



BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Sec 27, T25-S, R33-E

Rojo 7811 27 Fed Com #34H

Wellbore #1

Design: Wellbore #1

QES Survey Report

04 November, 2019





Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 27 Fed Com #34H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3369.0usft (Patterson #566)
Site:	Sec 27, T25-S, R33-E	MD Reference:	WELL @ 3369.0usft (Patterson #566)
Well:	Rojo 7811 27 Fed Com #34H	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		
Map 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 7811 27 Fed Com #34H					
Well Position	+N/-S	0.0 usft	Northing:	403,759.50 usft	Latitude:	32° 6' 27.456 N
	+E/-W	0.0 usft	Easting:	782,117.40 usft	Longitude:	103° 33' 20.501 W
Position Uncertainty	0.0 usft		Wellhead Elevation:	usft	Ground Level:	3,344.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	10/16/2019	6.60	59.70	47,731.20000000

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	169.23	

Survey Program	Date	11/4/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
160.0	17,876.0	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
First MWD Survey @ 160.0' MD / 160.0' TVD									
160.0	2.00	184.10	160.0	-2.8	-0.2	2.7	1.25	1.25	0.00
317.0	0.30	300.10	316.9	-5.3	-0.8	5.1	1.37	-1.08	73.89
410.0	0.20	354.10	409.9	-5.0	-1.0	4.8	0.26	-0.11	58.06
533.0	0.40	4.40	532.9	-4.4	-1.0	4.1	0.17	0.16	8.37
687.0	0.60	9.50	686.9	-3.1	-0.8	2.9	0.13	0.13	3.31
811.0	0.80	5.80	810.9	-1.6	-0.6	1.4	0.17	0.16	-2.98
904.0	0.90	3.00	903.9	-0.2	-0.5	0.1	0.12	0.11	-3.01
980.0	1.10	1.80	979.9	1.1	-0.4	-1.2	0.26	0.26	-1.58
1,072.0	1.00	352.10	1,071.9	2.8	-0.5	-2.9	0.22	-0.11	-10.54



