



HOBBS OCD

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30-025-43843

BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Sec 27, T25-S, R33-E

Rojo AE 7811 JV-P Federal Com #2H

Wellbore #1

Design: Wellbore #1

QES Survey Report

01 August, 2018





Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo AE 7811 JV-P Federal Com #2H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3369.0usft (Patterson #597)
Site:	Sec 27, T25-S, R33-E	MD Reference:	WELL @ 3369.0usft (Patterson #597)
Well:	Rojo AE 7811 JV-P Federal Com #2H	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		
ap Zone:	New Mexico Eastern Zone		

Site	Sec 27, T25-S, R33-E			
Site Position:		Northing:	403,958.90 usft	Latitude: 32° 6' 29.435 N
From: Map		Easting:	782,026.00 usft	Longitude: 103° 33' 21.547 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.41 °

Well	Rojo AE 7811 JV-P Federal Com #2H			
Well Position	+N/-S	0.0 usft	Northing: 403,965.60 usft	Latitude: 32° 6' 29.655 N
	+E/-W	0.0 usft	Easting: 779,875.70 usft	Longitude: 103° 33' 46.546 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level: 3,344.0 usft

Wellbore	Wellbore #1					
gnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	IGRF2015	6/21/2018	6.83	59.94	47,766.97404785	

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	178.24	

Survey Program	Date 7/24/2018				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	1,050.0	MS Gyro Surveys (Wellbore #1)	Good_gyro	Good Gyro	
1,168.0	16,901.0	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	0.26	191.44	100.0	-0.2	0.0	0.2	0.26	0.26	0.00	
200.0	0.15	257.14	200.0	-0.5	-0.2	0.5	0.24	-0.11	65.70	
300.0	0.42	230.51	300.0	-0.7	-0.6	0.7	0.29	0.27	-26.63	
400.0	0.59	205.50	400.0	-1.4	-1.1	1.4	0.27	0.17	-25.01	
500.0	0.70	216.15	500.0	-2.4	-1.7	2.3	0.16	0.11	10.65	
600.0	0.70	234.72	600.0	-3.2	-2.6	3.2	0.23	0.00	18.57	
700.0	0.69	252.01	700.0	-3.8	-3.6	3.7	0.21	-0.01	17.29	
800.0	1.17	253.27	800.0	-4.3	-5.2	4.1	0.48	0.48	1.26	
900.0	1.12	266.17	899.9	-4.6	-7.1	4.4	0.26	-0.05	12.90	



