



30.015-44750

BTA Oil Producers, LLC

Eddy County, New Mexico (NAD 83)

Sec 29, T23, R28-E

Ogden 20509 29-32 Fed Com #2H

Wellbore #1

Design: Wellbore #1

QES Survey Report

18 August, 2018

**NM OIL CONSERVATION
ARTESIA DISTRICT**

JAN 25 2019

RECEIVED





Survey Report



Company: BTA Oil Producers, LLC
 Project: Eddy County, New Mexico (NAD 83)
 Site: Sec 29, T23, R28-E
 Well: Ogden 20509 29-32 Fed Com #2H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
 TVD Reference: WELL @ 3097.0usft (Patterson #594)
 MD Reference: WELL @ 3097.0usft (Patterson #594)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

Project Eddy County, New Mexico (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 29, T23, R28-E

Site Position: Northing: 466,607.70 usft Latitude: 32° 16' 57.266 N
 From: Map Easting: 611,639.60 usft Longitude: 104° 6' 21.036 W
 Position Uncertainty: 0.0 usft Slot Radius: 13-3/16 " Grid Convergence: 0.12 °

Well Ogden 20509 29-32 Fed Com #2H

Well Position +N/-S 0.0 usft Northing: 466,577.60 usft Latitude: 32° 16' 56.968 N
 +E/-W 0.0 usft Easting: 611,639.70 usft Longitude: 104° 6' 21.036 W
 Position Uncertainty 0.0 usft Wellhead Elevation: usft Ground Level: 3,072.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	6/14/2018	7.10	60.02	47,816.40098425

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	171.80

Survey Program Date 8/18/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	328.0	MS Surveys (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro
494.0	16,910.0	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)	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	0.30	303.45	100.0	0.1	-0.2	-0.2	0.30	0.30	0.00
200.0	0.85	227.67	200.0	-0.2	-1.0	0.1	0.83	0.55	-75.78
300.0	1.20	267.26	300.0	-0.8	-2.6	0.4	0.77	0.35	39.59
328.0	1.32	277.54	328.0	-0.7	-3.2	0.3	0.91	0.43	36.71
Gyro Tie-In @ 328.1' MD / 328.1' TVD									
328.1	1.32	277.54	328.1	-0.7	-3.2	0.3	0.00	0.00	0.00
494.0	0.00	309.10	494.0	-0.5	-5.1	-0.2	0.80	-0.80	0.00
615.0	3.90	68.70	614.9	1.0	-1.3	-1.2	3.22	3.22	0.00
795.0	3.90	71.00	794.4	5.2	10.2	-3.7	0.09	0.00	1.28