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1,165.0	1.10	357.60	1,164.9	4.5	-0.7	-4.6	0.15	0.11	5.91
1,259.0	1.10	0.00	1,258.8	6.3	-0.7	-6.3	0.05	0.00	2.55
1,352.0	1.10	353.50	1,351.8	8.1	-0.8	-8.1	0.13	0.00	-6.99
1,445.0	3.30	50.00	1,444.8	10.7	1.1	-10.3	3.06	2.37	60.75
1,539.0	7.10	62.30	1,538.4	15.2	8.4	-13.3	4.19	4.04	13.09
1,632.0	10.10	73.70	1,630.3	20.1	21.3	-15.8	3.70	3.23	12.26
1,725.0	10.50	74.60	1,721.8	24.7	37.3	-17.3	0.46	0.43	0.97
1,819.0	10.10	74.60	1,814.3	29.1	53.5	-18.6	0.43	-0.43	0.00
1,912.0	9.90	74.40	1,905.9	33.4	69.0	-19.9	0.22	-0.22	-0.22
2,005.0	9.60	74.00	1,997.5	37.7	84.2	-21.3	0.33	-0.32	-0.43
2,099.0	9.50	74.20	2,090.2	42.0	99.2	-22.7	0.11	-0.11	0.21
2,192.0	9.30	74.40	2,182.0	46.1	113.8	-24.0	0.22	-0.22	0.22
2,285.0	9.10	75.10	2,273.8	50.0	128.2	-25.2	0.25	-0.22	0.75
2,379.0	8.90	73.30	2,366.6	54.0	142.3	-26.5	0.37	-0.21	-1.91
2,472.0	9.00	72.60	2,458.5	58.3	156.1	-28.1	0.16	0.11	-0.75
2,565.0	9.10	71.90	2,550.3	62.7	170.1	-29.8	0.16	0.11	-0.75
2,659.0	9.10	71.20	2,643.2	67.4	184.2	-31.8	0.12	0.00	-0.74
2,752.0	9.10	70.40	2,735.0	72.3	198.1	-34.0	0.14	0.00	-0.86
Cross 280' HL@ 2785.8' MD / 2768.4' TVD									
2,785.8	9.14	69.96	2,768.4	74.1	203.1	-34.8	0.23	0.11	-1.30
2,845.0	9.20	69.20	2,826.8	77.4	211.9	-36.4	0.23	0.11	-1.29
2,938.0	9.40	68.90	2,918.6	82.7	226.0	-39.1	0.22	0.22	-0.32
3,032.0	9.70	67.90	3,011.3	88.5	240.5	-42.0	0.36	0.32	-1.06
Cross 280' HL@ 3091.7' MD / 3070.1' TVD									
3,091.7	10.00	72.93	3,070.1	91.9	250.1	-43.5	1.53	0.50	8.43
3,125.0	10.20	75.60	3,102.9	93.5	255.7	-44.0	1.53	0.60	8.01
3,218.0	10.80	75.80	3,194.3	97.7	272.1	-45.1	0.65	0.65	0.22
3,311.0	9.40	72.60	3,285.9	102.1	287.8	-46.5	1.62	-1.51	-3.44
3,405.0	9.30	77.20	3,378.6	106.1	302.6	-47.6	0.80	-0.11	4.89
3,498.0	9.50	77.40	3,470.4	109.4	317.4	-48.2	0.22	0.22	0.22
3,591.0	9.10	76.90	3,562.2	112.7	332.0	-48.7	0.44	-0.43	-0.54
3,685.0	8.70	78.80	3,655.0	115.8	346.2	-49.1	0.53	-0.43	2.02
3,778.0	8.30	79.30	3,747.0	118.4	359.7	-49.1	0.44	-0.43	0.54
3,871.0	7.90	82.10	3,839.1	120.5	372.7	-48.8	0.60	-0.43	3.01
3,964.0	7.70	82.30	3,931.2	122.2	385.2	-48.1	0.22	-0.22	0.22
4,058.0	7.00	83.40	4,024.5	123.8	397.1	-47.4	0.76	-0.74	1.17
4,151.0	6.40	85.60	4,116.8	124.8	407.9	-46.4	0.70	-0.65	2.37
4,244.0	5.90	87.40	4,209.3	125.4	417.8	-45.1	0.58	-0.54	1.94
4,338.0	6.40	73.50	4,302.8	127.1	427.7	-45.0	1.67	0.53	-14.79
4,431.0	6.80	74.40	4,395.1	130.1	438.0	-45.9	0.44	0.43	0.97
4,524.0	6.30	66.80	4,487.5	133.6	448.0	-47.5	1.07	-0.54	-8.17
4,617.0	6.90	67.00	4,579.9	137.8	457.8	-49.8	0.65	0.65	0.22
4,711.0	7.10	76.90	4,673.2	141.3	468.6	-51.2	1.30	0.21	10.53



