



NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 12 2017

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BTA Oil Producers, LLC

Eddy County, New Mexico

Sec 20, T23S, R29E

20702 Harroun Ranch Federal Com #2H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

07 March, 2017

**Please provide signature
page for directional survey**





Survey Report - Geographic



Company: BTA Oil Producers, LLC
Project: Eddy County, New Mexico
Site: Sec 20, T23S, R29E
Well: 20702 Harroun Ranch Federal Com #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 20702 Harroun Ranch Federal Com #2H
TVD Reference: WELL @ 2983.0usft (Nomac #94)
MD Reference: WELL @ 2983.0usft (Nomac #94)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

Project Eddy County, New Mexico

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site Sec 20, T23S, R29E

Site Position: **From:** Map **Northings:** 467,011.30 usft **Latitude:** 32° 17' 0.701 N
Position Uncertainty: 0.0 usft **Easting:** 598,545.80 usft **Longitude:** 104° 0' 52.034 W
Slot Radius: 13-3/16 " **Grid Convergence:** 0.17 °

Well 20702 Harroun Ranch Federal Com #2H

Well Position **+N/-S** 0.0 usft **Northings:** 467,511.90 usft **Latitude:** 32° 17' 5.655 N
+E/-W 0.0 usft **Easting:** 598,543.80 usft **Longitude:** 104° 0' 52.040 W
Position Uncertainty 0.0 usft **Wellhead Elevation:** 0.0 usft **Ground Level:** 2,966.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/3/2017	7.20	60.05	47,968

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	1.18

Survey Program Date 3/7/2017

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	286.0	Gyros (Wellbore #1)	Good_gyro	Good Gyro
428.0	21,090.0	MWD Surveys (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	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W
100.0	0.30	266.80	100.0	0.0	-0.3	467,511.89	598,543.54	32° 17' 5.655 N	104° 0' 52.043 W
200.0	0.80	160.00	200.0	-0.7	-0.3	467,511.22	598,543.52	32° 17' 5.649 N	104° 0' 52.043 W
286.0	1.50	137.20	286.0	-2.1	0.7	467,509.83	598,544.49	32° 17' 5.635 N	104° 0' 52.032 W
Gyro Tie In @ 286' MD / TVD									
428.0	2.50	167.50	427.9	-6.5	2.6	467,505.44	598,546.42	32° 17' 5.591 N	104° 0' 52.009 W
615.0	1.70	218.90	614.8	-12.6	1.8	467,499.30	598,545.56	32° 17' 5.531 N	104° 0' 52.020 W
805.0	1.90	221.70	804.7	-17.1	-2.1	467,494.75	598,541.70	32° 17' 5.486 N	104° 0' 52.085 W
996.0	0.30	158.70	995.6	-20.0	-4.0	467,491.92	598,539.77	32° 17' 5.458 N	104° 0' 52.087 W
1,186.0	0.40	39.20	1,185.6	-19.9	-3.4	467,491.97	598,540.37	32° 17' 5.458 N	104° 0' 52.080 W
1,376.0	0.30	52.90	1,375.6	-19.1	-2.6	467,492.79	598,541.19	32° 17' 5.466 N	104° 0' 52.071 W