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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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	1.07	262.75	999.9	-4.8	-9.0	4.5	0.08	-0.05	-3.42
Gyro Tie-in @ 1050.0' MD / 1049.9' TVD									
1,050.0	1.01	250.03	1,049.9	-5.0	-9.9	4.7	0.48	-0.12	-25.44
1,168.0	1.10	271.90	1,167.9	-5.3	-12.0	5.0	0.35	0.08	18.53
1,261.0	1.10	270.40	1,260.9	-5.3	-13.8	4.9	0.03	0.00	-1.61
1,356.0	1.10	263.80	1,355.9	-5.4	-15.6	4.9	0.13	0.00	-6.95
1,450.0	1.10	267.10	1,449.8	-5.5	-17.4	5.0	0.07	0.00	3.51
1,545.0	1.10	279.60	1,544.8	-5.4	-19.2	4.8	0.25	0.00	13.16
1,640.0	1.10	277.60	1,639.8	-5.1	-21.1	4.5	0.04	0.00	-2.11
1,735.0	1.20	283.30	1,734.8	-4.8	-22.9	4.1	0.16	0.11	6.00
1,829.0	1.30	280.30	1,828.8	-4.4	-24.9	3.6	0.13	0.11	-3.19
1,924.0	1.40	280.80	1,923.7	-4.0	-27.1	3.1	0.11	0.11	0.53
2,019.0	1.10	133.90	2,018.7	-4.4	-27.6	3.5	2.52	-0.32	-154.63
2,115.0	1.50	123.10	2,114.7	-5.7	-25.9	4.9	0.49	0.42	-11.25
2,210.0	1.10	127.40	2,209.7	-6.9	-24.1	6.2	0.43	-0.42	4.53
2,305.0	1.10	123.70	2,304.7	-8.0	-22.6	7.3	0.07	0.00	-3.89
2,399.0	1.10	121.40	2,398.6	-9.0	-21.1	8.3	0.05	0.00	-2.45
2,492.0	1.10	115.10	2,491.6	-9.8	-19.6	9.2	0.13	0.00	-6.77
2,587.0	1.10	106.60	2,586.6	-10.5	-17.9	9.9	0.17	0.00	-8.95
2,682.0	1.10	105.20	2,681.6	-11.0	-16.1	10.5	0.03	0.00	-1.47
2,778.0	1.20	101.30	2,777.6	-11.4	-14.2	11.0	0.13	0.10	-4.06
2,872.0	1.20	99.20	2,871.6	-11.8	-12.3	11.4	0.05	0.00	-2.23
2,967.0	1.30	95.70	2,966.5	-12.0	-10.2	11.7	0.13	0.11	-3.68
3,062.0	1.30	86.20	3,061.5	-12.1	-8.1	11.8	0.23	0.00	-10.00
3,158.0	1.40	83.60	3,157.5	-11.9	-5.8	11.7	0.12	0.10	-2.71
3,253.0	1.60	79.70	3,252.4	-11.5	-3.4	11.4	0.24	0.21	-4.11
3,348.0	1.90	73.00	3,347.4	-10.8	-0.6	10.8	0.38	0.32	-7.05
3,443.0	1.90	70.80	3,442.4	-9.8	2.4	9.9	0.08	0.00	-2.32
3,539.0	1.60	72.70	3,538.3	-8.9	5.2	9.0	0.32	-0.31	1.98
3,634.0	1.40	75.70	3,633.3	-8.2	7.6	8.4	0.23	-0.21	3.16
3,729.0	1.30	77.10	3,728.2	-7.7	9.8	8.0	0.11	-0.11	1.47
3,824.0	1.20	77.60	3,823.2	-7.2	11.8	7.6	0.11	-0.11	0.53
3,919.0	1.10	78.50	3,918.2	-6.8	13.7	7.2	0.11	-0.11	0.95
4,014.0	1.10	75.80	4,013.2	-6.4	15.4	6.9	0.05	0.00	-2.84
4,109.0	1.10	74.40	4,108.2	-6.0	17.2	6.5	0.03	0.00	-1.47
4,204.0	1.20	79.00	4,203.2	-5.5	19.1	6.1	0.14	0.11	4.84
4,298.0	1.70	81.70	4,297.1	-5.1	21.4	5.8	0.54	0.53	2.87
4,393.0	1.80	85.30	4,392.1	-4.8	24.3	5.5	0.16	0.11	3.79
4,488.0	1.30	171.30	4,487.1	-5.7	25.9	6.5	2.26	-0.53	90.53
4,583.0	2.30	184.80	4,582.0	-8.7	25.9	9.5	1.14	1.05	14.21
4,676.0	1.10	91.70	4,675.0	-10.6	26.7	11.4	2.80	-1.29	-100.11
4,770.0	1.40	79.20	4,769.0	-10.4	28.7	11.3	0.43	0.32	-13.30
4,866.0	1.10	82.40	4,864.9	-10.1	30.8	11.0	0.32	-0.31	3.33



