



NM OIL CONSERVATION
ARTESIA DISTRICT

JUL 12 2018

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BTA Oil Producers, LLC

Eddy County, New Mexico (NAD 83)

Sec 20, T23-S, R29-E

20702 Harroun Ranch Fed Com #3H

Wellbore #1

30-015-43438

Design: Wellbore #1

QES Survey Report

20 March, 2018





Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well 20702 Harroun Ranch Fed Com #3H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3012.0usft (Patterson #594)
Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3012.0usft (Patterson #594)
Well:	20702 Harroun Ranch Fed Com #3H	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	Latitude:	32° 17' 1.081 N
From:	Map	Easting:	642,041.70 usft	Longitude:	104° 0' 26.864 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well	20702 Harroun Ranch Fed Com #3H				
Well Position	+N/-S	0.0 usft	Northing:	467,081.50 usft	Latitude: 32° 17' 1.179 N
	+E/-W	0.0 usft	Easting:	642,013.40 usft	Longitude: 104° 0' 27.193 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level: 2,987.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/2/2018	7.09	60.04	47,865.44602545

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	357.62	

Survey Program	Date 3/20/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
158.0	21,190.0	QES MWD Surveys (Wellbore #1)	MWD default	MWD - Standard

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Builde 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	
First MWD Survey @ 158.0' MD / 158.0' TVD										
158.0	0.60	327.00	158.0	0.7	-0.5	0.7	0.38	0.38	0.00	
277.0	0.40	302.60	277.0	1.4	-1.1	1.5	0.24	-0.17	-20.50	
315.0	0.30	292.90	315.0	1.6	-1.3	1.6	0.30	-0.26	-25.53	
434.0	0.50	359.50	434.0	2.2	-1.6	2.3	0.39	0.17	55.97	
526.0	0.60	291.70	526.0	2.8	-2.1	2.9	0.67	0.11	-73.70	
714.0	0.90	312.30	714.0	4.1	-4.1	4.3	0.21	0.16	10.96	
904.0	1.10	299.80	903.9	6.0	-6.8	6.3	0.16	0.11	-6.58	
1,094.0	1.40	295.70	1,093.9	8.0	-10.5	8.4	0.16	0.16	-2.16	
1,283.0	1.30	308.40	1,282.8	10.3	-14.2	10.9	0.17	-0.05	6.72	