Survey Report



Company: BTA Oil Producers, LLC
 Project: Eddy County, New Mexico (NAD 83)
 Site: Sec 29, T23, R28-E
 Well: Ogden 20509 29-32 Fed Com #2H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
 TVD Reference: WELL @ 3097.0usft (Patterson #594)
 MD Reference: WELL @ 3097.0usft (Patterson #594)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
899.0	4.00	71.70	898.2	7.5	17.0	-5.0	0.11	0.10	0.67
1,088.0	4.00	68.70	1,086.7	12.0	29.4	-7.7	0.11	0.00	-1.59
1,184.0	4.40	66.80	1,182.5	14.7	35.9	-9.4	0.44	0.42	-1.98
1,279.0	6.70	73.10	1,277.0	17.7	44.6	-11.2	2.50	2.42	6.63
1,375.0	7.80	76.20	1,372.3	20.9	56.3	-12.6	1.22	1.15	3.23
1,468.0	8.80	85.90	1,464.3	22.9	69.5	-12.7	1.85	1.08	10.43
1,564.0	8.40	86.30	1,559.2	23.9	83.8	-11.7	0.42	-0.42	0.42
1,659.0	7.80	85.60	1,653.3	24.8	97.2	-10.7	0.64	-0.63	-0.74
1,754.0	8.90	93.80	1,747.3	24.8	110.9	-8.7	1.70	1.16	8.63
1,848.0	8.80	97.00	1,840.1	23.5	125.3	-5.4	0.53	-0.11	3.40
1,943.0	9.20	102.30	1,934.0	21.0	140.0	-0.8	0.97	0.42	5.58
2,038.0	9.10	105.60	2,027.8	17.3	154.6	4.9	0.56	-0.11	3.47
2,133.0	7.60	102.10	2,121.8	14.0	168.0	10.1	1.67	-1.58	-3.68
LL Crossed @ 2180.0' MD / 2168.3' TVD									
2,180.0	7.57	96.76	2,168.3	13.0	174.1	12.0	1.50	-0.07	-11.37
2,228.0	7.60	91.30	2,215.9	12.5	180.4	13.3	1.50	0.07	-11.37
2,323.0	7.80	93.60	2,310.1	12.0	193.1	15.7	0.39	0.21	2.42
2,418.0	7.60	92.80	2,404.2	11.3	205.8	18.2	0.24	-0.21	-0.84
2,590.0	6.80	95.40	2,574.9	9.8	227.3	22.8	0.50	-0.47	1.51
2,685.0	7.30	94.50	2,669.1	8.8	239.0	25.4	0.54	0.53	-0.95
2,780.0	9.50	91.30	2,763.1	8.1	252.8	28.0	2.37	2.32	-3.37
2,874.0	10.20	87.30	2,855.7	8.3	268.9	30.1	1.04	0.74	-4.26
2,969.0	11.20	88.40	2,949.1	9.0	286.5	32.0	1.07	1.05	1.16
3,064.0	11.70	63.90	3,042.2	13.5	304.4	30.1	5.11	0.53	-25.79
3,159.0	12.60	86.10	3,135.2	18.4	323.4	27.9	4.98	0.95	23.37
3,254.0	12.20	89.90	3,227.9	19.1	343.8	30.1	0.96	-0.42	4.00
3,349.0	10.40	94.50	3,321.1	18.5	362.3	33.4	2.12	-1.89	4.84
3,444.0	9.80	96.40	3,414.6	16.9	378.9	37.3	0.72	-0.63	2.00
3,539.0	10.30	93.60	3,508.2	15.5	395.4	41.1	0.74	0.53	-2.95
3,633.0	11.00	93.50	3,600.6	14.4	412.8	44.6	0.74	0.74	-0.11
3,728.0	12.20	92.80	3,693.6	13.4	431.9	48.4	1.27	1.26	-0.74
3,823.0	10.20	94.20	3,786.8	12.2	450.3	52.1	2.12	-2.11	1.47
3,918.0	10.20	95.90	3,880.3	10.8	467.0	56.0	0.32	0.00	1.79
4,013.0	10.10	96.80	3,973.8	8.9	483.7	60.2	0.20	-0.11	0.95
4,108.0	9.30	89.40	4,067.5	8.0	499.6	63.3	1.56	-0.84	-7.79
4,203.0	9.90	88.20	4,161.1	8.3	515.5	65.3	0.67	0.63	-1.26
4,297.0	10.30	88.50	4,253.7	8.8	531.9	67.1	0.43	0.43	0.32
4,392.0	9.50	86.30	4,347.3	9.5	548.2	68.7	0.93	-0.84	-2.32
4,487.0	9.60	85.70	4,440.9	10.6	564.0	69.9	0.15	0.11	-0.63
4,582.0	9.60	85.20	4,534.6	11.9	579.8	70.9	0.09	0.00	-0.53
4,677.0	9.70	84.50	4,628.3	13.3	595.6	71.8	0.16	0.11	-0.74
4,771.0	9.90	83.40	4,720.9	15.0	611.5	72.4	0.29	0.21	-1.17
4,866.0	10.50	84.00	4,814.4	16.9	628.3	72.9	0.64	0.63	0.63



