



BTA Oil Producers, LLC

Eddy County, New Mexico (NAD 83)

Sec 20, T23-S, R29-E

Harroun Ranch 20702 20-17 Fed Com #7H

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

09 January, 2021





QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Harroun Ranch 20702 20-17 Fed Com #7H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3043.0usft (Patterson #288)
Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3043.0usft (Patterson #288)
Well:	Harroun Ranch 20702 20-17 Fed Com #7H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	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 20, T23-S, R29-E		
Site Position:		Northing:	467,071.70 usft
From:	Map	Easting:	642,041.70 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 17' 1.081 N
		Longitude:	104° 0' 26.864 W
		Grid Convergence:	0.17 °

Well	Harroun Ranch 20702 20-17 Fed Com #7H		
Well Position	+N/-S	0.0 usft	Northing: 467,259.70 usft
	+E/-W	0.0 usft	Easting: 643,996.10 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 17' 2.883 N
		Longitude:	104° 0' 4.090 W
		Ground Level:	3,018.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	10/27/2020	6.88	60.00	47,771.60000000

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	353.78	

Survey Program	Date	1/9/2021			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
137.0	20,430.0	QES MWD Surveys (Wellbore #1)	MWD	OWSG 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	467,259.70	643,996.10	32° 17' 2.883 N	104° 0' 4.090 W
137.0	0.30	210.80	137.0	-0.3	-0.2	467,259.39	643,995.92	32° 17' 2.879 N	104° 0' 4.092 W
First MWD Survey @ 137.0' MD / 137.0' TVD									
230.0	0.80	193.60	230.0	-1.1	-0.5	467,258.55	643,995.64	32° 17' 2.871 N	104° 0' 4.095 W
349.0	1.60	172.40	349.0	-3.6	-0.4	467,256.10	643,995.67	32° 17' 2.847 N	104° 0' 4.095 W
421.0	1.60	174.80	420.9	-5.6	-0.2	467,254.10	643,995.89	32° 17' 2.827 N	104° 0' 4.093 W
496.0	1.70	181.80	495.9	-7.8	-0.2	467,251.95	643,995.95	32° 17' 2.806 N	104° 0' 4.092 W
592.0	2.70	242.70	591.8	-10.2	-2.2	467,249.49	643,993.90	32° 17' 2.782 N	104° 0' 4.116 W
687.0	6.90	263.20	686.5	-11.9	-9.9	467,247.78	643,986.24	32° 17' 2.765 N	104° 0' 4.205 W
782.0	8.50	263.50	780.6	-13.4	-22.5	467,246.31	643,973.60	32° 17' 2.751 N	104° 0' 4.353 W
877.0	9.40	264.90	874.5	-14.9	-37.2	467,244.83	643,958.89	32° 17' 2.737 N	104° 0' 4.524 W
972.0	9.30	256.80	968.2	-17.3	-52.4	467,242.38	643,943.69	32° 17' 2.713 N	104° 0' 4.701 W