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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)	Buid Rate (°/100usft)	Turn Rate (°/100usft)
1,473.0	1.50	286.80	1,472.8	12.3	-18.3	13.1	0.29	0.11	-11.37
1,662.0	1.50	248.80	1,661.7	12.2	-23.0	13.1	0.52	0.00	-20.11
1,852.0	0.80	246.20	1,851.7	10.7	-26.5	11.8	0.37	-0.37	-1.37
2,041.0	0.50	100.10	2,040.7	10.1	-26.9	11.2	0.66	-0.16	-77.30
2,231.0	0.80	131.60	2,230.7	9.0	-25.1	10.1	0.24	0.16	16.58
2,420.0	1.80	114.00	2,419.6	6.9	-21.4	7.8	0.56	0.53	-9.31
2,610.0	3.30	198.40	2,609.5	0.5	-20.4	1.4	1.90	0.79	44.42
2,774.0	3.30	195.00	2,773.2	-8.5	-23.1	-7.5	0.12	0.00	-2.07
2,879.0	3.30	198.90	2,878.0	-14.3	-24.9	-13.2	0.21	0.00	3.71
3,069.0	3.50	223.50	3,067.7	-23.7	-30.6	-22.4	0.77	0.11	12.95
3,259.0	3.40	223.30	3,257.4	-32.0	-38.5	-30.3	0.05	-0.05	-0.11
3,447.0	3.60	223.00	3,445.0	-40.3	-46.3	-38.4	0.11	0.11	-0.16
3,637.0	4.30	244.40	3,634.6	-47.8	-56.8	-45.4	0.85	0.37	11.26
3,826.0	4.30	254.60	3,823.0	-52.7	-70.0	-49.8	0.40	0.00	5.40
4,016.0	4.70	260.90	4,012.5	-55.8	-84.6	-52.3	0.33	0.21	3.32
4,205.0	4.80	254.20	4,200.8	-59.2	-99.8	-55.0	0.30	0.05	-3.54
4,394.0	4.90	249.50	4,389.1	-64.2	-115.0	-59.4	0.22	0.05	-2.49
4,584.0	4.90	249.90	4,578.4	-69.8	-130.2	-64.4	0.02	0.00	0.21
4,773.0	5.10	249.70	4,766.7	-75.5	-145.7	-69.4	0.11	0.11	-0.11
4,963.0	4.90	248.40	4,956.0	-81.4	-161.2	-74.7	0.12	-0.11	-0.68
5,153.0	4.80	247.40	5,145.3	-87.5	-176.0	-80.1	0.07	-0.05	-0.53
5,343.0	4.60	248.40	5,334.7	-93.3	-190.5	-85.4	0.11	-0.11	0.53
5,532.0	4.20	247.40	5,523.1	-98.8	-203.9	-90.2	0.22	-0.21	-0.53
5,722.0	4.20	246.20	5,712.6	-104.3	-216.7	-95.2	0.05	0.00	-0.63
5,912.0	4.90	258.50	5,902.0	-108.7	-231.0	-99.0	0.63	0.37	6.47
6,102.0	4.50	255.30	6,091.4	-112.2	-246.2	-101.9	0.25	-0.21	-1.68
6,292.0	4.40	253.00	6,280.8	-116.2	-260.3	-105.3	0.11	-0.05	-1.21
6,481.0	4.20	250.60	6,469.3	-120.7	-273.8	-109.2	0.14	-0.11	-1.27
6,671.0	3.70	248.40	6,658.8	-125.2	-286.1	-113.2	0.27	-0.26	-1.16
6,861.0	4.20	243.20	6,848.4	-130.6	-298.0	-118.1	0.32	0.26	-2.74
7,050.0	4.60	253.70	7,036.8	-135.9	-311.4	-122.8	0.47	0.21	5.56
7,240.0	5.50	246.30	7,226.1	-141.7	-327.1	-128.0	0.58	0.47	-3.89
7,429.0	5.10	241.90	7,414.3	-149.3	-342.8	-134.9	0.30	-0.21	-2.33
7,619.0	4.60	278.50	7,603.6	-152.1	-357.8	-137.1	1.62	-0.26	19.26
7,809.0	3.80	272.90	7,793.1	-150.7	-371.6	-135.1	0.47	-0.42	-2.95
7,998.0	4.30	283.40	7,981.7	-148.7	-384.7	-132.6	0.47	0.26	5.56
8,187.0	2.90	313.30	8,170.3	-143.8	-395.1	-127.3	1.22	-0.74	15.82
8,377.0	1.90	293.80	8,360.1	-139.2	-401.5	-122.4	0.67	-0.53	-10.26
8,567.0	2.50	276.00	8,550.0	-137.5	-408.5	-120.4	0.48	0.32	-9.37
8,757.0	2.40	262.90	8,739.8	-137.6	-416.6	-120.2	0.30	-0.05	-6.89
8,946.0	1.10	258.50	8,928.7	-138.4	-422.3	-120.8	0.69	-0.69	-2.33
9,135.0	2.10	265.70	9,117.6	-139.0	-427.5	-121.2	0.54	0.53	3.81
9,325.0	2.40	276.00	9,307.5	-138.9	-434.9	-120.7	0.26	0.16	5.42