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4,940.0	1.10	78.80	4,938.9	-9.8	32.2	10.8	0.09	0.00	-4.86
5,032.0	0.70	62.00	5,030.9	-9.4	33.5	10.4	0.52	-0.43	-18.26
5,127.0	2.90	23.30	5,125.9	-6.9	35.0	8.0	2.52	2.32	-40.74
5,222.0	2.90	22.60	5,220.7	-2.5	36.9	3.6	0.04	0.00	-0.74
5,317.0	4.10	33.00	5,315.6	2.6	39.6	-1.4	1.42	1.26	10.95
5,412.0	4.70	33.80	5,410.3	8.7	43.7	-7.3	0.63	0.63	0.84
5,507.0	4.50	32.10	5,505.0	15.0	47.8	-13.6	0.25	-0.21	-1.79
5,601.0	4.20	30.00	5,598.7	21.1	51.5	-19.6	0.36	-0.32	-2.23
5,695.0	3.90	29.80	5,692.5	26.9	54.8	-25.2	0.32	-0.32	-0.21
5,789.0	3.80	31.00	5,786.2	32.3	58.0	-30.6	0.14	-0.11	1.28
5,884.0	4.90	39.50	5,881.0	38.2	62.2	-36.2	1.34	1.16	8.95
5,980.0	4.80	39.60	5,976.6	44.4	67.4	-42.3	0.10	-0.10	0.10
6,074.0	4.40	39.60	6,070.3	50.2	72.2	-48.0	0.43	-0.43	0.00
6,169.0	4.20	38.20	6,165.1	55.8	76.6	-53.4	0.24	-0.21	-1.47
6,263.0	4.20	38.40	6,258.8	61.2	80.9	-58.7	0.02	0.00	0.21
6,357.0	5.40	34.40	6,352.5	67.5	85.5	-64.9	1.32	1.28	-4.26
6,453.0	5.50	34.20	6,448.0	75.1	90.7	-72.2	0.11	0.10	-0.21
6,548.0	5.60	33.80	6,542.6	82.7	95.8	-79.7	0.11	0.11	-0.42
6,643.0	5.50	33.70	6,637.2	90.3	100.9	-87.2	0.11	-0.11	-0.11
6,738.0	5.40	32.80	6,731.7	97.9	105.9	-94.6	0.14	-0.11	-0.95
6,833.0	5.10	32.80	6,826.3	105.2	110.6	-101.7	0.32	-0.32	0.00
6,928.0	4.80	33.70	6,921.0	112.0	115.1	-108.4	0.33	-0.32	0.95
7,024.0	4.80	34.50	7,016.6	118.7	119.6	-115.0	0.07	0.00	0.83
7,119.0	4.40	33.10	7,111.3	125.0	123.8	-121.2	0.44	-0.42	-1.47
7,214.0	4.20	31.90	7,206.1	131.0	127.6	-127.0	0.23	-0.21	-1.26
7,309.0	4.80	35.30	7,300.8	137.2	131.8	-133.1	0.69	0.63	3.58
7,404.0	4.80	35.10	7,395.4	143.7	136.4	-139.5	0.02	0.00	-0.21
7,498.0	4.60	36.50	7,489.1	150.0	140.9	-145.6	0.25	-0.21	1.49
7,594.0	4.20	36.00	7,584.8	155.9	145.2	-151.4	0.42	-0.42	-0.52
7,689.0	3.80	36.10	7,679.6	161.3	149.1	-156.6	0.42	-0.42	0.11
7,783.0	3.40	36.00	7,773.4	166.0	152.6	-161.3	0.43	-0.43	-0.11
7,879.0	3.10	35.30	7,869.3	170.5	155.8	-165.6	0.32	-0.31	-0.73
7,974.0	2.70	37.50	7,964.1	174.3	158.6	-169.4	0.44	-0.42	2.32
8,069.0	1.80	48.30	8,059.1	177.1	161.1	-172.1	1.04	-0.95	11.37
8,164.0	1.00	83.60	8,154.0	178.2	163.0	-173.1	1.20	-0.84	37.16
8,259.0	1.00	84.10	8,249.0	178.4	164.7	-173.2	0.01	0.00	0.53
8,354.0	0.80	90.30	8,344.0	178.4	166.2	-173.2	0.23	-0.21	6.53
8,449.0	0.80	52.00	8,439.0	178.8	167.3	-173.6	0.55	0.00	-40.32
8,544.0	0.60	50.50	8,534.0	179.6	168.3	-174.3	0.21	-0.21	-1.58
8,637.0	0.30	60.70	8,627.0	180.0	168.8	-174.7	0.33	-0.32	10.97
8,677.0	0.30	75.70	8,667.0	180.1	169.0	-174.8	0.20	0.00	37.50
8,764.0	4.90	179.20	8,753.9	176.4	169.3	-171.1	5.72	5.29	118.97
8,860.0	18.60	180.40	8,847.7	156.9	169.3	-151.6	14.27	14.27	1.25