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4,804.0	6.40	70.00	4,765.6	144.4	479.1	-52.3	1.15	-0.75	-7.42
4,897.0	5.90	64.90	4,858.0	148.2	488.3	-54.3	0.80	-0.54	-5.48
4,990.0	5.20	65.30	4,950.6	151.9	496.5	-56.5	0.75	-0.75	0.43
5,084.0	4.90	63.70	5,044.2	155.5	503.9	-58.6	0.35	-0.32	-1.70
5,177.0	6.90	61.60	5,136.7	159.9	512.4	-61.4	2.16	2.15	-2.26
5,270.0	7.40	61.40	5,229.0	165.4	522.6	-64.9	0.54	0.54	-0.22
5,363.0	7.30	60.50	5,321.3	171.2	533.0	-68.6	0.16	-0.11	-0.97
5,457.0	7.70	65.80	5,414.4	176.7	543.9	-72.0	0.85	0.43	5.64
5,550.0	7.80	66.00	5,506.6	181.9	555.4	-74.9	0.11	0.11	0.22
5,643.0	7.80	64.50	5,598.7	187.1	566.8	-77.9	0.22	0.00	-1.61
5,737.0	7.70	65.30	5,691.9	192.5	578.3	-81.1	0.16	-0.11	0.85
5,830.0	7.70	64.20	5,784.0	197.8	589.6	-84.2	0.16	0.00	-1.18
5,923.0	7.70	63.80	5,876.2	203.3	600.8	-87.5	0.06	0.00	-0.43
6,016.0	8.30	67.90	5,968.3	208.6	612.6	-90.4	0.89	0.65	4.41
6,110.0	8.20	68.90	6,061.3	213.5	625.1	-93.0	0.19	-0.11	1.06
6,203.0	7.70	67.70	6,153.4	218.3	637.1	-95.4	0.57	-0.54	-1.29
6,296.0	7.70	66.80	6,245.6	223.1	648.6	-98.0	0.13	0.00	-0.97
6,390.0	7.40	66.70	6,338.8	228.0	659.9	-100.7	0.32	-0.32	-0.11
6,483.0	7.40	66.50	6,431.0	232.7	670.9	-103.3	0.03	0.00	-0.22
6,576.0	7.50	65.80	6,523.2	237.6	682.0	-106.0	0.15	0.11	-0.75
6,669.0	7.60	66.50	6,615.4	242.6	693.1	-108.8	0.15	0.11	0.75
6,762.0	7.40	66.00	6,707.6	247.5	704.2	-111.5	0.23	-0.22	-0.54
6,856.0	7.60	65.80	6,800.8	252.5	715.4	-114.3	0.21	0.21	-0.21
6,949.0	7.30	65.30	6,893.0	257.5	726.4	-117.2	0.33	-0.32	-0.54
7,042.0	7.10	65.60	6,985.3	262.3	737.0	-120.0	0.22	-0.22	0.32
7,136.0	6.90	64.50	7,078.6	267.1	747.4	-122.8	0.26	-0.21	-1.17
7,229.0	6.50	67.20	7,171.0	271.6	757.3	-125.3	0.55	-0.43	2.90
7,322.0	6.80	69.60	7,263.3	275.5	767.3	-127.3	0.44	0.32	2.58
7,415.0	6.90	70.40	7,355.7	279.3	777.7	-129.1	0.15	0.11	0.86
7,509.0	7.50	79.00	7,448.9	282.4	789.1	-130.0	1.31	0.64	9.15
7,602.0	7.40	79.80	7,541.1	284.6	800.9	-129.9	0.15	-0.11	0.86
7,695.0	6.90	80.70	7,633.4	286.6	812.3	-129.7	0.55	-0.54	0.97
7,788.0	6.20	79.50	7,725.8	288.4	822.8	-129.6	0.77	-0.75	-1.29
7,881.0	5.50	79.70	7,818.3	290.1	832.1	-129.5	0.75	-0.75	0.22
7,975.0	4.70	78.60	7,912.0	291.7	840.3	-129.5	0.86	-0.85	-1.17
8,068.0	6.10	70.00	8,004.5	294.1	848.7	-130.3	1.73	1.51	-9.25
8,161.0	6.30	68.60	8,097.0	297.7	858.1	-132.1	0.27	0.22	-1.51
8,255.0	6.00	68.60	8,190.5	301.3	867.5	-133.9	0.32	-0.32	0.00
8,348.0	5.50	67.00	8,283.0	304.9	876.1	-135.8	0.56	-0.54	-1.72
8,441.0	5.00	65.40	8,375.6	308.3	883.9	-137.7	0.56	-0.54	-1.72
8,524.0	5.80	66.30	8,458.2	311.5	891.0	-139.5	0.97	0.96	1.08
8,618.0	5.80	65.30	8,551.7	315.4	899.7	-141.7	0.11	0.00	-1.06
8,711.0	5.50	70.50	8,644.3	318.8	908.1	-143.5	0.64	-0.32	5.59
8,804.0	5.00	70.70	8,736.9	321.6	916.2	-144.8	0.54	-0.54	0.22