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9,514.0	1.70	278.00	9,496.4	-138.1	-441.6	-119.6	0.37	-0.37	1.06
9,704.0	1.30	266.70	9,686.3	-137.8	-446.6	-119.2	0.26	-0.21	-5.95
9,894.0	1.10	255.10	9,876.3	-138.4	-450.5	-119.6	0.17	-0.11	-6.11
10,084.0	1.00	251.60	10,066.2	-139.4	-453.8	-120.4	0.06	-0.05	-1.84
10,207.0	0.60	254.20	10,189.2	-139.9	-455.5	-120.9	0.33	-0.33	2.11
10,286.0	2.10	338.30	10,268.2	-138.7	-456.4	-119.6	2.69	1.90	106.46
10,381.0	10.70	7.40	10,362.5	-128.3	-455.9	-109.3	9.39	9.05	30.63
10,475.0	18.70	355.50	10,453.4	-104.6	-456.0	-85.6	9.05	8.51	-12.66
10,570.0	27.40	356.20	10,540.7	-67.5	-458.6	-48.4	9.16	9.16	0.74
10,665.0	37.50	359.20	10,620.8	-16.7	-460.5	2.5	10.76	10.63	3.16
10,760.0	46.40	0.60	10,691.4	46.8	-460.5	65.9	9.42	9.37	1.47
10,871.0	57.50	359.90	10,759.7	134.1	-460.2	153.0	10.01	10.00	-0.63
Crossed PA 330' FSL @ 10896.5' MD / 10772.9' TVD									
10,896.5	60.05	359.44	10,772.9	155.9	-460.3	174.8	10.11	9.99	-1.81
10,978.0	68.20	358.10	10,808.5	229.1	-461.9	248.1	10.11	10.00	-1.64
11,072.0	76.40	0.20	10,837.0	318.6	-463.2	337.5	8.98	8.72	2.23
11,166.0	83.60	359.90	10,853.3	411.1	-463.1	430.0	7.67	7.66	-0.32
11,261.0	90.80	358.10	10,858.0	505.9	-464.8	524.7	7.81	7.58	-1.89
11,355.0	89.90	355.00	10,857.4	599.7	-470.4	618.7	3.43	-0.96	-3.30
11,449.0	91.50	352.90	10,856.2	693.2	-480.4	712.5	2.81	1.70	-2.23
11,544.0	88.30	357.30	10,856.4	787.8	-488.5	807.4	5.73	-3.37	4.63
11,638.0	90.20	357.40	10,857.6	881.7	-492.8	901.4	2.02	2.02	0.11
11,732.0	87.00	0.90	10,859.9	975.6	-494.2	995.3	5.04	-3.40	3.72
11,827.0	87.50	359.70	10,864.5	1,070.5	-493.7	1,090.1	1.37	0.53	-1.26
11,922.0	87.30	0.10	10,868.8	1,165.4	-493.9	1,184.9	0.47	-0.21	0.42
12,016.0	88.00	1.60	10,872.7	1,259.3	-492.5	1,278.7	1.76	0.74	1.60
12,110.0	90.60	1.80	10,873.8	1,353.2	-489.7	1,372.4	2.77	2.77	0.21
12,205.0	89.30	1.80	10,873.9	1,448.2	-486.7	1,467.1	1.37	-1.37	0.00
12,299.0	89.10	3.00	10,875.2	1,542.1	-482.8	1,560.8	1.29	-0.21	1.28
12,394.0	89.80	0.60	10,876.1	1,637.0	-479.8	1,655.5	2.63	0.74	-2.53
12,488.0	91.60	2.90	10,875.0	1,731.0	-476.9	1,749.3	3.11	1.91	2.45
12,583.0	89.20	0.90	10,874.3	1,825.9	-473.8	1,844.0	3.29	-2.53	-2.11
12,677.0	88.20	359.40	10,876.4	1,919.9	-473.5	1,937.9	1.92	-1.06	-1.60
12,771.0	88.70	0.80	10,879.0	2,013.8	-473.4	2,031.8	1.58	0.53	1.49
12,866.0	90.40	359.90	10,879.7	2,108.8	-472.8	2,126.6	2.02	1.79	-0.95
12,961.0	90.00	358.10	10,879.4	2,203.8	-474.4	2,221.6	1.94	-0.42	-1.89
13,056.0	88.80	356.00	10,880.4	2,298.7	-479.3	2,316.6	2.55	-1.26	-2.21
13,148.0	91.30	355.90	10,880.3	2,390.4	-485.8	2,408.6	2.72	2.72	-0.11
13,243.0	89.00	353.60	10,880.1	2,485.0	-494.5	2,503.4	3.42	-2.42	-2.42
13,338.0	90.00	353.60	10,880.9	2,579.4	-505.1	2,598.2	1.05	1.05	0.00
13,433.0	90.20	352.90	10,880.7	2,673.8	-516.3	2,692.9	0.77	0.21	-0.74
13,527.0	89.00	350.20	10,881.4	2,766.7	-530.1	2,786.4	3.14	-1.28	-2.87
13,621.0	90.20	350.00	10,882.0	2,859.3	-546.2	2,879.6	1.29	1.28	-0.21