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North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,565.0	0.30	335.20	1,564.6	-18.4	-2.4	467,493.53	598,541.38	32° 17' 5.474 N	104° 0' 52.068 W
1,755.0	0.40	286.40	1,754.6	-17.7	-3.3	467,494.17	598,540.53	32° 17' 5.480 N	104° 0' 52.078 W
1,945.0	0.50	258.20	1,944.6	-17.7	-4.7	467,494.19	598,539.08	32° 17' 5.480 N	104° 0' 52.095 W
2,135.0	0.60	254.70	2,134.6	-18.1	-6.5	467,493.76	598,537.31	32° 17' 5.476 N	104° 0' 52.116 W
2,325.0	0.80	198.60	2,324.6	-19.7	-7.9	467,492.24	598,535.93	32° 17' 5.461 N	104° 0' 52.132 W
2,514.0	2.40	171.60	2,513.5	-24.8	-7.7	467,487.07	598,536.09	32° 17' 5.410 N	104° 0' 52.130 W
2,687.0	1.30	151.90	2,686.4	-30.1	-6.3	467,481.76	598,537.54	32° 17' 5.357 N	104° 0' 52.114 W
2,783.0	1.20	161.40	2,782.4	-32.1	-5.4	467,479.84	598,538.37	32° 17' 5.338 N	104° 0' 52.104 W
2,973.0	5.60	161.00	2,972.0	-42.7	-1.8	467,469.19	598,542.03	32° 17' 5.233 N	104° 0' 52.062 W
3,163.0	6.00	159.60	3,161.1	-60.8	4.7	467,451.12	598,548.51	32° 17' 5.054 N	104° 0' 51.987 W
3,352.0	6.10	164.50	3,349.0	-79.7	10.8	467,432.18	598,554.64	32° 17' 4.866 N	104° 0' 51.916 W
3,542.0	6.10	161.50	3,537.9	-99.0	16.7	467,412.88	598,560.54	32° 17' 4.675 N	104° 0' 51.848 W
3,732.0	5.90	165.80	3,726.9	-118.1	22.3	467,393.84	598,566.14	32° 17' 4.486 N	104° 0' 51.784 W
3,921.0	5.80	164.50	3,914.9	-136.7	27.3	467,375.22	598,571.07	32° 17' 4.302 N	104° 0' 51.727 W
4,111.0	6.30	165.90	4,103.9	-156.0	32.4	467,355.86	598,576.18	32° 17' 4.110 N	104° 0' 51.668 W
4,301.0	5.30	156.40	4,292.9	-174.2	38.4	467,337.70	598,582.23	32° 17' 3.930 N	104° 0' 51.598 W
4,491.0	5.20	159.60	4,482.1	-190.3	44.9	467,321.59	598,588.74	32° 17' 3.771 N	104° 0' 51.523 W
4,681.0	5.80	161.20	4,671.2	-207.5	51.0	467,304.43	598,594.84	32° 17' 3.601 N	104° 0' 51.452 W
4,870.0	5.70	164.20	4,859.3	-225.5	56.7	467,286.36	598,600.47	32° 17' 3.422 N	104° 0' 51.387 W
5,060.0	5.30	165.60	5,048.4	-243.1	61.4	467,268.78	598,605.22	32° 17' 3.248 N	104° 0' 51.333 W
5,250.0	5.10	160.50	5,237.6	-259.6	66.4	467,252.32	598,610.22	32° 17' 3.085 N	104° 0' 51.275 W
5,440.0	4.80	160.80	5,426.9	-275.0	71.9	467,236.86	598,615.66	32° 17' 2.931 N	104° 0' 51.212 W
5,630.0	4.20	165.60	5,616.3	-289.3	76.2	467,222.61	598,620.00	32° 17' 2.790 N	104° 0' 51.162 W
5,820.0	4.80	164.50	5,805.7	-303.7	80.1	467,208.21	598,623.86	32° 17' 2.648 N	104° 0' 51.118 W
6,010.0	4.60	165.40	5,995.1	-318.7	84.1	467,193.18	598,627.90	32° 17' 2.499 N	104° 0' 51.071 W
6,200.0	4.50	168.10	6,184.5	-333.4	87.6	467,178.51	598,631.36	32° 17' 2.353 N	104° 0' 51.031 W
6,390.0	4.80	160.70	6,373.9	-348.2	91.7	467,163.71	598,635.52	32° 17' 2.207 N	104° 0' 50.983 W