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Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3043.0usft (Patterson #288)
Well:	Harroun Ranch 20702 20-17 Fed Com #7H	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
1,067.0	9.90	250.80	1,061.9	-21.8	-67.6	467,237.95	643,928.50	32° 17' 2.669 N	104° 0' 4.878 W
1,162.0	8.80	247.40	1,155.6	-27.2	-82.0	467,232.47	643,914.08	32° 17' 2.616 N	104° 0' 5.046 W
1,257.0	8.40	241.00	1,249.6	-33.4	-94.8	467,226.31	643,901.31	32° 17' 2.555 N	104° 0' 5.195 W
1,352.0	8.50	243.50	1,343.5	-39.9	-107.2	467,219.81	643,888.95	32° 17' 2.491 N	104° 0' 5.340 W
1,447.0	8.30	245.90	1,437.5	-45.8	-119.7	467,213.88	643,876.41	32° 17' 2.433 N	104° 0' 5.486 W
1,542.0	8.30	247.40	1,531.5	-51.3	-132.3	467,208.45	643,863.82	32° 17' 2.379 N	104° 0' 5.633 W
1,637.0	8.30	248.40	1,625.5	-56.4	-145.0	467,203.29	643,851.11	32° 17' 2.329 N	104° 0' 5.781 W
1,732.0	8.30	249.30	1,719.5	-61.4	-157.8	467,198.34	643,838.33	32° 17' 2.280 N	104° 0' 5.930 W
1,827.0	8.40	249.70	1,813.5	-66.2	-170.7	467,193.51	643,825.40	32° 17' 2.233 N	104° 0' 6.081 W
1,922.0	8.40	248.80	1,907.5	-71.1	-183.7	467,188.59	643,812.43	32° 17' 2.184 N	104° 0' 6.232 W
2,017.0	8.00	258.00	2,001.5	-75.0	-196.6	467,184.71	643,799.49	32° 17' 2.146 N	104° 0' 6.383 W
2,112.0	7.00	253.30	2,095.7	-78.0	-208.6	467,181.67	643,787.48	32° 17' 2.117 N	104° 0' 6.523 W
2,207.0	5.80	242.00	2,190.1	-81.9	-218.4	467,177.75	643,777.69	32° 17' 2.078 N	104° 0' 6.637 W
2,302.0	5.60	242.20	2,284.7	-86.4	-226.7	467,173.34	643,769.36	32° 17' 2.035 N	104° 0' 6.734 W
2,398.0	7.20	259.60	2,380.1	-89.6	-236.8	467,170.07	643,759.29	32° 17' 2.003 N	104° 0' 6.852 W
2,493.0	6.60	256.10	2,474.4	-92.0	-248.0	467,167.68	643,748.14	32° 17' 1.980 N	104° 0' 6.982 W
2,588.0	7.40	252.40	2,568.7	-95.2	-259.1	467,164.52	643,737.01	32° 17' 1.949 N	104° 0' 7.112 W
2,683.0	8.10	247.80	2,662.8	-99.6	-271.1	467,160.14	643,724.98	32° 17' 1.906 N	104° 0' 7.252 W
2,778.0	7.80	257.10	2,756.9	-103.5	-283.6	467,156.17	643,712.50	32° 17' 1.867 N	104° 0' 7.397 W
2,873.0	7.60	262.30	2,851.0	-105.8	-296.1	467,153.89	643,699.99	32° 17' 1.845 N	104° 0' 7.543 W
2,968.0	7.10	261.10	2,945.3	-107.6	-308.1	467,152.14	643,687.96	32° 17' 1.828 N	104° 0' 7.683 W
3,063.0	6.80	259.40	3,039.6	-109.5	-319.5	467,150.20	643,676.63	32° 17' 1.809 N	104° 0' 7.815 W
3,157.0	8.60	269.20	3,132.7	-110.6	-332.0	467,149.08	643,664.13	32° 17' 1.798 N	104° 0' 7.961 W
3,252.0	10.10	273.10	3,226.5	-110.3	-347.4	467,149.43	643,648.71	32° 17' 1.802 N	104° 0' 8.141 W
3,347.0	9.90	272.20	3,320.0	-109.5	-363.9	467,150.19	643,632.24	32° 17' 1.810 N	104° 0' 8.333 W
3,442.0	9.50	270.10	3,413.7	-109.2	-379.9	467,150.52	643,616.23	32° 17' 1.814 N	104° 0' 8.519 W
3,537.0	9.50	269.30	3,507.4	-109.3	-395.5	467,150.44	643,600.56	32° 17' 1.813 N	104° 0' 8.702 W