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8,898.0	4.40	70.40	8,830.6	324.2	923.4	-145.9	0.64	-0.64	-0.32
8,991.0	3.70	73.30	8,923.4	326.3	929.7	-146.8	0.78	-0.75	3.12
9,084.0	2.90	70.00	9,016.2	327.9	934.8	-147.5	0.88	-0.86	-3.55
9,177.0	2.50	68.20	9,109.1	329.5	938.9	-148.2	0.44	-0.43	-1.94
9,270.0	2.00	67.50	9,202.0	330.9	942.2	-149.0	0.54	-0.54	-0.75
9,364.0	1.60	46.30	9,296.0	332.4	944.7	-150.0	0.82	-0.43	-22.55
9,457.0	1.20	20.10	9,389.0	334.2	946.0	-151.6	0.80	-0.43	-28.17
9,550.0	1.60	354.10	9,481.9	336.4	946.2	-153.7	0.80	0.43	-27.96
9,643.0	0.40	38.70	9,574.9	338.0	946.2	-155.2	1.45	-1.29	47.96
9,737.0	0.40	139.80	9,668.9	338.0	946.7	-155.1	0.66	0.00	107.55
9,830.0	0.30	250.40	9,761.9	337.6	946.6	-154.8	0.62	-0.11	118.92
9,923.0	0.60	332.40	9,854.9	338.0	946.2	-155.2	0.68	0.32	88.17
10,017.0	1.50	343.50	9,948.9	339.6	945.6	-156.9	0.98	0.96	11.81
10,110.0	1.20	340.20	10,041.9	341.7	944.9	-159.1	0.33	-0.32	-3.55
10,203.0	0.90	304.10	10,134.8	343.0	944.0	-160.6	0.76	-0.32	-38.82
10,297.0	1.40	292.20	10,228.8	343.9	942.3	-161.7	0.59	0.53	-12.66
10,390.0	0.60	309.10	10,321.8	344.6	940.9	-162.7	0.91	-0.86	18.17
10,483.0	1.10	111.50	10,414.8	344.6	941.3	-162.6	1.81	0.54	174.62
10,577.0	1.40	106.20	10,508.8	343.9	943.3	-161.6	0.34	0.32	-5.64
10,670.0	1.10	73.50	10,601.8	343.9	945.2	-161.2	0.82	-0.32	-35.16
10,763.0	1.50	125.20	10,694.7	343.4	947.1	-160.4	1.28	0.43	55.59
10,857.0	1.40	137.70	10,788.7	341.9	948.9	-158.5	0.35	-0.11	13.30
10,950.0	1.10	138.00	10,881.7	340.4	950.2	-156.8	0.32	-0.32	0.32
11,043.0	0.60	49.60	10,974.7	340.0	951.2	-156.3	1.33	-0.54	-95.05
11,136.0	1.30	105.20	11,067.7	340.0	952.6	-156.0	1.16	0.75	59.78
11,230.0	1.60	114.50	11,161.6	339.2	954.8	-154.8	0.40	0.32	9.89
11,323.0	0.70	194.50	11,254.6	338.1	955.8	-153.6	1.75	-0.97	86.02
11,416.0	1.60	262.30	11,347.6	337.4	954.4	-153.1	1.60	0.97	72.90
11,510.0	2.20	254.70	11,441.6	336.8	951.4	-153.0	0.69	0.64	-8.09
11,603.0	1.60	187.90	11,534.5	335.0	949.5	-151.7	2.31	-0.65	-71.83
11,696.0	1.10	190.80	11,627.5	332.8	949.1	-149.6	0.54	-0.54	3.12
11,790.0	1.20	192.30	11,721.5	331.0	948.8	-147.9	0.11	0.11	1.60
11,883.0	1.20	150.30	11,814.5	329.2	949.0	-146.1	0.92	0.00	-45.16
11,976.0	1.10	180.90	11,907.4	327.5	949.5	-144.3	0.66	-0.11	32.90
12,070.0	1.10	169.80	12,001.4	325.7	949.6	-142.5	0.23	0.00	-11.81
12,163.0	1.30	179.30	12,094.4	323.7	949.8	-140.5	0.30	0.22	10.22
12,256.0	1.50	176.50	12,187.4	321.5	949.9	-138.3	0.23	0.22	-3.01
12,349.0	1.90	178.80	12,280.3	318.7	950.0	-135.6	0.44	0.43	2.47
12,400.0	1.90	185.30	12,331.3	317.0	949.9	-133.9	0.42	0.00	12.75
12,476.0	2.00	191.30	12,407.3	314.5	949.6	-131.5	0.30	0.13	7.89
12,571.0	9.90	156.70	12,501.7	305.3	952.5	-122.0	8.77	8.32	-36.42
12,666.0	24.40	154.50	12,592.2	280.0	964.2	-94.9	15.28	15.26	-2.32
12,697.0	28.80	158.60	12,619.9	267.2	969.7	-81.3	15.37	14.19	13.23