6,580.0	3.40	162.60	6,563.4	-361.1	96.0	467,150.84	598,639.84	32° 17' 2.079 N	104° 0' 50.933 W
6,769.0	4.20	150.10	6,752.0	-372.4	101.2	467,139.49	598,644.96	32° 17' 1.967 N	104° 0' 50.874 W
6,959.0	5.50	168.90	6,941.3	-387.4	106.4	467,124.52	598,650.18	32° 17' 1.819 N	104° 0' 50.814 W
7,149.0	4.40	163.30	7,130.6	-403.3	110.2	467,108.60	598,654.03	32° 17' 1.661 N	104° 0' 50.770 W
7,339.0	3.30	175.80	7,320.1	-415.7	112.7	467,096.17	598,656.53	32° 17' 1.538 N	104° 0' 50.741 W
7,529.0	4.70	158.40	7,509.7	-428.4	116.0	467,083.47	598,659.79	32° 17' 1.412 N	104° 0' 50.703 W
7,718.0	3.90	160.80	7,698.2	-441.7	121.0	467,070.20	598,664.76	32° 17' 1.281 N	104° 0' 50.646 W
7,908.0	4.20	160.30	7,887.7	-454.3	125.4	467,057.55	598,669.23	32° 17' 1.155 N	104° 0' 50.594 W
8,098.0	2.70	190.90	8,077.3	-465.3	126.9	467,046.61	598,670.73	32° 17' 1.047 N	104° 0' 50.577 W
8,288.0	3.40	158.20	8,267.1	-474.9	128.2	467,036.98	598,671.97	32° 17' 0.952 N	104° 0' 50.563 W
8,478.0	3.30	159.80	8,456.8	-485.3	132.1	467,026.62	598,675.95	32° 17' 0.849 N	104° 0' 50.517 W
8,668.0	7.40	158.00	8,645.9	-501.8	138.6	467,010.13	598,682.43	32° 17' 0.686 N	104° 0' 50.442 W
8,857.0	5.40	159.80	8,833.7	-521.4	146.3	466,990.50	598,690.06	32° 17' 0.491 N	104° 0' 50.354 W
9,047.0	5.00	166.10	9,022.9	-537.8	151.3	466,974.07	598,695.14	32° 17' 0.328 N	104° 0' 50.295 W
9,078.6	4.61	164.98	9,054.4	-540.4	152.0	466,971.51	598,695.80	32° 17' 0.303 N	104° 0' 50.288 W
Crossed Hard Line @ 9079' MD / 9054' TVD									
9,237.0	2.70	154.50	9,212.5	-549.9	155.2	466,961.99	598,699.05	32° 17' 0.209 N	104° 0' 50.250 W
9,427.0	4.00	167.00	9,402.2	-560.4	158.7	466,951.50	598,702.47	32° 17' 0.105 N	104° 0' 50.211 W
9,617.0	4.60	159.80	9,591.6	-574.0	162.8	466,937.89	598,706.59	32° 16' 59.970 N	104° 0' 50.163 W
9,807.0	4.30	166.30	9,781.1	-588.1	167.1	466,923.82	598,710.91	32° 16' 59.831 N	104° 0' 50.113 W
9,997.0	2.00	171.00	9,970.8	-598.3	169.3	466,913.62	598,713.11	32° 16' 59.730 N	104° 0' 50.088 W
10,187.0	1.20	130.80	10,160.7	-602.9	171.3	466,909.05	598,715.14	32° 16' 59.684 N	104° 0' 50.065 W
10,292.0	7.00	13.20	10,265.4	-597.3	173.6	466,914.57	598,717.44	32° 16' 59.739 N	104° 0' 50.038 W
10,387.0	21.10	6.00	10,357.4	-574.6	176.8	466,937.32	598,720.56	32° 16' 59.964 N	104° 0' 50.000 W
10,482.0	28.30	0.50	10,443.6	-535.0	178.7	466,976.91	598,722.55	32° 16' 59.356 N	104° 0' 49.976 W
10,577.0	36.00	0.90	10,524.0	-484.5	179.4	467,027.42	598,723.18	32° 17' 0.856 N	104° 0' 49.967 W
10,672.0	43.90	357.70	10,596.8	-423.6	178.5	467,088.35	598,722.30	32° 17' 1.459 N	104° 0' 49.975 W
10,767.0	51.70	1.90	10,660.6	-353.3	178.4	467,158.64	598,722.21	32° 17' 2.154 N	104° 0' 49.974 W