3,632.0	9.40	268.40	3,601.1	-109.6	-411.1	467,150.12	643,584.96	32° 17' 1.811 N	104° 0' 8.883 W
3,727.0	9.40	267.40	3,694.8	-110.1	-426.6	467,149.55	643,569.46	32° 17' 1.806 N	104° 0' 9.064 W
3,822.0	9.50	256.00	3,788.5	-112.4	-442.0	467,147.31	643,554.10	32° 17' 1.784 N	104° 0' 9.243 W
3,917.0	9.30	254.70	3,882.2	-116.3	-457.0	467,143.38	643,539.09	32° 17' 1.745 N	104° 0' 9.418 W
4,012.0	9.20	254.10	3,976.0	-120.4	-471.7	467,139.28	643,524.38	32° 17' 1.705 N	104° 0' 9.589 W
4,107.0	9.30	253.60	4,069.8	-124.7	-486.4	467,135.03	643,509.71	32° 17' 1.664 N	104° 0' 9.760 W
4,202.0	9.40	252.80	4,163.5	-129.1	-501.2	467,130.57	643,494.94	32° 17' 1.620 N	104° 0' 9.933 W
4,297.0	9.00	252.40	4,257.3	-133.7	-515.7	467,126.03	643,480.44	32° 17' 1.576 N	104° 0' 10.102 W
4,391.0	8.70	252.40	4,350.2	-138.0	-529.4	467,121.65	643,466.66	32° 17' 1.533 N	104° 0' 10.263 W
4,486.0	8.50	252.20	4,444.1	-142.4	-543.0	467,117.34	643,453.12	32° 17' 1.490 N	104° 0' 10.420 W
4,581.0	8.20	250.60	4,538.1	-146.8	-556.1	467,112.94	643,440.05	32° 17' 1.447 N	104° 0' 10.573 W
4,676.0	8.20	249.70	4,632.1	-151.4	-568.8	467,108.34	643,427.31	32° 17' 1.402 N	104° 0' 10.721 W
4,771.0	8.20	249.10	4,726.1	-156.1	-581.5	467,103.57	643,414.62	32° 17' 1.355 N	104° 0' 10.869 W
4,866.0	8.30	249.10	4,820.2	-161.0	-594.2	467,098.71	643,401.89	32° 17' 1.308 N	104° 0' 11.018 W
4,961.0	8.20	247.90	4,914.2	-166.0	-606.9	467,093.71	643,389.20	32° 17' 1.259 N	104° 0' 11.166 W
5,056.0	7.90	247.40	5,008.2	-171.0	-619.2	467,088.66	643,376.90	32° 17' 1.209 N	104° 0' 11.309 W
5,151.0	7.70	245.90	5,102.4	-176.2	-631.0	467,083.55	643,365.06	32° 17' 1.159 N	104° 0' 11.447 W
5,246.0	7.30	247.40	5,196.5	-181.1	-642.4	467,078.63	643,353.68	32° 17' 1.110 N	104° 0' 11.580 W
5,341.0	8.30	259.00	5,290.7	-184.7	-654.7	467,075.00	643,341.38	32° 17' 1.075 N	104° 0' 11.724 W
5,436.0	7.90	259.80	5,384.7	-187.2	-667.9	467,072.54	643,328.22	32° 17' 1.051 N	104° 0' 11.877 W
5,531.0	7.30	257.40	5,478.9	-189.6	-680.2	467,070.06	643,315.90	32° 17' 1.027 N	104° 0' 12.021 W
5,626.0	7.30	257.20	5,573.1	-192.3	-692.0	467,067.41	643,304.13	32° 17' 1.001 N	104° 0' 12.158 W
5,721.0	7.10	256.10	5,667.4	-195.0	-703.6	467,064.66	643,292.54	32° 17' 0.974 N	104° 0' 12.293 W
5,816.0	6.90	255.10	5,761.7	-197.9	-714.8	467,061.78	643,281.33	32° 17' 0.946 N	104° 0' 12.424 W
5,911.0	7.70	257.50	5,855.9	-200.8	-726.5	467,058.94	643,269.60	32° 17' 0.918 N	104° 0' 12.560 W
6,006.0	8.00	260.30	5,950.0	-203.3	-739.2	467,056.45	643,256.87	32° 17' 0.894 N	104° 0' 12.709 W
6,101.0	9.50	260.50	6,043.9	-205.7	-753.5	467,054.04	643,242.62	32° 17' 0.870 N	104° 0' 12.875 W
6,196.0	9.50	260.10	6,137.6	-208.3	-768.9	467,051.40	643,227.17	32° 17' 0.845 N	104° 0' 13.055 W