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13,716.0	91.40	353.20	10,880.7	2,953.3	-560.1	2,974.0	3.60	1.26	3.37
13,811.0	89.90	357.60	10,879.6	3,048.0	-567.7	3,068.9	4.89	-1.58	4.63
13,906.0	91.40	359.70	10,878.6	3,142.9	-570.0	3,163.9	2.72	1.58	2.21
14,000.0	89.20	358.50	10,878.1	3,236.9	-571.4	3,257.8	2.67	-2.34	-1.28
14,096.0	89.20	358.10	10,879.4	3,332.8	-574.3	3,353.8	0.42	0.00	-0.42
14,189.0	88.60	357.40	10,881.2	3,425.8	-577.9	3,446.8	0.99	-0.65	-0.75
14,284.0	88.30	358.50	10,883.8	3,520.7	-581.3	3,541.8	1.20	-0.32	1.16
14,378.0	91.90	358.50	10,883.6	3,614.6	-583.8	3,635.7	3.83	3.83	0.00
14,473.0	91.30	358.10	10,880.9	3,709.5	-586.6	3,730.7	0.76	-0.63	-0.42
14,567.0	88.90	356.70	10,880.8	3,803.4	-590.9	3,824.7	2.96	-2.55	-1.49
14,662.0	87.80	356.40	10,883.5	3,898.2	-596.6	3,919.6	1.20	-1.16	-0.32
14,756.0	87.40	356.00	10,887.4	3,991.9	-602.8	4,013.5	0.60	-0.43	-0.43
14,851.0	87.00	356.40	10,892.1	4,086.6	-609.1	4,108.4	0.60	-0.42	0.42
14,945.0	90.50	354.10	10,894.1	4,180.2	-616.9	4,202.2	4.45	3.72	-2.45
15,040.0	90.40	353.70	10,893.4	4,274.7	-627.0	4,297.0	0.43	-0.11	-0.42
15,134.0	89.80	354.80	10,893.2	4,368.2	-636.4	4,390.9	1.33	-0.64	1.17
15,229.0	89.30	354.30	10,894.0	4,462.8	-645.4	4,485.7	0.74	-0.53	-0.53
15,323.0	92.00	353.60	10,892.9	4,556.2	-655.3	4,579.5	2.97	2.87	-0.74
15,417.0	92.20	353.70	10,889.5	4,649.6	-665.7	4,673.2	0.24	0.21	0.11
15,512.0	92.10	353.90	10,885.9	4,744.0	-676.0	4,768.0	0.24	-0.11	0.21
15,607.0	91.80	354.30	10,882.7	4,838.4	-685.7	4,862.7	0.53	-0.32	0.42
15,701.0	91.50	354.80	10,880.0	4,932.0	-694.7	4,956.6	0.62	-0.32	0.53
15,795.0	90.80	355.50	10,878.1	5,025.6	-702.6	5,050.4	1.05	-0.74	0.74
15,890.0	90.30	355.90	10,877.2	5,120.3	-709.7	5,145.4	0.67	-0.53	0.42
15,985.0	89.70	356.20	10,877.2	5,215.1	-716.3	5,240.3	0.71	-0.63	0.32
16,080.0	91.70	358.10	10,876.0	5,310.0	-721.0	5,335.3	2.90	2.11	2.00
16,174.0	91.70	358.30	10,873.2	5,403.9	-723.9	5,429.3	0.21	0.00	0.21
16,268.0	91.70	358.70	10,870.4	5,497.8	-726.4	5,523.2	0.43	0.00	0.43
16,363.0	91.60	359.40	10,867.7	5,592.8	-728.0	5,618.2	0.74	-0.11	0.74
16,457.0	91.60	359.90	10,865.1	5,686.7	-728.6	5,712.1	0.53	0.00	0.53
16,551.0	90.30	359.90	10,863.5	5,780.7	-728.7	5,806.0	1.38	-1.38	0.00
16,646.0	88.60	359.90	10,864.4	5,875.7	-728.9	5,900.9	1.79	-1.79	0.00
16,740.0	89.40	0.40	10,866.1	5,969.7	-728.6	5,994.8	1.00	0.85	0.53
16,834.0	90.00	1.10	10,866.5	6,063.7	-727.4	6,088.6	0.98	0.64	0.74
16,929.0	89.70	0.80	10,866.8	6,158.7	-725.8	6,183.5	0.45	-0.32	-0.32
17,023.0	89.40	0.90	10,867.5	6,252.6	-724.4	6,277.3	0.34	-0.32	0.11
17,118.0	89.30	0.90	10,868.6	6,347.6	-722.9	6,372.2	0.11	-0.11	0.00
17,212.0	89.30	1.10	10,869.8	6,441.6	-721.3	6,466.0	0.21	0.00	0.21
17,306.0	88.70	0.90	10,871.4	6,535.6	-719.7	6,559.8	0.67	-0.64	-0.21
17,406.0	92.00	3.40	10,870.8	6,635.5	-715.9	6,659.5	4.14	3.30	2.50
17,500.0	92.20	3.80	10,867.3	6,729.2	-710.0	6,752.9	0.48	0.21	0.43
17,595.0	91.80	4.80	10,864.0	6,823.9	-702.9	6,847.2	1.13	-0.42	1.05
17,690.0	91.10	4.60	10,861.6	6,918.6	-695.1	6,941.5	0.77	-0.74	-0.21
17,784.0	90.00	4.50	10,860.7	7,012.3	-687.7	7,034.8	1.18	-1.17	-0.11



Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well 20702 Harroun Ranch Fed Com #3H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 3012.0usft (Patterson #594)
Site:	Sec 20, T23-S, R29-E	MD Reference:	WELL @ 3012.0usft (Patterson #594)
Well:	20702 Harroun Ranch Fed Com #3H	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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,878.0	89.10	4.50	10,861.5	7,106.0	-680.3	7,128.1	0.96	-0.96	0.00
17,973.0	88.90	5.00	10,863.1	7,200.6	-672.4	7,222.3	0.57	-0.21	0.53
18,068.0	89.50	5.70	10,864.4	7,295.2	-663.6	7,316.5	0.97	0.63	0.74
18,163.0	87.90	4.80	10,866.6	7,389.8	-654.9	7,410.6	1.93	-1.68	-0.95
18,257.0	87.70	5.20	10,870.2	7,483.3	-646.7	7,503.7	0.48	-0.21	0.43
18,352.0	87.10	5.00	10,874.5	7,577.9	-638.2	7,597.8	0.67	-0.63	-0.21
18,446.0	87.40	2.00	10,879.0	7,671.6	-632.5	7,691.2	3.20	0.32	-3.19
18,539.0	90.10	2.20	10,881.1	7,764.5	-629.1	7,783.9	2.91	2.90	0.22
18,634.0	89.60	2.00	10,881.3	7,859.4	-625.6	7,878.6	0.57	-0.53	-0.21
18,729.0	89.40	2.50	10,882.1	7,954.3	-621.9	7,973.3	0.57	-0.21	0.53
18,824.0	88.30	2.00	10,884.0	8,049.2	-618.2	8,068.0	1.27	-1.16	-0.53
18,918.0	88.40	2.20	10,886.8	8,143.1	-614.7	8,161.6	0.24	0.11	0.21
19,012.0	88.00	2.20	10,889.7	8,237.0	-611.1	8,255.3	0.43	-0.43	0.00
19,107.0	90.00	3.60	10,891.4	8,331.9	-606.3	8,349.9	2.57	2.11	1.47
19,202.0	89.30	2.50	10,891.9	8,426.7	-601.3	8,444.4	1.37	-0.74	-1.16
19,297.0	91.70	5.50	10,891.1	8,521.5	-594.6	8,538.8	4.04	2.53	3.16
19,392.0	91.90	5.70	10,888.1	8,616.0	-585.4	8,632.9	0.30	0.21	0.21
19,486.0	92.20	6.60	10,884.8	8,709.4	-575.3	8,725.8	1.01	0.32	0.96
19,580.0	90.70	5.00	10,882.4	8,802.9	-565.8	8,818.8	2.33	-1.60	-1.70
19,675.0	89.90	5.20	10,881.9	8,897.5	-557.4	8,913.0	0.87	-0.84	0.21