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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,794.0	53.80	0.50	10,676.9	-331.8	178.9	467,180.12	598,722.66	32° 17' 2.367 N	104° 0' 49.968 W
10,847.0	57.20	1.90	10,706.9	-288.1	179.8	467,223.78	598,723.58	32° 17' 2.799 N	104° 0' 49.955 W
10,941.0	67.40	1.90	10,750.6	-205.0	182.5	467,306.86	598,726.34	32° 17' 3.621 N	104° 0' 49.920 W
11,036.0	74.50	3.30	10,781.5	-115.4	186.6	467,396.50	598,730.43	32° 17' 4.508 N	104° 0' 49.870 W
11,131.0	79.80	3.90	10,802.7	-23.0	192.5	467,488.90	598,736.25	32° 17' 5.422 N	104° 0' 49.799 W
11,226.0	86.30	2.10	10,814.2	71.1	197.4	467,583.02	598,741.18	32° 17' 6.353 N	104° 0' 49.738 W
11,320.0	87.00	1.80	10,819.7	164.9	200.6	467,676.81	598,744.37	32° 17' 7.281 N	104° 0' 49.697 W
11,415.0	89.20	357.00	10,822.8	259.8	199.6	467,771.72	598,743.37	32° 17' 8.221 N	104° 0' 49.706 W
11,509.0	87.30	355.80	10,825.7	353.6	193.7	467,865.48	598,737.47	32° 17' 9.149 N	104° 0' 49.771 W
11,604.0	91.70	357.90	10,826.5	448.4	188.5	467,960.30	598,732.26	32° 17' 10.087 N	104° 0' 49.829 W
11,699.0	90.80	358.80	10,824.4	543.3	185.7	468,055.24	598,729.52	32° 17' 11.027 N	104° 0' 49.857 W
11,793.0	89.30	358.40	10,824.3	637.3	183.4	468,149.21	598,727.22	32° 17' 11.957 N	104° 0' 49.881 W
11,888.0	87.80	356.70	10,826.8	732.2	179.4	468,244.09	598,723.17	32° 17' 12.896 N	104° 0' 49.925 W
11,982.0	89.30	356.50	10,829.1	826.0	173.8	468,337.89	598,717.59	32° 17' 13.824 N	104° 0' 49.986 W
12,077.0	90.30	358.20	10,829.5	920.9	169.4	468,432.78	598,713.20	32° 17' 14.763 N	104° 0' 50.034 W
12,172.0	90.60	359.30	10,828.7	1,015.9	167.3	468,527.75	598,711.13	32° 17' 15.703 N	104° 0' 50.055 W
12,266.0	90.00	0.90	10,828.2	1,109.8	167.5	468,621.75	598,711.29	32° 17' 16.634 N	104° 0' 50.050 W
12,361.0	89.00	358.80	10,829.1	1,204.8	167.2	468,716.74	598,711.04	32° 17' 17.574 N	104° 0' 50.050 W
12,455.0	90.60	358.60	10,829.4	1,298.8	165.1	468,810.71	598,708.91	32° 17' 18.504 N	104° 0' 50.071 W
12,549.0	90.80	1.90	10,828.2	1,392.8	165.5	468,904.69	598,709.32	32° 17' 19.434 N	104° 0' 50.063 W
12,644.0	89.90	2.30	10,827.7	1,487.7	169.0	468,999.62	598,712.80	32° 17' 20.373 N	104° 0' 50.019 W
12,739.0	89.00	3.00	10,828.6	1,582.6	173.4	469,094.52	598,717.19	32° 17' 21.312 N	104° 0' 49.965 W
12,833.0	89.60	6.20	10,829.7	1,676.3	180.9	469,188.19	598,724.73	32° 17' 22.239 N	104° 0' 49.874 W
12,928.0	87.80	2.60	10,831.9	1,771.0	188.2	469,282.87	598,732.02	32° 17' 23.176 N	104° 0' 49.786 W
13,022.0	89.30	1.20	10,834.2	1,864.9	191.3	469,376.78	598,735.13	32° 17' 24.105 N	104° 0' 49.746 W
13,117.0	90.60	2.60	10,834.3	1,959.8	194.5	469,471.73	598,738.28	32° 17' 25.044 N	104° 0' 49.706 W
13,211.0	90.40	1.80	10,833.5	2,053.8	198.1	469,565.65	598,741.89	32° 17' 25.974 N	104° 0' 49.661 W