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Well:	Harroun Ranch 20702 20-17 Fed Com #7H	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
6,290.0	9.40	259.00	6,230.3	-211.1	-784.1	467,048.60	643,211.99	32° 17' 0.817 N	104° 0' 13.232 W
6,386.0	8.60	258.30	6,325.1	-214.1	-798.8	467,045.65	643,197.27	32° 17' 0.789 N	104° 0' 13.403 W
6,481.0	8.30	257.20	6,419.1	-217.0	-812.5	467,042.69	643,183.62	32° 17' 0.760 N	104° 0' 13.562 W
6,575.0	8.00	256.00	6,512.1	-220.1	-825.4	467,039.60	643,170.66	32° 17' 0.730 N	104° 0' 13.714 W
6,670.0	7.50	254.70	6,606.3	-223.3	-837.8	467,036.37	643,158.27	32° 17' 0.698 N	104° 0' 13.858 W
6,765.0	8.90	263.00	6,700.3	-225.9	-851.1	467,033.84	643,144.99	32° 17' 0.673 N	104° 0' 14.013 W
6,860.0	8.30	264.20	6,794.2	-227.5	-865.2	467,032.25	643,130.88	32° 17' 0.658 N	104° 0' 14.177 W
6,955.0	7.40	262.20	6,888.4	-229.0	-878.1	467,030.72	643,117.99	32° 17' 0.643 N	104° 0' 14.327 W
7,050.0	8.40	263.00	6,982.4	-230.7	-891.1	467,029.05	643,105.04	32° 17' 0.627 N	104° 0' 14.478 W
7,145.0	8.00	264.80	7,076.5	-232.1	-904.5	467,027.60	643,091.57	32° 17' 0.613 N	104° 0' 14.635 W
7,240.0	10.30	259.60	7,170.3	-234.2	-919.5	467,025.47	643,076.63	32° 17' 0.593 N	104° 0' 14.809 W
7,335.0	10.60	260.10	7,263.7	-237.3	-936.4	467,022.44	643,059.67	32° 17' 0.563 N	104° 0' 15.007 W
7,430.0	9.20	261.20	7,357.3	-239.9	-952.5	467,019.77	643,043.56	32° 17' 0.537 N	104° 0' 15.195 W
7,525.0	9.50	254.40	7,451.0	-243.2	-967.6	467,016.50	643,028.50	32° 17' 0.505 N	104° 0' 15.370 W
7,620.0	8.70	252.90	7,544.8	-247.4	-982.0	467,012.28	643,014.08	32° 17' 0.464 N	104° 0' 15.539 W
7,715.0	10.00	247.40	7,638.6	-252.7	-996.5	467,007.00	642,999.60	32° 17' 0.412 N	104° 0' 15.707 W
7,810.0	10.00	246.90	7,732.1	-259.1	-1,011.7	467,000.59	642,984.40	32° 17' 0.349 N	104° 0' 15.885 W
7,905.0	9.10	246.80	7,825.8	-265.3	-1,026.2	466,994.40	642,969.91	32° 17' 0.288 N	104° 0' 16.054 W
8,000.0	8.60	247.40	7,919.7	-271.0	-1,039.7	466,988.71	642,956.44	32° 17' 0.233 N	104° 0' 16.211 W
8,096.0	7.90	247.60	8,014.7	-276.3	-1,052.4	466,983.43	642,943.72	32° 17' 0.181 N	104° 0' 16.359 W
8,191.0	7.60	248.20	8,108.8	-281.1	-1,064.3	466,978.61	642,931.85	32° 17' 0.133 N	104° 0' 16.498 W
8,286.0	7.90	244.50	8,202.9	-286.2	-1,076.0	466,973.47	642,920.12	32° 17' 0.083 N	104° 0' 16.634 W
8,381.0	7.40	242.30	8,297.1	-291.9	-1,087.3	466,967.82	642,908.81	32° 17' 0.027 N	104° 0' 16.766 W
8,476.0	7.20	254.40	8,391.3	-296.3	-1,098.4	466,963.37	642,897.66	32° 16' 59.984 N	104° 0' 16.896 W
8,571.0	7.00	255.70	8,485.6	-299.4	-1,109.8	466,960.34	642,886.32	32° 16' 59.954 N	104° 0' 17.029 W
8,666.0	6.50	252.50	8,579.9	-302.4	-1,120.5	466,957.29	642,875.58	32° 16' 59.924 N	104° 0' 17.154 W
8,761.0	6.20	249.60	8,674.4	-305.8	-1,130.5	466,953.89	642,865.64	32° 16' 59.891 N	104° 0' 17.270 W