Survey Report



Company: BTA Oil Producers, LLC
 Project: Eddy County, New Mexico (NAD 83)
 Site: Sec 29, T23, R28-E
 Well: Ogden 20509 29-32 Fed Com #2H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
 TVD Reference: WELL @ 3097.0usft (Patterson #594)
 MD Reference: WELL @ 3097.0usft (Patterson #594)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
4,961.0	9.10	89.80	4,908.0	17.8	644.4	74.3	1.80	-1.47	6.11
5,055.0	8.80	91.30	5,000.9	17.7	659.0	76.5	0.40	-0.32	1.60
5,150.0	8.90	92.20	5,094.7	17.2	673.6	79.0	0.18	0.11	0.95
5,244.0	9.00	91.00	5,187.6	16.8	688.2	81.5	0.23	0.11	-1.28
5,339.0	9.10	90.10	5,281.4	16.7	703.2	83.8	0.18	0.11	-0.95
5,434.0	9.40	88.20	5,375.2	16.9	718.4	85.7	0.45	0.32	-2.00
5,529.0	9.80	86.40	5,468.8	17.6	734.3	87.3	0.53	0.42	-1.89
5,623.0	9.90	86.30	5,561.4	18.7	750.3	88.5	0.11	0.11	-0.11
5,718.0	10.60	85.40	5,654.9	19.9	767.2	89.7	0.76	0.74	-0.95
5,814.0	10.40	84.50	5,749.3	21.4	784.6	90.7	0.27	-0.21	-0.94
5,908.0	10.40	84.50	5,841.8	23.1	801.5	91.5	0.00	0.00	0.00
6,003.0	9.90	86.10	5,935.3	24.4	818.2	92.5	0.60	-0.53	1.68
6,098.0	9.10	84.30	6,029.0	25.7	833.8	93.4	0.90	-0.84	-1.89
6,192.0	8.00	81.00	6,121.9	27.5	847.6	93.7	1.28	-1.17	-3.51
6,287.0	6.90	81.50	6,216.1	29.4	859.8	93.6	1.16	-1.16	0.53
6,382.0	5.20	79.80	6,310.6	31.0	869.7	93.4	1.80	-1.79	-1.79
6,476.0	4.40	76.80	6,404.3	32.6	877.4	92.9	0.89	-0.85	-3.19
6,571.0	4.00	71.00	6,499.0	34.5	884.1	92.0	0.61	-0.42	-6.11
6,667.0	2.50	73.60	6,594.9	36.2	889.3	91.0	1.57	-1.56	2.71
6,762.0	0.40	166.60	6,689.8	36.4	891.3	91.1	2.69	-2.21	97.89
6,856.0	0.80	208.30	6,783.8	35.5	891.1	91.9	0.60	0.43	44.36
6,951.0	1.10	226.40	6,878.8	34.3	890.1	93.0	0.44	0.32	19.05
7,046.0	1.30	221.30	6,973.8	32.9	888.7	94.2	0.24	0.21	-5.37
7,141.0	0.40	297.00	7,068.8	32.2	887.7	94.7	1.33	-0.95	79.68
7,236.0	0.30	310.20	7,163.8	32.5	887.2	94.4	0.13	-0.11	13.89
7,330.0	0.30	308.80	7,257.8	32.8	886.9	94.0	0.01	0.00	-1.49
7,425.0	0.50	294.20	7,352.8	33.2	886.3	93.6	0.23	0.21	-15.37
7,520.0	0.70	278.20	7,447.8	33.4	885.3	93.2	0.27	0.21	-16.84
7,615.0	1.30	247.40	7,542.8	33.1	883.8	93.3	0.83	0.63	-32.42
7,709.0	2.50	245.00	7,636.7	31.8	880.9	94.2	1.28	1.28	-2.55
7,804.0	1.60	242.20	7,731.6	30.3	877.9	95.2	0.95	-0.95	-2.95
7,899.0	1.40	234.10	7,826.6	29.0	875.8	96.2	0.31	-0.21	-8.53
7,994.0	1.60	243.10	7,921.6	27.7	873.6	97.2	0.32	0.21	9.47
8,088.0	0.30	194.20	8,015.6	26.9	872.4	97.8	1.51	-1.38	-52.02
8,183.0	0.30	233.70	8,110.6	26.5	872.2	98.2	0.21	0.00	41.58
8,278.0	0.60	213.50	8,205.6	25.9	871.7	98.6	0.35	0.32	-21.26
8,373.0	0.80	58.50	8,300.6	25.9	872.0	98.8	1.44	0.21	-163.16
8,467.0	0.80	61.80	8,394.6	26.5	873.1	98.3	0.05	0.00	3.51
8,562.0	0.50	320.40	8,489.5	27.2	873.4	97.7	1.08	-0.32	-106.74
8,657.0	1.10	311.10	8,584.5	28.1	872.5	96.6	0.64	0.63	-9.79
8,752.0	1.30	299.50	8,679.5	29.2	870.8	95.3	0.33	0.21	-12.21
8,847.0	1.20	295.60	8,774.5	30.2	869.0	94.1	0.14	-0.11	-4.11
8,958.0	7.10	166.20	8,885.2	24.0	869.6	100.3	7.13	5.32	-116.58
9,052.0	17.70	168.70	8,976.9	4.3	873.8	120.4	11.29	11.28	2.66



