12.9	-139.3	0.22	-0.21	-5.58	
9,031.0	0.50	258.60	9,026.4	-139.3	-13.6	-139.2	0.28	0.11	-33.40	
9,126.0	1.10	273.20	9,121.4	-139.3	-14.9	-139.3	0.66	0.63	15.37	
9,222.0	1.10	259.60	9,217.4	-139.5	-16.8	-139.4	0.27	0.00	-14.17	
9,317.0	1.30	256.50	9,312.4	-139.9	-18.7	-139.8	0.22	0.21	-3.26	
9,412.0	0.40	206.20	9,407.3	-140.4	-19.9	-140.3	1.15	-0.95	-52.95	
9,506.0	0.70	259.60	9,501.3	-140.8	-20.6	-140.7	0.60	0.32	56.81	
9,601.0	1.80	282.50	9,596.3	-140.6	-22.7	-140.5	1.25	1.16	24.11	
9,696.0	1.00	244.00	9,691.3	-140.6	-24.9	-140.5	1.26	-0.84	-40.53	
9,807.0	0.80	239.40	9,802.3	-141.5	-26.4	-141.3	0.19	-0.18	-4.14	



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Survey

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9,907.0	7.70	240.80	9,901.9	-145.1	-32.8	-144.9	6.90	6.90	1.40
10,000.0	12.60	291.40	9,993.6	-144.4	-47.8	-144.1	10.44	5.27	54.41
10,095.0	24.60	307.30	10,083.5	-128.6	-73.3	-128.2	13.60	12.63	16.74
10,190.0	34.90	327.80	10,166.1	-93.4	-103.6	-92.8	15.10	10.84	21.58
10,285.0	41.40	349.30	10,241.1	-39.3	-124.0	-38.5	15.48	6.84	22.63
10,380.0	48.70	357.40	10,308.2	27.4	-131.5	28.2	9.76	7.68	8.53
10,475.0	56.90	2.30	10,365.7	102.9	-131.5	103.7	9.56	8.63	5.16
330' FSL Crossed @ 10506.0' MD / 10382.0' TVD									
10,506.0	59.61	2.78	10,382.0	129.3	-130.4	130.1	8.83	8.73	1.56
10,570.0	65.20	3.70	10,411.6	185.9	-127.1	186.6	8.83	8.74	1.43
10,664.0	75.00	4.00	10,443.6	274.0	-121.2	274.7	10.43	10.43	0.32
10,759.0	86.10	4.00	10,459.1	367.3	-114.7	368.0	11.68	11.68	0.00
10,854.0	89.60	4.40	10,462.7	462.0	-107.7	462.6	3.71	3.68	0.42
10,935.0	89.90	4.20	10,463.1	542.7	-101.7	543.3	0.45	0.37	-0.25
11,059.0	91.90	3.90	10,461.1	666.4	-92.9	666.9	1.63	1.61	-0.24
11,154.0	91.70	3.90	10,458.1	761.1	-86.4	761.6	0.21	-0.21	0.00
11,249.0	92.00	4.40	10,455.1	855.8	-79.6	856.3	0.61	0.32	0.53
11,344.0	92.10	4.70	10,451.7	950.5	-72.0	950.9	0.33	0.11	0.32
11,439.0	91.90	3.70	10,448.3	1,045.2	-65.1	1,045.5	1.07	-0.21	-1.05
11,534.0	91.90	2.10	10,445.2	1,140.0	-60.3	1,140.3	1.68	0.00	-1.68
11,628.0	92.00	0.20	10,442.0	1,233.9	-58.4	1,234.2	2.02	0.11	-2.02
11,723.0	93.00	358.40	10,437.8	1,328.8	-59.6	1,329.1	2.17	1.05	-1.89
11,818.0	92.90	359.80	10,433.0	1,423.7	-61.1	1,424.0	1.48	-0.11	1.47
11,913.0	93.00	359.80	10,428.1	1,518.5	-61.4	1,518.9	0.11	0.11	0.00
12,008.0	91.30	359.80	10,424.5	1,613.5	-61.7	1,613.8	1.79	-1.79	0.00
12,102.0	90.90	359.80	10,422.7	1,707.5	-62.0	1,707.8	0.43	-0.43	0.00
12,197.0	91.00	359.50	10,421.1	1,802.4	-62.6	1,802.8	0.33	0.11	-0.32