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 27 Fed Com #34H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3369.0usft (Patterson #566)
Site:	Sec 27, T25-S, R33-E	MD Reference:	WELL @ 3369.0usft (Patterson #566)
Well:	Rojo 7811 27 Fed Com #34H	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)
12,729.0	33.40	163.50	12,647.3	251.6	975.0	-65.0	16.40	14.38	15.31
12,761.0	37.80	167.70	12,673.4	233.6	979.6	-46.4	15.72	13.75	13.13
12,856.0	51.90	181.60	12,740.7	167.3	984.8	19.7	18.01	14.84	14.63
12,888.0	56.50	186.40	12,759.4	141.4	983.0	44.8	18.83	14.38	15.00
12,919.0	60.80	189.40	12,775.5	115.2	979.3	69.9	16.14	13.87	9.68
12,951.0	62.50	192.90	12,790.7	87.6	973.9	96.0	10.99	5.31	10.94
Cross 280' HL@ 12980.9' MD / 12804.3' TVD									
12,980.9	63.37	190.87	12,804.3	61.5	968.4	120.5	6.71	2.92	-6.78
13,047.0	65.40	186.50	12,832.9	2.6	959.4	176.7	6.71	3.07	-6.61
13,142.0	69.60	182.90	12,869.3	-84.8	952.3	261.3	5.64	4.42	-3.79
13,174.0	71.70	185.50	12,879.9	-114.9	950.0	290.4	10.09	6.56	8.13
13,206.0	76.50	185.80	12,888.7	-145.6	947.0	320.0	15.03	15.00	0.94
13,238.0	81.70	186.40	12,894.7	-176.8	943.7	350.0	16.35	16.25	1.88
13,270.0	83.50	188.30	12,898.8	-208.3	939.6	380.2	8.14	5.63	5.94
13,301.0	82.60	191.30	12,902.6	-238.6	934.4	409.0	10.04	-2.90	9.68
13,333.0	82.10	192.50	12,906.8	-269.6	927.8	438.2	4.03	-1.56	3.75
13,390.0	86.60	192.70	12,912.4	-325.0	915.5	490.3	7.90	7.89	0.35
13,453.0	87.60	190.90	12,915.6	-386.5	902.6	548.4	3.27	1.59	-2.86
13,548.0	91.50	185.30	12,916.4	-480.5	889.2	638.2	7.18	4.11	-5.89
13,643.0	89.90	179.20	12,915.2	-575.4	885.5	730.7	6.64	-1.68	-6.42
13,738.0	89.40	178.80	12,915.8	-670.4	887.2	824.4	0.67	-0.53	-0.42
13,833.0	91.80	180.70	12,914.8	-765.4	887.6	917.8	3.22	2.53	2.00
13,928.0	92.20	179.20	12,911.5	-860.3	887.7	1,011.0	1.63	0.42	-1.58
14,023.0	91.00	179.20	12,908.8	-955.3	889.0	1,104.6	1.26	-1.26	0.00
14,119.0	91.20	178.80	12,907.0	-1,051.2	890.7	1,199.2	0.47	0.21	-0.42
14,214.0	87.70	179.70	12,907.9	-1,146.2	891.9	1,292.7	3.80	-3.68	0.95
14,308.0	86.90	178.50	12,912.3	-1,240.1	893.4	1,385.2	1.53	-0.85	-1.28
14,403.0	87.80	180.00	12,916.7	-1,335.0	894.6	1,478.6	1.84	0.95	1.58
14,498.0	87.30	179.00	12,920.8	-1,429.9	895.4	1,572.0	1.18	-0.53	-1.05
14,593.0	87.90	181.60	12,924.8	-1,524.8	894.9	1,665.2	2.81	0.63	2.74
14,688.0	88.60	180.90	12,927.7	-1,619.7	892.9	1,758.0	1.04	0.74	-0.74
14,782.0	87.70	180.00	12,930.7	-1,713.7	892.1	1,850.2	1.35	-0.96	-0.96
14,877.0	91.60	182.10	12,931.3	-1,808.6	890.4	1,943.2	4.66	4.11	2.21
14,972.0	96.00	184.60	12,925.0	-1,903.2	884.9	2,035.1	5.32	4.63	2.63
15,067.0	92.30	180.60	12,918.1	-1,997.8	880.6	2,127.2	5.73	-3.89	-4.21
15,162.0	89.10	177.90	12,917.0	-2,092.8	881.8	2,220.7	4.41	-3.37	-2.84
15,257.0	94.90	181.80	12,913.6	-2,187.7	882.1	2,314.0	7.35	6.11	4.11
15,353.0	91.70	180.20	12,908.1	-2,283.5	880.4	2,407.8	3.73	-3.33	-1.67
15,448.0	88.20	179.30	12,908.2	-2,378.5	880.8	2,501.2	3.80	-3.68	-0.95
15,543.0	86.30	178.80	12,912.8	-2,473.4	882.4	2,594.7	2.07	-2.00	-0.53
15,638.0	86.30	178.10	12,918.9	-2,568.1	885.0	2,688.3	0.74	0.00	-0.74
15,734.0	85.40	177.80	12,925.8	-2,663.8	888.4	2,782.9	0.99	-0.94	-0.31
15,829.0	87.80	178.60	12,931.5	-2,758.6	891.4	2,876.6	2.66	2.53	0.84