Survey Report



Company: BTA Oil Producers, LLC
 Project: Eddy County, New Mexico (NAD 83)
 Site: Sec 29, T23, R28-E
 Well: Ogden 20509 29-32 Fed Com #2H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
 TVD Reference: WELL @ 3097.0usft (Patterson #594)
 MD Reference: WELL @ 3097.0usft (Patterson #594)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
330' FNL Crossed @ 9136.6' MD / 9054.9' TVD									
9,136.6	27.41	170.65	9,054.9	-27.6	879.5	152.8	11.50	11.47	2.30
9,147.0	28.60	170.80	9,064.1	-32.4	880.3	157.6	11.50	11.48	1.47
9,242.0	36.00	170.80	9,144.4	-82.5	888.4	208.4	7.79	7.79	0.00
9,337.0	43.40	168.50	9,217.4	-142.1	899.4	269.0	7.94	7.79	-2.42
9,431.0	50.40	169.80	9,281.6	-209.5	912.2	337.5	7.51	7.45	1.38
9,526.0	55.70	171.00	9,338.7	-284.3	924.9	413.3	5.67	5.58	1.26
9,621.0	61.70	177.80	9,388.1	-365.0	932.6	494.3	8.79	6.32	7.16
9,710.0	65.90	182.20	9,427.4	-444.8	932.6	573.3	6.48	4.72	4.94
9,759.0	65.10	181.90	9,447.7	-489.4	931.0	617.2	1.73	-1.63	-0.61
9,853.0	75.30	178.40	9,479.5	-577.7	930.8	704.6	11.40	10.85	-3.72
9,948.0	86.20	181.20	9,494.7	-671.3	931.1	797.3	11.84	11.47	2.95
10,042.0	86.60	180.50	9,500.7	-765.1	929.7	889.9	0.86	0.43	-0.74
10,136.0	87.90	180.30	9,505.2	-859.0	929.1	982.7	1.40	1.38	-0.21
10,230.0	87.90	180.60	9,508.6	-952.9	928.3	1,075.6	0.32	0.00	0.32
10,324.0	87.60	181.40	9,512.3	-1,046.9	926.7	1,168.3	0.91	-0.32	0.85
10,418.0	87.70	181.70	9,516.2	-1,140.7	924.2	1,260.9	0.34	0.11	0.32
10,512.0	90.40	180.10	9,517.7	-1,234.7	922.7	1,353.7	3.34	2.87	-1.70
10,606.0	90.40	181.00	9,517.1	-1,328.7	921.8	1,446.6	0.96	0.00	0.96
10,700.0	90.10	180.80	9,516.6	-1,422.7	920.3	1,539.4	0.38	-0.32	-0.21
10,794.0	89.80	179.90	9,516.7	-1,516.7	919.7	1,632.4	1.01	-0.32	-0.96
10,888.0	89.00	177.50	9,517.7	-1,610.6	921.9	1,725.7	2.69	-0.85	-2.55
10,982.0	88.90	177.80	9,519.4	-1,704.5	925.7	1,819.2	0.34	-0.11	0.32
11,075.0	89.90	178.70	9,520.4	-1,797.5	928.6	1,911.6	1.45	1.08	0.97
11,170.0	89.90	179.60	9,520.6	-1,892.5	930.0	2,005.8	0.95	0.00	0.95
11,264.0	90.00	178.20	9,520.7	-1,986.5	931.8	2,099.1	1.49	0.11	-1.49
11,358.0	90.30	178.50	9,520.4	-2,080.4	934.5	2,192.4	0.45	0.32	0.32
11,452.0	89.90	177.80	9,520.2	-2,174.4	937.5	2,285.9	0.86	-0.43	-0.74
11,546.0	89.50	178.00	9,520.7	-2,268.3	941.0	2,379.3	0.48	-0.43	0.21
11,641.0	89.00	177.70	9,522.0	-2,363.2	944.5	2,473.8	0.61	-0.53	-0.32
11,735.0	89.90	178.00	9,522.9	-2,457.2	948.1	2,567.3	1.01	0.96	0.32
11,829.0	91.40	177.50	9,521.8	-2,551.1	951.7	2,660.7	1.68	1.60	-0.53
11,923.0	91.70	177.30	9,519.3	-2,645.0	956.0	2,754.3	0.38	0.32	-0.21
12,017.0	91.70	177.00	9,516.5	-2,738.8	960.7	2,847.8	0.32	0.00	-0.32
12,111.0	92.50	177.00	9,513.0	-2,832.6	965.6	2,941.4	0.85	0.85	0.00
12,205.0	91.80	177.10	9,509.5	-2,926.4	970.4	3,034.9	0.75	-0.74	0.11
12,299.0	90.80	177.70	9,507.4	-3,020.3	974.7	3,128.4	1.24	-1.06	0.64
12,393.0	89.00	177.70	9,507.5	-3,114.2	978.5	3,221.9	1.91	-1.91	0.00
12,487.0	89.60	177.50	9,508.7	-3,208.1	982.4	3,315.4	0.67	0.64	-0.21
12,581.0	91.40	177.10	9,507.9	-3,302.0	986.8	3,409.0	1.96	1.91	-0.43
12,675.0	89.50	177.50	9,507.1	-3,395.9	991.3	3,502.6	2.07	-2.02	0.43
12,769.0	91.40	177.70	9,506.4	-3,489.8	995.2	3,596.1	2.03	2.02	0.21
12,864.0	89.30	178.20	9,505.8	-3,584.7	998.6	3,690.5	2.27	-2.21	0.53