8,856.0	5.60	245.60	8,768.8	-309.5	-1,139.5	466,950.18	642,856.62	32° 16' 59.854 N	104° 0' 17.375 W
8,951.0	3.90	237.10	8,863.5	-313.2	-1,146.4	466,946.51	642,849.68	32° 16' 59.818 N	104° 0' 17.456 W
9,046.0	3.90	236.30	8,958.3	-316.7	-1,151.8	466,942.97	642,844.28	32° 16' 59.783 N	104° 0' 17.519 W
9,141.0	1.70	243.70	9,053.2	-319.2	-1,155.8	466,940.55	642,840.33	32° 16' 59.760 N	104° 0' 17.565 W
9,235.0	1.20	229.80	9,147.2	-320.4	-1,157.8	466,939.30	642,838.33	32° 16' 59.747 N	104° 0' 17.589 W
9,330.0	0.60	223.20	9,242.1	-321.4	-1,158.9	466,938.29	642,837.23	32° 16' 59.737 N	104° 0' 17.601 W
9,425.0	0.30	245.20	9,337.1	-321.9	-1,159.4	466,937.83	642,836.66	32° 16' 59.733 N	104° 0' 17.608 W
9,488.0	0.30	255.40	9,400.1	-322.0	-1,159.8	466,937.71	642,836.35	32° 16' 59.732 N	104° 0' 17.612 W
9,608.0	0.80	281.40	9,520.1	-321.9	-1,160.9	466,937.80	642,835.23	32° 16' 59.732 N	104° 0' 17.625 W
9,703.0	14.20	352.50	9,614.1	-310.2	-1,163.1	466,949.54	642,833.04	32° 16' 59.849 N	104° 0' 17.650 W
9,798.0	24.80	354.50	9,703.6	-278.7	-1,166.5	466,981.02	642,829.60	32° 17' 0.160 N	104° 0' 17.689 W
9,892.0	38.00	355.90	9,783.6	-230.0	-1,170.5	467,029.72	642,825.63	32° 17' 0.642 N	104° 0' 17.733 W
9,986.0	47.30	356.40	9,852.7	-166.5	-1,174.7	467,093.19	642,821.38	32° 17' 1.271 N	104° 0' 17.780 W
10,081.0	55.80	358.10	9,911.7	-92.3	-1,178.2	467,167.44	642,817.88	32° 17' 2.005 N	104° 0' 17.819 W
10,173.5	64.08	0.25	9,958.0	-12.3	-1,179.3	467,247.41	642,816.79	32° 17' 2.797 N	104° 0' 17.828 W
330' HL Crossed @ 10173.5' MD / 9958.0' TVD									
10,176.0	64.30	0.30	9,959.1	-10.0	-1,179.3	467,249.66	642,816.80	32° 17' 2.819 N	104° 0' 17.828 W
10,271.0	74.80	359.20	9,992.2	78.8	-1,179.7	467,338.55	642,816.38	32° 17' 3.699 N	104° 0' 17.830 W
10,362.0	82.90	358.00	10,009.8	168.0	-1,181.9	467,427.73	642,814.19	32° 17' 4.581 N	104° 0' 17.852 W
10,392.0	86.60	357.40	10,012.6	197.9	-1,183.1	467,457.57	642,812.99	32° 17' 4.877 N	104° 0' 17.865 W
10,487.0	90.60	359.50	10,014.9	292.8	-1,185.7	467,552.48	642,810.42	32° 17' 5.816 N	104° 0' 17.892 W
10,581.0	91.30	1.50	10,013.3	386.8	-1,184.9	467,646.46	642,811.24	32° 17' 6.746 N	104° 0' 17.879 W
10,676.0	92.50	2.30	10,010.2	481.7	-1,181.7	467,741.35	642,814.39	32° 17' 7.685 N	104° 0' 17.839 W
10,771.0	89.00	2.10	10,008.9	576.6	-1,178.1	467,836.26	642,818.04	32° 17' 8.624 N	104° 0' 17.793 W
10,865.0	90.30	2.60	10,009.5	670.5	-1,174.2	467,930.18	642,821.89	32° 17' 9.553 N	104° 0' 17.745 W
10,960.0	88.70	0.90	10,010.3	765.4	-1,171.3	468,025.12	642,824.79	32° 17' 10.493 N	104° 0' 17.708 W
11,055.0	87.60	358.10	10,013.4	860.4	-1,172.1	468,120.06	642,823.96	32° 17' 11.432 N	104° 0' 17.714 W
11,149.0	89.80	359.80	10,015.5	954.3	-1,173.9	468,214.01	642,822.24	32° 17' 12.362 N	104° 0' 17.730 W