13,306.0	89.90	0.70	10,833.3	2,148.7	200.2	469,660.63	598,743.96	32° 17' 26.913 N	104° 0' 49.633 W
13,400.0	91.00	1.90	10,832.5	2,242.7	202.3	469,754.60	598,746.10	32° 17' 27.843 N	104° 0' 49.605 W
13,494.0	91.70	2.80	10,830.3	2,336.6	206.1	469,848.49	598,749.95	32° 17' 28.772 N	104° 0' 49.557 W
13,589.0	90.90	1.20	10,828.2	2,431.5	209.5	469,943.40	598,753.26	32° 17' 29.712 N	104° 0' 49.515 W
13,683.0	89.90	0.00	10,827.5	2,525.5	210.4	470,037.39	598,754.25	32° 17' 30.642 N	104° 0' 49.500 W
13,778.0	90.00	0.00	10,827.6	2,620.5	210.4	470,132.39	598,754.25	32° 17' 31.582 N	104° 0' 49.497 W
13,873.0	90.50	359.10	10,827.2	2,715.5	209.7	470,227.39	598,753.50	32° 17' 32.522 N	104° 0' 49.503 W
13,967.0	89.60	356.70	10,827.1	2,809.4	206.3	470,321.32	598,750.06	32° 17' 33.452 N	104° 0' 49.539 W
14,062.0	90.80	356.10	10,826.8	2,904.2	200.3	470,416.13	598,744.09	32° 17' 34.390 N	104° 0' 49.606 W
14,157.0	89.90	353.30	10,826.2	2,998.8	191.5	470,510.71	598,735.32	32° 17' 35.326 N	104° 0' 49.705 W
14,252.0	91.80	355.80	10,824.8	3,093.4	182.5	470,605.26	598,726.30	32° 17' 36.262 N	104° 0' 49.806 W
14,346.0	90.10	358.10	10,823.2	3,187.2	177.5	470,699.10	598,721.30	32° 17' 37.191 N	104° 0' 49.861 W
14,441.0	91.40	0.20	10,822.0	3,282.2	176.1	470,794.08	598,719.89	32° 17' 38.131 N	104° 0' 49.874 W
14,535.0	91.80	0.30	10,819.3	3,376.1	176.5	470,888.04	598,720.30	32° 17' 39.061 N	104° 0' 49.866 W
14,630.0	89.40	0.20	10,818.3	3,471.1	176.9	470,983.03	598,720.71	32° 17' 40.001 N	104° 0' 49.858 W
14,725.0	90.50	359.50	10,818.4	3,566.1	176.7	471,078.02	598,720.46	32° 17' 40.941 N	104° 0' 49.858 W
14,820.0	90.60	1.90	10,817.5	3,661.1	177.8	471,173.00	598,721.62	32° 17' 41.881 N	104° 0' 49.841 W
14,914.0	90.00	0.90	10,817.0	3,755.1	180.1	471,266.97	598,723.92	32° 17' 42.811 N	104° 0' 49.811 W
15,009.0	88.80	358.20	10,818.0	3,850.1	179.4	471,361.95	598,723.17	32° 17' 43.751 N	104° 0' 49.816 W
15,104.0	90.00	0.00	10,819.0	3,945.0	177.9	471,456.93	598,721.68	32° 17' 44.691 N	104° 0' 49.831 W
15,198.0	88.70	0.50	10,820.1	4,039.0	178.3	471,550.92	598,722.09	32° 17' 45.621 N	104° 0' 49.823 W
15,293.0	94.30	3.90	10,817.6	4,133.9	181.9	471,645.77	598,725.73	32° 17' 46.559 N	104° 0' 49.777 W
15,388.0	88.00	4.20	10,815.7	4,228.6	188.6	471,740.46	598,732.44	32° 17' 47.496 N	104° 0' 49.695 W
15,483.0	89.00	3.00	10,818.2	4,323.3	194.6	471,835.24	598,738.40	32° 17' 48.434 N	104° 0' 49.623 W
15,578.0	89.90	3.30	10,819.1	4,418.2	199.8	471,930.09	598,743.62	32° 17' 49.372 N	104° 0' 49.559 W
15,672.0	89.40	3.20	10,819.7	4,512.0	205.1	472,023.94	598,748.95	32° 17' 50.301 N	104° 0' 49.493 W
15,766.0	91.60	4.20	10,818.8	4,605.8	211.2	472,117.73	598,755.01	32° 17' 51.229 N	104° 0' 49.419 W
15,861.0	90.60	2.10	10,817.0	4,700.7	216.4	472,212.57	598,760.23	32° 17' 52.167 N	104° 0' 49.355 W