12,292.0	91.00	359.60	10,419.5	1,897.4	-63.4	1,897.8	0.11	0.00	0.11
12,387.0	91.00	359.60	10,417.8	1,992.4	-64.0	1,992.7	0.00	0.00	0.00
12,482.0	91.00	359.60	10,416.1	2,087.4	-64.7	2,087.7	0.00	0.00	0.00
12,577.0	91.10	359.50	10,414.4	2,182.4	-65.4	2,182.7	0.15	0.11	-0.11
12,672.0	91.00	359.10	10,412.7	2,277.3	-66.6	2,277.7	0.43	-0.11	-0.42
12,767.0	91.50	359.50	10,410.6	2,372.3	-67.8	2,372.7	0.67	0.53	0.42
12,862.0	92.00	359.10	10,407.7	2,467.3	-68.9	2,467.6	0.67	0.53	-0.42
12,956.0	90.80	359.80	10,405.4	2,561.2	-69.8	2,561.6	1.48	-1.28	0.74
13,051.0	91.00	0.30	10,403.9	2,656.2	-69.7	2,656.6	0.57	0.21	0.53
13,146.0	90.90	0.50	10,402.3	2,751.2	-69.1	2,751.6	0.24	-0.11	0.21
13,241.0	90.90	0.50	10,400.8	2,846.2	-68.2	2,846.5	0.00	0.00	0.00
13,335.0	90.90	0.30	10,399.4	2,940.2	-67.6	2,940.5	0.21	0.00	-0.21
13,430.0	90.80	0.20	10,398.0	3,035.2	-67.2	3,035.5	0.15	-0.11	-0.11
13,526.0	90.90	359.80	10,396.5	3,131.1	-67.2	3,131.5	0.43	0.10	-0.42
13,621.0	90.80	0.20	10,395.1	3,226.1	-67.2	3,226.5	0.43	-0.11	0.42
13,715.0	91.90	0.20	10,392.9	3,320.1	-66.9	3,320.4	1.17	1.17	0.00



Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Grama 8817 16-9 Fed Com #5H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3504.0usft (Patterson #594)
Site:	Sec 16, T22-S, R34-E	MD Reference:	WELL @ 3504.0usft (Patterson #594)
Well:	Grama 8817 16-9 Fed Com #5H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,810.0	91.50	359.80	10,390.1	3,415.1	-66.9	3,415.4	0.60	-0.42	-0.42
13,905.0	91.30	359.50	10,387.8	3,510.0	-67.4	3,510.4	0.38	-0.21	-0.32
14,000.0	90.60	359.80	10,386.2	3,605.0	-68.0	3,605.4	0.80	-0.74	0.32
14,095.0	90.70	359.60	10,385.1	3,700.0	-68.5	3,700.4	0.24	0.11	-0.21
14,189.0	90.80	359.10	10,383.9	3,794.0	-69.6	3,794.3	0.54	0.11	-0.53
14,283.0	91.90	359.60	10,381.7	3,888.0	-70.6	3,888.3	1.29	1.17	0.53
14,378.0	91.60	1.00	10,378.8	3,982.9	-70.1	3,983.3	1.51	-0.32	1.47
14,474.0	89.60	1.20	10,377.8	4,078.9	-68.3	4,079.2	2.09	-2.08	0.21
14,568.0	89.40	1.40	10,378.6	4,172.9	-66.2	4,173.2	0.30	-0.21	0.21
14,663.0	90.00	0.20	10,379.1	4,267.8	-64.8	4,268.2	1.41	0.63	-1.26
14,758.0	91.70	359.50	10,377.7	4,362.8	-65.1	4,363.1	1.94	1.79	-0.74
14,853.0	91.90	359.60	10,374.7	4,457.8	-65.8	4,458.1	0.24	0.21	0.11
14,947.0	92.00	359.60	10,371.5	4,551.7	-66.5	4,552.0	0.11	0.11	0.00
15,042.0	91.20	359.50	10,368.8	4,646.7	-67.2	4,647.0	0.85	-0.84	-0.11
15,137.0	91.90	358.80	10,366.3	4,741.6	-68.6	4,742.0	1.04	0.74	-0.74
15,232.0	92.00	358.90	10,363.0	4,836.6	-70.6	4,836.9	0.15	0.11	0.11
15,327.0	91.90	359.10	10,359.8	4,931.5	-72.2	4,931.8	0.24	-0.11	0.21