QES

Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Harroun Ranch 20702 20-17 Fed Com #7H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3043.0usft (Patterson #288)
Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3043.0usft (Patterson #288)
Well:	Harroun Ranch 20702 20-17 Fed Com #7H	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
11,243.0	90.90	0.20	10,015.0	1,048.3	-1,173.9	468,308.01	642,822.24	32° 17' 13.292 N	104° 0' 17.727 W
11,338.0	89.90	1.00	10,014.3	1,143.3	-1,172.9	468,403.00	642,823.24	32° 17' 14.232 N	104° 0' 17.712 W
11,432.0	88.80	359.70	10,015.4	1,237.3	-1,172.3	468,496.99	642,823.81	32° 17' 15.162 N	104° 0' 17.702 W
11,526.0	88.70	0.90	10,017.4	1,331.3	-1,171.8	468,590.96	642,824.30	32° 17' 16.092 N	104° 0' 17.693 W
11,620.0	87.40	359.90	10,020.6	1,425.2	-1,171.1	468,684.90	642,824.96	32° 17' 17.022 N	104° 0' 17.682 W
11,715.0	88.60	0.30	10,023.9	1,520.1	-1,171.0	468,779.84	642,825.13	32° 17' 17.961 N	104° 0' 17.677 W
11,810.0	92.50	2.80	10,023.0	1,615.1	-1,168.4	468,874.78	642,827.69	32° 17' 18.901 N	104° 0' 17.643 W
11,904.0	92.10	1.90	10,019.3	1,708.9	-1,164.6	468,968.62	642,831.55	32° 17' 19.829 N	104° 0' 17.595 W
11,999.0	92.70	1.10	10,015.3	1,803.8	-1,162.1	469,063.50	642,834.03	32° 17' 20.768 N	104° 0' 17.563 W
12,094.0	89.80	0.50	10,013.2	1,898.8	-1,160.7	469,158.46	642,835.36	32° 17' 21.708 N	104° 0' 17.544 W
12,188.0	88.30	359.20	10,014.8	1,992.7	-1,161.0	469,252.44	642,835.11	32° 17' 22.638 N	104° 0' 17.544 W
12,283.0	90.30	359.50	10,015.9	2,087.7	-1,162.1	469,347.43	642,834.03	32° 17' 23.578 N	104° 0' 17.553 W
12,377.0	90.80	358.40	10,015.0	2,181.7	-1,163.8	469,441.40	642,832.31	32° 17' 24.508 N	104° 0' 17.569 W
12,472.0	92.70	0.20	10,012.1	2,276.6	-1,165.0	469,536.34	642,831.15	32° 17' 25.447 N	104° 0' 17.580 W
12,567.0	93.10	1.50	10,007.3	2,371.5	-1,163.5	469,631.21	642,832.56	32° 17' 26.386 N	104° 0' 17.560 W
12,662.0	95.50	1.00	10,000.2	2,466.2	-1,161.5	469,725.91	642,834.62	32° 17' 27.323 N	104° 0' 17.532 W
12,756.0	91.80	0.60	9,994.2	2,560.0	-1,160.2	469,819.70	642,835.93	32° 17' 28.251 N	104° 0' 17.514 W
12,851.0	88.70	2.10	9,993.8	2,655.0	-1,157.9	469,914.65	642,838.17	32° 17' 29.191 N	104° 0' 17.484 W
12,945.0	88.70	1.00	9,995.9	2,748.9	-1,155.4	470,008.59	642,840.71	32° 17' 30.120 N	104° 0' 17.451 W
13,039.0	92.00	2.60	9,995.3	2,842.8	-1,152.4	470,102.53	642,843.66	32° 17' 31.050 N	104° 0' 17.414 W
13,134.0	88.90	1.40	9,994.6	2,937.8	-1,149.1	470,197.46	642,846.98	32° 17' 31.989 N	104° 0' 17.372 W
13,229.0	90.00	0.50	9,995.5	3,032.7	-1,147.6	470,292.44	642,848.55	32° 17' 32.929 N	104° 0' 17.350 W
13,325.0	88.40	2.10	9,996.9	3,128.7	-1,145.4	470,388.40	642,850.73	32° 17' 33.878 N	104° 0' 17.321 W
13,419.0	89.50	2.00	9,998.6	3,222.6	-1,142.0	470,482.32	642,854.09	32° 17' 34.808 N	104° 0' 17.278 W
13,514.0	88.20	358.50	10,000.5	3,317.6	-1,141.6	470,577.28	642,854.51	32° 17' 35.747 N	104° 0' 17.270 W
13,609.0	88.90	357.90	10,002.9	3,412.5	-1,144.6	470,672.20	642,851.53	32° 17' 36.687 N	104° 0' 17.302 W