Survey Report - Geographic



Company: BTA Oil Producers, LLC
Project: Eddy County, New Mexico
Site: Sec 20, T23S, R29E
Well: 20702 Harroun Ranch Federal Com #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 20702 Harroun Ranch Federal Com #2H
TVD Reference: WELL @ 2983.0usft (Nomac #94)
MD Reference: WELL @ 2983.0usft (Nomac #94)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,955.0	92.80	2.60	10,814.2	4,794.5	220.3	472,306.44	598,764.09	32° 17' 53.096 N	104° 0' 49.307 W
16,050.0	90.10	0.30	10,811.8	4,889.5	222.7	472,401.36	598,766.49	32° 17' 54.035 N	104° 0' 49.276 W
16,144.0	90.10	358.90	10,811.7	4,983.5	222.0	472,495.36	598,765.83	32° 17' 54.966 N	104° 0' 49.280 W
16,239.0	91.30	0.00	10,810.5	5,078.4	221.1	472,590.34	598,764.92	32° 17' 55.906 N	104° 0' 49.287 W
16,333.0	90.10	356.70	10,809.3	5,172.4	218.4	472,684.28	598,762.21	32° 17' 56.835 N	104° 0' 49.316 W
16,427.0	93.20	358.20	10,806.6	5,266.2	214.2	472,778.14	598,758.03	32° 17' 57.764 N	104° 0' 49.361 W
16,522.0	93.40	2.10	10,801.2	5,361.1	214.5	472,872.96	598,758.28	32° 17' 58.703 N	104° 0' 49.355 W
16,616.0	90.10	1.60	10,798.3	5,455.0	217.5	472,966.85	598,761.31	32° 17' 59.632 N	104° 0' 49.316 W
16,710.0	90.60	0.30	10,797.7	5,548.9	219.1	473,060.84	598,762.87	32° 18' 0.562 N	104° 0' 49.295 W
16,805.0	91.80	3.00	10,795.7	5,643.9	221.8	473,155.77	598,765.60	32° 18' 1.501 N	104° 0' 49.260 W
16,900.0	89.60	1.80	10,794.6	5,738.8	225.8	473,250.67	598,769.58	32° 18' 2.440 N	104° 0' 49.210 W
16,994.0	88.50	0.90	10,796.1	5,832.7	228.0	473,344.63	598,771.80	32° 18' 3.370 N	104° 0' 49.181 W
17,088.0	91.80	1.20	10,795.9	5,926.7	229.7	473,438.60	598,773.52	32° 18' 4.300 N	104° 0' 49.158 W
17,183.0	90.50	2.30	10,794.0	6,021.6	232.6	473,533.53	598,776.42	32° 18' 5.239 N	104° 0' 49.121 W
17,277.0	87.30	0.70	10,795.8	6,115.6	235.1	473,627.47	598,778.88	32° 18' 6.169 N	104° 0' 49.089 W
17,367.0	88.50	1.00	10,799.1	6,205.5	236.4	473,717.39	598,780.21	32° 18' 7.059 N	104° 0' 49.070 W
17,459.0	90.80	1.20	10,799.6	6,297.5	238.2	473,809.37	598,781.98	32° 18' 7.969 N	104° 0' 49.046 W
17,556.0	89.30	359.60	10,799.6	6,394.5	238.9	473,906.36	598,782.66	32° 18' 8.929 N	104° 0' 49.035 W
17,650.0	91.40	4.60	10,799.0	6,488.4	242.3	474,000.26	598,786.10	32° 18' 9.858 N	104° 0' 48.992 W
17,745.0	87.10	2.60	10,800.2	6,583.1	248.3	474,095.04	598,792.06	32° 18' 10.796 N	104° 0' 48.919 W
17,840.0	88.60	5.30	10,803.8	6,677.8	254.8	474,189.73	598,798.60	32° 18' 11.732 N	104° 0' 48.839 W
17,934.0	86.70	3.00	10,807.6	6,771.5	261.6	474,283.40	598,805.40	32° 18' 12.659 N	104° 0' 48.757 W
18,029.0	86.70	5.30	10,813.1	6,866.1	268.5	474,377.99	598,812.26	32° 18' 13.595 N	104° 0' 48.674 W
18,123.0	88.60	2.80	10,817.0	6,959.8	275.1	474,471.66	598,818.89	32° 18' 14.522 N	104° 0' 48.593 W
18,217.0	88.30	358.80	10,819.5	7,053.7	276.4	474,565.60	598,820.21	32° 18' 15.451 N	104° 0' 48.575 W
18,312.0	89.90	0.90	10,821.0	7,148.7	276.2	474,660.58	598,819.96	32° 18' 16.391 N	104° 0' 48.574 W