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8,955.0	27.10	181.50	8,935.1	120.1	168.6	-114.8	8.96	8.95	1.16
9,050.0	33.20	182.20	9,017.2	72.4	167.0	-67.2	6.43	6.42	0.74
9,144.0	38.70	180.10	9,093.3	17.2	166.0	-12.1	6.00	5.85	-2.23
9,239.0	47.20	178.50	9,162.8	-47.4	166.8	52.5	9.02	8.95	-1.68
9,334.0	57.20	180.30	9,220.9	-122.4	167.5	127.5	10.63	10.53	1.89
330' HL Crossed @ 9341.6' MD / 9225.0' TVD									
9,341.6	58.21	180.37	9,225.0	-128.8	167.5	133.9	13.28	13.26	0.94
9,429.0	69.80	181.10	9,263.2	-207.2	166.5	212.2	13.28	13.26	0.83
9,554.0	79.30	181.10	9,296.5	-327.5	164.2	332.4	7.60	7.60	0.00
9,649.0	86.00	178.90	9,308.6	-421.7	164.2	426.5	7.42	7.05	-2.32
9,744.0	89.20	177.10	9,312.6	-516.5	167.5	521.4	3.86	3.37	-1.89
9,840.0	89.30	176.80	9,313.9	-612.4	172.6	617.4	0.33	0.10	-0.31
9,935.0	89.90	180.40	9,314.5	-707.4	174.9	712.4	3.84	0.63	3.79
10,030.0	90.60	181.50	9,314.1	-802.3	173.3	807.3	1.37	0.74	1.16
10,125.0	88.30	180.80	9,315.0	-897.3	171.4	902.1	2.53	-2.42	-0.74
10,220.0	87.80	180.40	9,318.3	-992.2	170.4	997.0	0.67	-0.53	-0.42
10,315.0	89.80	181.10	9,320.3	-1,087.2	169.2	1,091.9	2.23	2.11	0.74
10,409.0	90.00	181.70	9,320.4	-1,181.2	166.9	1,185.7	0.67	0.21	0.64
10,504.0	90.50	180.40	9,320.0	-1,276.2	165.2	1,280.6	1.47	0.53	-1.37
10,599.0	90.80	180.60	9,318.9	-1,371.2	164.3	1,375.6	0.38	0.32	0.21
10,692.0	91.10	181.70	9,317.4	-1,464.1	162.5	1,468.4	1.23	0.32	1.18
10,787.0	91.60	182.20	9,315.1	-1,559.0	159.2	1,563.2	0.74	0.53	0.53
10,882.0	91.10	179.40	9,312.9	-1,654.0	157.9	1,658.1	2.99	-0.53	-2.95
10,977.0	91.40	179.20	9,310.8	-1,749.0	159.1	1,753.0	0.38	0.32	-0.21
11,072.0	91.70	179.70	9,308.3	-1,843.9	160.0	1,848.0	0.61	0.32	0.53
11,167.0	91.70	179.60	9,305.5	-1,938.9	160.6	1,942.9	0.11	0.00	-0.11
11,262.0	89.60	179.00	9,304.4	-2,033.9	161.7	2,037.9	2.30	-2.21	-0.63
11,357.0	90.40	179.20	9,304.4	-2,128.8	163.2	2,132.9	0.87	0.84	0.21
11,452.0	90.20	179.20	9,303.9	-2,223.8	164.5	2,227.8	0.21	-0.21	0.00
11,548.0	88.60	178.70	9,304.9	-2,319.8	166.3	2,323.8	1.75	-1.67	-0.52
11,643.0	88.70	179.00	9,307.1	-2,414.8	168.2	2,418.8	0.33	0.11	0.32
11,738.0	85.20	179.40	9,312.2	-2,509.6	169.5	2,513.6	3.71	-3.68	0.42
11,832.0	86.10	178.50	9,319.3	-2,603.3	171.3	2,607.3	1.35	0.96	-0.96
11,927.0	88.60	178.20	9,323.7	-2,698.2	174.0	2,702.2	2.65	2.63	-0.32
12,022.0	89.90	178.00	9,324.9	-2,793.1	177.1	2,797.2	1.38	1.37	-0.21
12,117.0	88.90	178.00	9,325.9	-2,888.0	180.4	2,892.2	1.05	-1.05	0.00
12,213.0	90.00	177.80	9,326.9	-2,984.0	184.0	2,988.2	1.16	1.15	-0.21
12,307.0	90.00	178.20	9,326.9	-3,077.9	187.2	3,082.2	0.43	0.00	0.43
12,402.0	89.70	178.20	9,327.1	-3,172.9	190.2	3,177.2	0.32	-0.32	0.00
12,496.0	89.60	178.20	9,327.7	-3,266.8	193.2	3,271.2	0.11	-0.11	0.00
12,594.0	92.20	179.60	9,326.1	-3,364.8	195.1	3,369.2	3.01	2.65	1.43
12,689.0	92.90	179.60	9,321.9	-3,459.7	195.7	3,464.1	0.74	0.74	0.00
12,783.0	93.00	179.00	9,317.1	-3,553.5	196.9	3,557.9	0.65	0.11	-0.64
12,879.0	90.70	178.30	9,314.0	-3,649.5	199.1	3,653.9	2.50	-2.40	-0.73



Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM (NAD 83)
Site: Sec 27, T25-S, R33-E
Well: Rojo AE 7811 JV-P Federal Com #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well Rojo AE 7811 JV-P Federal Com #2H
TVD Reference: WELL @ 3369.0usft (Patterson #597)
MD Reference: WELL @ 3369.0usft (Patterson #597)
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)
12,974.0	91.40	178.50	9,312.2	-3,744.4	201.8	3,748.8	0.77	0.74	0.21
13,069.0	89.00	178.00	9,311.9	-3,839.4	204.7	3,843.8	2.58	-2.53	-0.53
13,164.0	89.00	177.60	9,313.6	-3,934.3	208.3	3,938.8	0.42	0.00	-0.42
13,259.0	89.40	177.30	9,314.9	-4,029.2	212.6	4,033.8	0.53	0.42	-0.32
13,354.0	90.30	177.60	9,315.1	-4,124.1	216.8	4,128.8	1.00	0.95	0.32
13,449.0	90.60	177.80	9,314.4	-4,219.0	220.6	4,223.8	0.38	0.32	0.21
13,543.0	88.50	177.10	9,315.1	-4,312.9	224.8	4,317.8	2.35	-2.23	-0.74
13,638.0	89.40	177.30	9,316.9	-4,407.8	229.4	4,412.7	0.97	0.95	0.21
13,732.0	90.00	179.40	9,317.4	-4,501.7	232.1	4,506.7	2.32	0.64	2.23
13,827.0	90.60	181.00	9,316.9	-4,596.7	231.8	4,601.7	1.80	0.63	1.68
13,921.0	91.50	181.90	9,315.1	-4,690.7	229.4	4,695.5	1.35	0.96	0.96
14,015.0	91.00	180.80	9,313.1	-4,784.6	227.2	4,789.3	1.29	-0.53	-1.17
14,111.0	90.70	180.80	9,311.7	-4,880.6	225.9	4,885.2	0.31	-0.31	0.00
14,205.0	91.40	181.00	9,309.9	-4,974.6	224.4	4,979.1	0.77	0.74	0.21
14,299.0	89.50	180.80	9,309.2	-5,068.5	222.9	5,073.0	2.03	-2.02	-0.21
14,395.0	88.90	181.00	9,310.5	-5,164.5	221.4	5,168.9	0.66	-0.63	0.21
14,490.0	89.20	181.70	9,312.1	-5,259.5	219.2	5,263.7	0.80	0.32	0.74
14,585.0	89.80	182.20	9,312.9	-5,354.4	215.9	5,358.5	0.82	0.63	0.53
14,681.0	90.00	182.00	9,313.1	-5,450.4	212.4	5,454.3	0.29	0.21	-0.21
14,776.0	91.10	182.60	9,312.2	-5,545.3	208.6	5,549.1	1.32	1.16	0.63
14,871.0	90.80	181.70	9,310.6	-5,640.2	205.0	5,643.8	1.00	-0.32	-0.95
14,966.0	90.30	180.80	9,309.7	-5,735.2	203.0	5,738.7	1.08	-0.53	-0.95
15,062.0	90.80	181.30	9,308.8	-5,831.1	201.2	5,834.6	0.74	0.52	0.52
15,157.0	89.40	178.90	9,308.6	-5,926.1	201.0	5,929.5	2.92	-1.47	-2.53
15,251.0	90.00	178.90	9,309.1	-6,020.1	202.8	6,023.5	0.64	0.64	0.00
15,346.0	90.00	178.90	9,309.1	-6,115.1	204.7	6,118.5	0.00	0.00	0.00