15,421.0	92.20	358.80	10,356.4	5,025.4	-73.9	5,025.8	0.45	0.32	-0.32
15,516.0	92.20	359.60	10,352.8	5,120.3	-75.3	5,120.7	0.84	0.00	0.84
15,611.0	92.10	0.00	10,349.2	5,215.3	-75.6	5,215.6	0.43	-0.11	0.42
15,706.0	91.60	0.50	10,346.2	5,310.2	-75.2	5,310.6	0.74	-0.53	0.53
15,801.0	91.00	359.50	10,344.0	5,405.2	-75.2	5,405.5	1.23	-0.63	-1.05
15,895.0	90.90	359.10	10,342.4	5,499.2	-76.3	5,499.5	0.44	-0.11	-0.43
15,988.0	91.10	359.10	10,340.8	5,592.1	-77.8	5,592.5	0.22	0.22	0.00
16,083.0	91.40	358.60	10,338.7	5,687.1	-79.7	5,687.5	0.61	0.32	-0.53
16,178.0	91.60	358.20	10,336.3	5,782.0	-82.3	5,782.4	0.47	0.21	-0.42
16,273.0	92.00	358.20	10,333.3	5,876.9	-85.3	5,877.3	0.42	0.42	0.00
16,368.0	92.80	357.70	10,329.3	5,971.8	-88.7	5,972.2	0.99	0.84	-0.53
16,463.0	91.10	358.90	10,326.1	6,066.7	-91.5	6,067.1	2.19	-1.79	1.26
16,558.0	90.20	0.90	10,325.0	6,161.7	-91.7	6,162.1	2.31	-0.95	2.11
16,653.0	90.20	2.10	10,324.7	6,256.6	-89.2	6,257.1	1.26	0.00	1.26
16,748.0	90.30	2.10	10,324.2	6,351.6	-85.7	6,352.0	0.11	0.11	0.00
16,843.0	90.50	1.90	10,323.6	6,446.5	-82.4	6,446.9	0.30	0.21	-0.21
16,938.0	90.00	1.90	10,323.2	6,541.5	-79.3	6,541.8	0.53	-0.53	0.00
17,033.0	90.30	2.30	10,322.9	6,636.4	-75.8	6,636.7	0.53	0.32	0.42
17,127.0	90.10	2.10	10,322.6	6,730.3	-72.2	6,730.6	0.30	-0.21	-0.21
17,222.0	90.00	1.70	10,322.5	6,825.3	-69.0	6,825.6	0.43	-0.11	-0.42
17,317.0	90.10	1.40	10,322.4	6,920.2	-66.5	6,920.5	0.33	0.11	-0.32
17,411.0	90.10	1.00	10,322.3	7,014.2	-64.5	7,014.5	0.43	0.00	-0.43
17,505.0	90.20	1.00	10,322.0	7,108.2	-62.8	7,108.5	0.11	0.11	0.00
17,600.0	90.30	0.90	10,321.6	7,203.2	-61.3	7,203.4	0.15	0.11	-0.11
17,695.0	90.40	1.00	10,321.0	7,298.2	-59.7	7,298.4	0.15	0.11	0.11
17,789.0	90.00	0.90	10,320.7	7,392.2	-58.1	7,392.4	0.44	-0.43	-0.11



Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Grama 8817 16-9 Fed Com #5H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3504.0usft (Patterson #594)
Site:	Sec 16, T22-S, R34-E	MD Reference:	WELL @ 3504.0usft (Patterson #594)
Well:	Grama 8817 16-9 Fed Com #5H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,884.0	90.20	0.90	10,320.5	7,487.2	-56.6	7,487.4	0.21	0.21	0.00
17,979.0	90.00	0.90	10,320.4	7,582.1	-55.2	7,582.3	0.21	-0.21	0.00
18,074.0	90.30	1.00	10,320.1	7,677.1	-53.6	7,677.3	0.33	0.32	0.11
18,169.0	92.20	0.50	10,318.0	7,772.1	-52.3	7,772.3	2.07	2.00	-0.53
18,263.0	92.10	359.80	10,314.5	7,866.0	-52.1	7,866.2	0.75	-0.11	-0.74
18,358.0	92.20	0.00	10,310.9	7,961.0	-52.3	7,961.1	0.24	0.11	0.21
18,453.0	92.20	359.60	10,307.3	8,055.9	-52.6	8,056.1	0.42	0.00	-0.42