13,703.0	88.40	2.60	10,005.1	3,506.4	-1,144.2	470,766.15	642,851.93	32° 17' 37.617 N	104° 0' 17.293 W
13,798.0	88.60	3.20	10,007.6	3,601.3	-1,139.4	470,860.99	642,856.74	32° 17' 38.555 N	104° 0' 17.234 W
13,893.0	88.80	3.30	10,009.7	3,696.1	-1,134.0	470,955.82	642,862.12	32° 17' 39.493 N	104° 0' 17.168 W
13,987.0	87.80	2.10	10,012.5	3,790.0	-1,129.6	471,049.67	642,866.55	32° 17' 40.422 N	104° 0' 17.113 W
14,082.0	86.80	0.20	10,017.0	3,884.8	-1,127.6	471,144.54	642,868.46	32° 17' 41.360 N	104° 0' 17.088 W
14,177.0	90.20	1.00	10,019.5	3,979.8	-1,126.7	471,239.49	642,869.45	32° 17' 42.300 N	104° 0' 17.073 W
14,271.0	92.40	0.00	10,017.4	4,073.8	-1,125.8	471,333.45	642,870.27	32° 17' 43.230 N	104° 0' 17.060 W
14,366.0	91.90	359.50	10,013.8	4,168.7	-1,126.2	471,428.38	642,869.86	32° 17' 44.169 N	104° 0' 17.061 W
14,460.0	87.40	0.00	10,014.4	4,262.7	-1,126.7	471,522.36	642,869.45	32° 17' 45.099 N	104° 0' 17.062 W
14,554.0	86.10	359.00	10,019.7	4,356.5	-1,127.5	471,616.20	642,868.63	32° 17' 46.028 N	104° 0' 17.069 W
14,649.0	89.30	358.10	10,023.5	4,451.4	-1,129.9	471,711.08	642,866.23	32° 17' 46.967 N	104° 0' 17.093 W
14,743.0	94.20	357.70	10,020.6	4,545.2	-1,133.3	471,804.94	642,862.78	32° 17' 47.896 N	104° 0' 17.130 W
14,838.0	90.30	359.10	10,016.9	4,640.1	-1,136.0	471,899.81	642,860.14	32° 17' 48.835 N	104° 0' 17.157 W
14,932.0	88.90	359.60	10,017.6	4,734.1	-1,137.0	471,993.80	642,859.07	32° 17' 49.765 N	104° 0' 17.167 W
15,027.0	91.50	359.60	10,017.2	4,829.1	-1,137.7	472,088.79	642,858.41	32° 17' 50.705 N	104° 0' 17.171 W
15,121.0	92.90	358.40	10,013.6	4,923.0	-1,139.3	472,182.70	642,856.77	32° 17' 51.634 N	104° 0' 17.187 W
15,215.0	90.90	0.10	10,010.5	5,016.9	-1,140.6	472,276.63	642,855.54	32° 17' 52.564 N	104° 0' 17.198 W
15,310.0	88.40	359.60	10,011.1	5,111.9	-1,140.8	472,371.62	642,855.29	32° 17' 53.504 N	104° 0' 17.197 W
15,405.0	88.20	359.30	10,013.9	5,206.9	-1,141.7	472,466.58	642,854.38	32° 17' 54.444 N	104° 0' 17.204 W
15,500.0	87.50	358.40	10,017.5	5,301.8	-1,143.6	472,561.49	642,852.47	32° 17' 55.383 N	104° 0' 17.223 W
15,595.0	89.40	358.00	10,020.0	5,396.7	-1,146.6	472,656.40	642,849.49	32° 17' 56.322 N	104° 0' 17.255 W
15,689.0	91.50	0.00	10,019.3	5,490.7	-1,148.3	472,750.38	642,847.85	32° 17' 57.252 N	104° 0' 17.270 W
15,784.0	92.00	0.00	10,016.4	5,585.6	-1,148.3	472,845.33	642,847.85	32° 17' 58.192 N	104° 0' 17.267 W
15,878.0	93.10	0.10	10,012.2	5,679.5	-1,148.2	472,939.24	642,847.93	32° 17' 59.121 N	104° 0' 17.263 W
15,973.0	93.60	0.60	10,006.7	5,774.4	-1,147.6	473,034.07	642,848.51	32° 18' 0.060 N	104° 0' 17.252 W
16,068.0	90.00	1.50	10,003.7	5,869.3	-1,145.9	473,128.99	642,850.25	32° 18' 0.999 N	104° 0' 17.229 W
16,162.0	89.10	2.60	10,004.4	5,963.2	-1,142.5	473,222.93	642,853.61	32° 18' 1.928 N	104° 0' 17.186 W
16,258.0	90.10	3.40	10,005.1	6,059.1	-1,137.5	473,318.79	642,858.64	32° 18' 2.877 N	104° 0' 17.124 W
16,352.0	90.50	2.80	10,004.6	6,153.0	-1,132.4	473,412.65	642,863.72	32° 18' 3.805 N	104° 0' 17.062 W