18,406.0	89.50	0.00	10,821.5	7,242.7	276.9	474,754.57	598,820.70	32° 18' 17.321 N	104° 0' 48.562 W
18,501.0	90.40	359.50	10,821.6	7,337.7	276.5	474,849.57	598,820.28	32° 18' 18.262 N	104° 0' 48.564 W
18,596.0	89.50	357.50	10,821.7	7,432.6	274.0	474,944.53	598,817.80	32° 18' 19.201 N	104° 0' 48.590 W
18,691.0	91.10	357.90	10,821.2	7,527.5	270.2	475,039.45	598,813.98	32° 18' 20.141 N	104° 0' 48.631 W
18,785.0	91.10	357.20	10,819.4	7,621.4	266.2	475,133.35	598,809.97	32° 18' 21.070 N	104° 0' 48.674 W
18,879.0	90.10	357.40	10,818.4	7,715.3	261.7	475,227.24	598,805.54	32° 18' 21.999 N	104° 0' 48.723 W
18,974.0	90.70	356.10	10,817.7	7,810.2	256.3	475,322.08	598,800.15	32° 18' 22.938 N	104° 0' 48.782 W
19,068.0	90.70	355.30	10,816.6	7,903.9	249.3	475,415.81	598,793.11	32° 18' 23.866 N	104° 0' 48.861 W
19,163.0	91.30	355.60	10,814.9	7,998.6	241.8	475,510.49	598,785.57	32° 18' 24.803 N	104° 0' 48.945 W
19,257.0	90.40	355.60	10,813.5	8,092.3	234.6	475,604.20	598,778.36	32° 18' 25.731 N	104° 0' 49.026 W
19,352.0	89.40	0.00	10,813.7	8,187.2	230.9	475,699.11	598,774.71	32° 18' 26.670 N	104° 0' 49.065 W
19,447.0	89.00	359.80	10,815.0	8,282.2	230.7	475,794.10	598,774.55	32° 18' 27.610 N	104° 0' 49.064 W
19,542.0	89.20	359.80	10,816.5	8,377.2	230.4	475,889.09	598,774.22	32° 18' 28.550 N	104° 0' 49.065 W
19,636.0	91.70	1.80	10,815.8	8,471.2	231.7	475,983.06	598,775.53	32° 18' 29.480 N	104° 0' 49.046 W
19,731.0	90.70	1.60	10,813.8	8,566.1	234.5	476,078.00	598,778.35	32° 18' 30.419 N	104° 0' 49.010 W
19,826.0	92.20	1.90	10,811.4	8,661.0	237.4	476,172.92	598,781.25	32° 18' 31.359 N	104° 0' 48.973 W
19,920.0	89.30	0.20	10,810.1	8,755.0	239.2	476,266.88	598,782.97	32° 18' 32.289 N	104° 0' 48.949 W
20,014.0	92.30	1.80	10,808.8	8,848.9	240.8	476,360.85	598,784.61	32° 18' 33.218 N	104° 0' 48.927 W
20,109.0	88.40	1.00	10,808.2	8,943.9	243.1	476,455.80	598,786.93	32° 18' 34.158 N	104° 0' 48.897 W
20,204.0	86.70	359.30	10,812.3	9,038.8	243.4	476,550.70	598,787.18	32° 18' 35.097 N	104° 0' 48.891 W
20,298.0	86.20	0.30	10,818.1	9,132.6	243.0	476,644.52	598,786.85	32° 18' 36.026 N	104° 0' 48.891 W
20,392.0	86.40	359.80	10,824.2	9,226.4	243.1	476,738.32	598,786.93	32° 18' 36.954 N	104° 0' 48.887 W
20,487.0	89.80	359.80	10,827.3	9,321.4	242.8	476,833.26	598,786.60	32° 18' 37.893 N	104° 0' 48.887 W
20,582.0	89.90	359.50	10,827.6	9,416.4	242.2	476,928.26	598,786.02	32° 18' 38.833 N	104° 0' 48.891 W
20,675.0	89.10	358.40	10,828.4	9,509.3	240.5	477,021.23	598,784.31	32° 18' 39.754 N	104° 0' 48.908 W
20,770.0	88.60	358.80	10,830.3	9,604.3	238.2	477,116.19	598,781.99	32° 18' 40.693 N	104° 0' 48.931 W
20,865.0	88.80	359.80	10,832.5	9,699.3	237.0	477,211.15	598,780.83	32° 18' 41.633 N	104° 0' 48.941 W
20,959.0	88.00	0.00	10,835.1	9,793.2	236.9	477,305.12	598,780.67	32° 18' 42.563 N	104° 0' 48.940 W
21,038.0	88.60	0.50	10,837.4	9,872.2	237.2	477,384.08	598,781.01	32° 18' 43.344 N	104° 0' 48.933 W