Survey Report



Company: BTA Oil Producers, LLC
 Project: Eddy County, New Mexico (NAD 83)
 Site: Sec 29, T23, R28-E
 Well: Ogden 20509 29-32 Fed Com #2H
 Wellbore: Wellbore #1
 Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
 TVD Reference: WELL @ 3097.0usft (Patterson #594)
 MD Reference: WELL @ 3097.0usft (Patterson #594)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 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)
12,957.0	89.20	178.40	9,507.0	-3,677.7	1,001.3	3,782.9	0.24	-0.11	0.22
13,052.0	90.80	178.20	9,507.0	-3,772.6	1,004.2	3,877.3	1.70	1.68	-0.21
13,146.0	90.90	178.20	9,505.6	-3,866.6	1,007.1	3,970.7	0.11	0.11	0.00
13,240.0	88.90	177.10	9,505.8	-3,960.5	1,011.0	4,064.2	2.43	-2.13	-1.17
13,334.0	90.40	177.10	9,506.4	-4,054.4	1,015.7	4,157.8	1.60	1.60	0.00
13,428.0	89.50	176.80	9,506.5	-4,148.2	1,020.7	4,251.4	1.01	-0.96	-0.32
13,521.0	89.10	179.60	9,507.6	-4,241.2	1,023.7	4,343.8	3.04	-0.43	3.01
13,615.0	87.80	179.10	9,510.1	-4,335.1	1,024.7	4,437.0	1.48	-1.38	-0.53
13,709.0	89.10	178.70	9,512.7	-4,429.1	1,026.5	4,530.2	1.45	1.38	-0.43
13,804.0	89.50	178.20	9,513.8	-4,524.0	1,029.1	4,624.6	0.67	0.42	-0.53
13,898.0	90.70	178.40	9,513.7	-4,618.0	1,031.9	4,718.0	1.29	1.28	0.21
13,992.0	90.70	178.00	9,512.5	-4,711.9	1,034.8	4,811.4	0.43	0.00	-0.43
14,086.0	92.20	179.80	9,510.1	-4,805.9	1,036.6	4,904.6	2.49	1.60	1.91
14,181.0	93.10	179.90	9,505.8	-4,900.8	1,036.9	4,998.6	0.95	0.95	0.11
14,274.0	91.60	180.60	9,501.9	-4,993.7	1,036.5	5,090.5	1.78	-1.61	0.75
14,369.0	88.90	181.00	9,501.5	-5,088.7	1,035.2	5,184.3	2.87	-2.84	0.42
14,462.0	92.50	181.90	9,500.4	-5,181.6	1,032.8	5,276.0	3.99	3.87	0.97
14,556.0	88.90	181.00	9,499.2	-5,275.6	1,030.4	5,368.6	3.95	-3.83	-0.96
14,651.0	89.60	181.90	9,500.5	-5,370.5	1,028.0	5,462.3	1.20	0.74	0.95
14,745.0	87.60	180.60	9,502.8	-5,464.5	1,026.0	5,554.9	2.54	-2.13	-1.38
14,838.0	87.50	180.60	9,506.8	-5,557.4	1,025.0	5,646.8	0.11	-0.11	0.00
14,932.0	86.60	179.60	9,511.6	-5,651.3	1,024.8	5,739.7	1.43	-0.96	-1.06
15,027.0	88.60	178.20	9,515.6	-5,746.2	1,026.7	5,833.8	2.57	2.11	-1.47
15,121.0	89.50	178.00	9,517.1	-5,840.1	1,029.8	5,927.3	0.98	0.96	-0.21
15,216.0	90.00	178.00	9,517.6	-5,935.0	1,033.1	6,021.7	0.53	0.53	0.00
15,309.0	89.90	177.70	9,517.6	-6,028.0	1,036.6	6,114.2	0.34	-0.11	-0.32
15,403.0	89.60	177.80	9,518.0	-6,121.9	1,040.3	6,207.7	0.34	-0.32	0.11
15,498.0	87.80	177.10	9,520.2	-6,216.8	1,044.5	6,302.2	2.03	-1.89	-0.74
15,592.0	92.20	177.30	9,520.2	-6,310.6	1,049.1	6,395.7	4.69	4.68	0.21
15,686.0	92.20	177.30	9,516.6	-6,404.5	1,053.5	6,489.2	0.00	0.00	0.00
15,780.0	92.80	177.30	9,512.5	-6,498.3	1,057.9	6,582.7	0.64	0.64	0.00
15,874.0	91.00	175.20	9,509.4	-6,592.0	1,064.1	6,676.4	2.94	-1.91	-2.23
15,967.0	90.30	175.20	9,508.3	-6,684.7	1,071.9	6,769.2	0.75	-0.75	0.00
16,062.0	87.30	174.10	9,510.3	-6,779.2	1,080.7	6,864.1	3.36	-3.16	-1.16
16,156.0	90.90	176.60	9,511.8	-6,872.9	1,088.3	6,957.8	4.66	3.83	2.66
16,250.0	90.90	180.50	9,510.3	-6,966.8	1,090.7	7,051.2	4.15	0.00	4.15
16,344.0	90.40	180.50	9,509.2	-7,060.8	1,089.9	7,144.1	0.53	-0.53	0.00
16,438.0	87.10	179.30	9,511.3	-7,154.8	1,090.0	7,237.1	3.74	-3.51	-1.28
16,532.0	92.10	180.30	9,511.9	-7,248.7	1,090.4	7,330.1	5.42	5.32	1.06
330' FSL Crossed @ 16588.5' MD / 9509.6' TVD									
16,588.5	92.58	180.60	9,509.6	-7,305.2	1,089.9	7,386.0	1.00	0.85	0.53
16,626.0	92.90	180.80	9,507.8	-7,342.6	1,089.5	7,423.0	1.00	0.85	0.53
16,719.0	93.20	181.20	9,502.9	-7,435.5	1,087.9	7,514.6	0.54	0.32	0.43
16,814.0	93.90	181.00	9,497.0	-7,530.3	1,086.0	7,608.2	0.77	0.74	-0.21