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Harroun Ranch 20702 20-17 Fed Com #7H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3043.0usft (Patterson #288)
Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3043.0usft (Patterson #288)
Well:	Harroun Ranch 20702 20-17 Fed Com #7H	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
16,447.0	90.90	3.10	10,003.4	6,247.8	-1,127.5	473,507.52	642,868.61	32° 18' 4.744 N	104° 0' 17.001 W
16,541.0	90.70	1.70	10,002.1	6,341.7	-1,123.6	473,601.43	642,872.55	32° 18' 5.673 N	104° 0' 16.952 W
16,636.0	84.40	358.70	10,006.2	6,436.6	-1,123.2	473,696.28	642,872.88	32° 18' 6.612 N	104° 0' 16.945 W
16,731.0	85.30	359.90	10,014.7	6,531.2	-1,124.4	473,790.89	642,871.73	32° 18' 7.548 N	104° 0' 16.955 W
16,826.0	87.30	0.40	10,020.9	6,626.0	-1,124.1	473,885.68	642,871.98	32° 18' 8.486 N	104° 0' 16.949 W
16,921.0	86.90	359.50	10,025.7	6,720.9	-1,124.2	473,980.56	642,871.89	32° 18' 9.425 N	104° 0' 16.946 W
17,015.0	91.10	1.90	10,027.3	6,814.8	-1,123.1	474,074.51	642,873.04	32° 18' 10.355 N	104° 0' 16.929 W
17,110.0	92.70	2.10	10,024.1	6,909.7	-1,119.7	474,169.40	642,876.36	32° 18' 11.294 N	104° 0' 16.887 W
17,205.0	90.50	1.30	10,021.5	7,004.6	-1,116.9	474,264.31	642,879.17	32° 18' 12.233 N	104° 0' 16.851 W
17,300.0	91.30	2.00	10,020.0	7,099.6	-1,114.2	474,359.26	642,881.91	32° 18' 13.172 N	104° 0' 16.816 W
17,394.0	88.60	0.00	10,020.1	7,193.5	-1,112.6	474,453.23	642,883.55	32° 18' 14.102 N	104° 0' 16.794 W
17,489.0	88.70	359.90	10,022.3	7,288.5	-1,112.6	474,548.20	642,883.46	32° 18' 15.042 N	104° 0' 16.791 W
17,584.0	92.70	1.70	10,021.2	7,383.5	-1,111.3	474,643.17	642,884.79	32° 18' 15.982 N	104° 0' 16.772 W
17,678.0	89.50	359.20	10,019.4	7,477.4	-1,110.6	474,737.13	642,885.53	32° 18' 16.911 N	104° 0' 16.760 W
17,773.0	89.80	359.20	10,019.9	7,572.4	-1,111.9	474,832.11	642,884.20	32° 18' 17.851 N	104° 0' 16.772 W
17,867.0	91.70	0.30	10,018.7	7,666.4	-1,112.3	474,926.10	642,883.79	32° 18' 18.782 N	104° 0' 16.774 W
17,962.0	89.90	359.70	10,017.4	7,761.4	-1,112.3	475,021.09	642,883.79	32° 18' 19.721 N	104° 0' 16.770 W
18,057.0	89.80	0.10	10,017.6	7,856.4	-1,112.5	475,116.09	642,883.62	32° 18' 20.662 N	104° 0' 16.769 W
18,151.0	89.10	359.90	10,018.5	7,950.4	-1,112.5	475,210.08	642,883.62	32° 18' 21.592 N	104° 0' 16.766 W
18,246.0	90.20	1.20	10,019.1	8,045.4	-1,111.6	475,305.07	642,884.54	32° 18' 22.532 N	104° 0' 16.752 W
18,341.0	90.70	1.00	10,018.4	8,140.3	-1,109.7	475,400.05	642,886.36	32° 18' 23.472 N	104° 0' 16.727 W
18,435.0	90.30	2.00	10,017.5	8,234.3	-1,107.3	475,494.01	642,888.82	32° 18' 24.401 N	104° 0' 16.695 W
18,531.0	89.30	3.20	10,017.9	8,330.2	-1,102.9	475,589.91	642,893.18	32° 18' 25.350 N	104° 0' 16.641 W
18,625.0	91.70	1.80	10,017.1	8,424.1	-1,098.8	475,683.81	642,897.27	32° 18' 26.279 N	104° 0' 16.590 W
18,720.0	89.10	359.40	10,016.4	8,519.1	-1,097.8	475,778.79	642,898.27	32° 18' 27.219 N	104° 0' 16.575 W
18,814.0	90.90	0.60	10,016.4	8,613.1	-1,097.8	475,872.78	642,898.27	32° 18' 28.149 N	104° 0' 16.571 W
18,908.0	93.10	1.80	10,013.1	8,707.0	-1,095.9	475,966.69	642,900.24	32° 18' 29.079 N	104° 0' 16.545 W
19,003.0	91.70	359.20	10,009.1	8,801.9	-1,095.0	476,061.60	642,901.06	32° 18' 30.018 N	104° 0' 16.532 W
19,098.0	89.20	359.90	10,008.4	8,896.9	-1,095.8	476,156.58	642,900.32	32° 18' 30.958 N	104° 0' 16.537 W
19,192.0	91.50	2.10	10,007.8	8,990.9	-1,094.1	476,250.55	642,901.96	32° 18' 31.887 N	104° 0' 16.515 W
19,287.0	88.30	358.80	10,008.0	9,085.8	-1,093.4	476,345.53	642,902.70	32° 18' 32.827 N	104° 0' 16.503 W
19,382.0	88.80	357.80	10,010.4	9,180.8	-1,096.2	476,440.45	642,899.89	32° 18' 33.767 N	104° 0' 16.532 W
19,477.0	90.70	1.30	10,010.8	9,275.7	-1,097.0	476,535.43	642,899.14	32° 18' 34.707 N	104° 0' 16.537 W
19,571.0	89.50	0.80	10,010.6	9,369.7	-1,095.2	476,629.41	642,900.86	32° 18' 35.637 N	104° 0' 16.514 W
19,666.0	89.90	0.60	10,011.1	9,464.7	-1,094.1	476,724.40	642,902.02	32° 18' 36.577 N	104° 0' 16.497 W
19,761.0	90.80	2.00	10,010.6	9,559.7	-1,091.9	476,819.37	642,904.18	32° 18' 37.516 N	104° 0' 16.469 W
19,855.0	93.00	2.70	10,007.4	9,653.5	-1,088.1	476,913.24	642,908.03	32° 18' 38.445 N	104° 0' 16.420 W
19,950.0	91.40	0.70	10,003.8	9,748.4	-1,085.3	477,008.12	642,910.84	32° 18' 39.384 N	104° 0' 16.384 W
20,046.0	89.60	358.90	10,003.0	9,844.4	-1,085.6	477,104.10	642,910.51	32° 18' 40.334 N	104° 0' 16.385 W
20,140.0	88.70	359.20	10,004.4	9,938.4	-1,087.2	477,198.08	642,908.95	32° 18' 41.264 N	104° 0' 16.399 W
20,161.7	88.17	359.02	10,004.9	9,960.1	-1,087.5	477,219.77	642,908.61	32° 18' 41.478 N	104° 0' 16.403 W
330' HL Crossed @ 20161.7' MD / 10004.9' TVD									
20,235.0	86.40	358.40	10,008.4	10,033.3	-1,089.1	477,292.97	642,906.96	32° 18' 42.203 N	104° 0' 16.419 W
20,329.0	86.30	357.40	10,014.4	10,127.0	-1,092.6	477,386.71	642,903.53	32° 18' 43.131 N	104° 0' 16.456 W
20,367.0	86.70	357.40	10,016.7	10,164.9	-1,094.3	477,424.60	642,901.81	32° 18' 43.506 N	104° 0' 16.475 W
20,430.0	86.70	357.40	10,020.3	10,227.7	-1,097.2	477,487.43	642,898.95	32° 18' 44.127 N	104° 0' 16.506 W
TD @ 20430.0' MD / 10020.3' TVD									



QES
Survey Report - Geographic



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Harroun Ranch 20702 20-17 Fed Com #7H
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Well:	Harroun Ranch 20702 20-17 Fed Com #7H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
137.0	137.0	-0.3	-0.2	First MWD Survey @ 137.0' MD / 137.0' TVD	
10,173.5	9,958.0	-12.3	-1,179.3	330' HL Crossed @ 10173.5' MD / 9958.0' TVD	
20,161.7	10,004.9	9,960.1	-1,087.5	330' HL Crossed @ 20161.7' MD / 10004.9' TVD	
20,430.0	10,020.3	10,227.7	-1,097.2	TD @ 20430.0' MD / 10020.3' TVD	

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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 27779

CONDITIONS OF APPROVAL

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX79701				OGRID: 260297	Action Number: 27779	Action Type: C-103N
OCD Reviewer				Condition		
ksimmons				None		