15,441.0	89.70	179.00	9,309.4	-6,210.1	206.4	6,213.5	0.33	-0.32	0.11
15,536.0	90.40	179.20	9,309.3	-6,305.1	207.9	6,308.5	0.77	0.74	0.21
15,632.0	90.90	179.20	9,308.2	-6,401.1	209.2	6,404.5	0.52	0.52	0.00
15,727.0	88.50	177.80	9,308.7	-6,496.0	211.7	6,499.5	2.92	-2.53	-1.47
15,821.0	88.10	177.10	9,311.5	-6,589.9	215.9	6,593.4	0.86	-0.43	-0.74
15,915.0	89.60	177.80	9,313.4	-6,683.8	220.1	6,687.4	1.76	1.60	0.74
16,010.0	91.10	178.50	9,312.8	-6,778.7	223.2	6,782.4	1.74	1.58	0.74
16,105.0	90.70	178.50	9,311.3	-6,873.7	225.6	6,877.4	0.42	-0.42	0.00
16,200.0	92.00	179.60	9,309.1	-6,968.6	227.2	6,972.3	1.79	1.37	1.16
16,295.0	87.90	178.20	9,309.1	-7,063.6	229.0	7,067.3	4.56	-4.32	-1.47
16,390.0	87.90	178.00	9,312.6	-7,158.5	232.2	7,162.2	0.21	0.00	-0.21
16,485.0	88.20	178.50	9,315.9	-7,253.4	235.1	7,257.2	0.61	0.32	0.53
16,580.0	88.90	178.90	9,318.3	-7,348.3	237.2	7,352.1	0.85	0.74	0.42
330' HL Crossed @ 16621.3' MD / 9318.9' TVD									
16,621.3	89.29	179.33	9,318.9	-7,389.6	237.9	7,393.4	1.42	0.95	1.05
16,675.0	89.80	179.90	9,319.3	-7,443.3	238.2	7,447.1	1.42	0.95	1.05
16,769.0	90.80	180.10	9,318.8	-7,537.3	238.2	7,541.1	1.08	1.06	0.21



Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo AE 7811 JV-P Federal Com #2H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3369.0usft (Patterson #597)
Site:	Sec 27, T25-S, R33-E	MD Reference:	WELL @ 3369.0usft (Patterson #597)
Well:	Rojo AE 7811 JV-P Federal Com #2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

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)
16,841.0	91.60	180.30	9,317.3	-7,609.3	238.0	7,613.0	1.15	1.11	0.28
TD @ 16901.0' MD / 9315.7' TVD									
16,901.0	91.60	180.30	9,315.7	-7,669.3	237.7	7,672.9	0.00	0.00	0.00

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,050.0	1,049.9	-5.0	-9.9	Gyro Tie-in @ 1050.0' MD / 1049.9' TVD
9,341.6	9,225.0	-128.8	167.5	330' HL Crossed @ 9341.6' MD / 9225.0' TVD
16,621.3	9,318.9	-7,389.6	237.9	330' HL Crossed @ 16621.3' MD / 9318.9' TVD
16,901.0	9,315.7	-7,669.3	237.7	TD @ 16901.0' MD / 9315.7' TVD

Checked By: _____ Approved By: _____ Date: _____