Survey Report



Company: BTA Oil Producers, LLC
Project: Eddy County, New Mexico (NAD 83)
Site: Sec 29, T23, R28-E
Well: Ogden 20509 29-32 Fed Com #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Ogden 20509 29-32 Fed Com #2H
TVD Reference: WELL @ 3097.0usft (Patterson #594)
MD Reference: WELL @ 3097.0usft (Patterson #594)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
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)
16,858.0	93.70	180.60	9,494.1	-7,574.2	1,085.4	7,651.6	1.01	-0.45	-0.91
TD @ 16910.0' MD / 9490.7' TVD									
16,910.0	93.70	180.60	9,490.7	-7,626.1	1,084.9	7,702.9	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
328.1	328.1	-0.7	-3.2	Gyro Tie-in @ 328.1' MD / 328.1' TVD
2,180.0	2,168.3	13.0	174.1	LL Crossed @ 2180.0' MD / 2168.3' TVD
9,136.6	9,054.9	-27.6	879.5	330' FNL Crossed @ 9136.6' MD / 9054.9' TVD
16,588.5	9,509.6	-7,305.2	1,089.9	330' FSL Crossed @ 16588.5' MD / 9509.6' TVD
16,910.0	9,490.7	-7,626.1	1,084.9	TD @ 16910.0' MD / 9490.7' TVD

Checked By: _____ Approved By: _____ Date: _____