19,770.0	90.30	5.20	10,881.7	8,992.1	-548.8	9,007.1	0.42	0.42	0.00
19,865.0	90.80	6.00	10,880.8	9,086.6	-539.5	9,101.2	0.99	0.53	0.84
19,959.0	91.10	6.70	10,879.3	9,180.1	-529.1	9,194.1	0.81	0.32	0.74
20,054.0	91.80	7.60	10,876.9	9,274.3	-517.3	9,287.8	1.20	0.74	0.95
20,149.0	90.40	5.20	10,875.0	9,368.7	-506.7	9,381.6	2.92	-1.47	-2.53
20,244.0	90.20	5.70	10,874.5	9,463.2	-497.7	9,475.7	0.57	-0.21	0.53
20,338.0	89.30	3.60	10,874.9	9,556.9	-490.0	9,569.0	2.43	-0.96	-2.23
20,432.0	90.20	5.20	10,875.4	9,650.6	-482.8	9,662.4	1.95	0.96	1.70
20,527.0	90.40	5.30	10,874.9	9,745.2	-474.1	9,756.5	0.24	0.21	0.11
20,621.0	90.20	4.30	10,874.4	9,838.9	-466.3	9,849.8	1.08	-0.21	-1.06
20,716.0	89.90	3.40	10,874.3	9,933.7	-459.9	9,944.2	1.00	-0.32	-0.95
20,810.0	89.00	2.70	10,875.2	10,027.5	-454.9	10,037.8	1.21	-0.96	-0.74
20,905.0	89.30	2.70	10,876.6	10,122.4	-450.4	10,132.4	0.32	0.32	0.00
Crossed PA 330' FNL @ 20908.5' MD / 10876.6' TVD									
20,908.5	89.30	2.70	10,876.6	10,125.9	-450.3	10,135.9	0.00	0.00	0.00
20,999.0	89.20	2.70	10,877.8	10,216.3	-446.0	10,226.0	0.11	-0.11	0.00
21,140.0	91.60	4.60	10,876.8	10,357.0	-437.0	10,366.2	2.17	1.70	1.35
TD @ 21190.0' MD / 10875.4' TVD									
21,190.0	91.60	4.60	10,875.4	10,406.8	-433.0	10,415.8	0.00	0.00	0.00



Survey Report



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Well:	20702 Harroun Ranch Fed Com #3H	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		Comment
		+N/-S (usft)	+E/-W (usft)	
158.0	158.0	0.7	-0.5	First MWD Survey @ 158.0' MD / 158.0' TVD
10,896.5	10,772.9	155.9	-460.3	Crossed PA 330' FSL @ 10896.5' MD / 10772.9' TVD
20,908.5	10,876.6	10,125.9	-450.3	Crossed PA 330' FNL @ 20908.5' MD / 10876.6' TVD
21,190.0	10,875.4	10,406.8	-433.0	TD @ 21190.0' MD / 10875.4' TVD

Checked By: _____ Approved By: _____ Date: _____