18,548.0	92.30	359.80	10,303.6	8,150.8	-53.1	8,151.0	0.24	0.11	0.21
18,643.0	92.20	0.20	10,299.8	8,245.7	-53.1	8,245.9	0.43	-0.11	0.42
18,737.0	91.90	0.30	10,296.5	8,339.7	-52.7	8,339.8	0.34	-0.32	0.11
18,833.0	92.20	0.30	10,293.0	8,435.6	-52.2	8,435.8	0.31	0.31	0.00
18,927.0	92.10	0.20	10,289.5	8,529.6	-51.8	8,529.7	0.15	-0.11	-0.11
19,022.0	92.10	359.80	10,286.0	8,624.5	-51.8	8,624.6	0.42	0.00	-0.42
19,117.0	92.40	0.00	10,282.3	8,719.4	-51.9	8,719.6	0.38	0.32	0.21
19,212.0	92.90	0.20	10,277.9	8,814.3	-51.8	8,814.5	0.57	0.53	0.21
19,307.0	93.70	0.00	10,272.4	8,909.2	-51.6	8,909.3	0.87	0.84	-0.21
19,402.0	94.20	0.20	10,265.9	9,003.9	-51.4	9,004.1	0.57	0.53	0.21
19,497.0	93.10	359.80	10,259.9	9,098.7	-51.4	9,098.9	1.23	-1.16	-0.42
19,592.0	93.10	359.50	10,254.7	9,193.6	-52.0	9,193.7	0.32	0.00	-0.32
19,686.0	93.10	359.10	10,249.6	9,287.4	-53.2	9,287.6	0.42	0.00	-0.43
19,781.0	93.00	358.80	10,244.6	9,382.3	-54.9	9,382.5	0.33	-0.11	-0.32
19,876.0	93.00	358.40	10,239.6	9,477.1	-57.2	9,477.3	0.42	0.00	-0.42
19,971.0	93.10	358.10	10,234.6	9,572.0	-60.1	9,572.1	0.33	0.11	-0.32
20,065.0	93.00	357.90	10,229.6	9,665.8	-63.4	9,666.0	0.24	-0.11	-0.21
20,160.0	92.90	359.30	10,224.7	9,760.6	-65.7	9,760.8	1.48	-0.11	1.47
20,255.0	92.90	359.10	10,219.9	9,855.5	-67.0	9,855.7	0.21	0.00	-0.21
20,350.0	91.90	359.30	10,215.9	9,950.4	-68.4	9,950.6	1.07	-1.05	0.21
330' FNL Crossed @ 20431.5' MD / 10213.2' TVD									
20,431.5	91.81	1.12	10,213.2	10,031.8	-68.1	10,032.1	2.24	-0.11	2.23
20,444.0	91.80	1.40	10,212.8	10,044.3	-67.8	10,044.6	2.24	-0.11	2.23
20,524.0	91.80	1.70	10,210.3	10,124.3	-65.6	10,124.5	0.37	0.00	0.38
TD @ 20560.0' MD / 10209.2' TVD									
20,560.0	91.80	1.70	10,209.2	10,160.2	-64.6	10,160.4	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,563.0	3,562.9	-5.2	-3.1	ST2 Tie In
10,506.0	10,382.0	129.3	-130.4	330' FSL Crossed @ 10506.0' MD / 10382.0' TVD
20,431.5	10,213.2	10,031.8	-68.1	330' FNL Crossed @ 20431.5' MD / 10213.2' TVD
20,560.0	10,209.2	10,160.2	-64.6	TD @ 20560.0' MD / 10209.2' TVD



Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Grama 8817 16-9 Fed Com #5H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3504.0usft (Patterson #594)
Site:	Sec 16, T22-S, R34-E	MD Reference:	WELL @ 3504.0usft (Patterson #594)
Well:	Grama 8817 16-9 Fed Com #5H	North Reference:	Grid
Wellbore:	Sidetrack #2	Survey Calculation Method:	Minimum Curvature
Design:	Sidetrack #2	Database:	EDM 5000.1 Single User Db

Checked By: _____ Approved By: _____ Date: _____