Survey Report - Geographic



Company: BTA Oil Producers, LLC
Project: Eddy County, New Mexico
Site: Sec 20, T23S, R29E
Well: 20702 Harroun Ranch Federal Com #2H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 20702 Harroun Ranch Federal Com #2H
TVD Reference: WELL @ 2983.0usft (Nomac #94)
MD Reference: WELL @ 2983.0usft (Nomac #94)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM5002

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
21,066.8	88.60	0.50	10,838.1	9,901.0	237.5	477,412.87	598,781.27	32° 18' 43.629 N	104° 0' 48.929 W
Crossed Hard Line @ 21067' MD / 10838' TVD									
21,090.0	88.60	0.50	10,838.7	9,924.2	237.7	477,436.06	598,781.47	32° 18' 43.859 N	104° 0' 48.926 W
TD @ 21090' MD / 10839' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
286.0	286.0	-2.1	0.7	Gyro Tie In @ 286' MD / TVD
9,078.6	9,054.4	-540.4	152.0	Crossed Hard Line @ 9079' MD / 9054' TVD
21,066.8	10,838.1	9,901.0	237.5	Crossed Hard Line @ 21067' MD / 10838' TVD
21,090.0	10,838.7	9,924.2	237.7	TD @ 21090' MD / 10839' TVD

Checked By: _____ Approved By: _____ Date: _____