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well Rojo 7811 27 Fed Com #34H
Project:	Lea County, NM (NAD 83)	TVD Reference:	WELL @ 3369.0usft (Patterson #566)
Site:	Sec 27, T25-S, R33-E	MD Reference:	WELL @ 3369.0usft (Patterson #566)
Well:	Rojo 7811 27 Fed Com #34H	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)	
15,923.0	89.90	179.00	12,933.4	-2,852.5	893.3	2,969.2	2.27	2.23	0.43	
16,018.0	89.90	177.40	12,933.5	-2,947.5	896.3	3,063.1	1.68	0.00	-1.68	
16,112.0	90.90	178.60	12,932.9	-3,041.4	899.6	3,156.0	1.66	1.06	1.28	
16,207.0	91.50	177.60	12,930.9	-3,136.4	902.7	3,249.8	1.23	0.63	-1.05	
16,303.0	89.80	179.70	12,929.8	-3,232.3	905.0	3,344.5	2.81	-1.77	2.19	
16,397.0	89.80	179.30	12,930.1	-3,326.3	905.8	3,437.0	0.43	0.00	-0.43	
16,492.0	88.50	177.80	12,931.5	-3,421.3	908.2	3,530.7	2.09	-1.37	-1.58	
16,586.0	88.60	180.00	12,933.9	-3,515.2	910.0	3,623.3	2.34	0.11	2.34	
16,681.0	91.20	181.40	12,934.1	-3,610.2	908.9	3,716.4	3.11	2.74	1.47	
16,776.0	91.50	181.30	12,931.8	-3,705.1	906.6	3,809.3	0.33	0.32	-0.11	
16,870.0	91.60	180.70	12,929.3	-3,799.1	905.0	3,901.3	0.65	0.11	-0.64	
16,965.0	89.70	180.20	12,928.2	-3,894.1	904.2	3,994.5	2.07	-2.00	-0.53	
17,060.0	88.90	178.50	12,929.4	-3,989.1	905.3	4,088.0	1.98	-0.84	-1.79	
17,155.0	89.10	178.50	12,931.0	-4,084.0	907.8	4,181.7	0.21	0.21	0.00	
17,250.0	88.20	177.20	12,933.3	-4,178.9	911.4	4,275.6	1.66	-0.95	-1.37	
17,345.0	88.70	178.80	12,935.8	-4,273.8	914.7	4,369.5	1.76	0.53	1.68	
17,440.0	88.80	178.30	12,937.9	-4,368.8	917.1	4,463.2	0.54	0.11	-0.53	
17,535.0	90.00	178.50	12,938.9	-4,463.7	919.7	4,557.0	1.28	1.26	0.21	
Cross 330' HL@ 17596.9' MD / 12938.7' TVD										
17,596.9	90.46	178.11	12,938.7	-4,525.6	921.6	4,618.1	0.97	0.74	-0.63	
17,630.0	90.70	177.90	12,938.3	-4,558.7	922.7	4,650.8	0.97	0.74	-0.63	
17,725.0	92.10	177.20	12,936.0	-4,653.6	926.8	4,744.8	1.65	1.47	-0.74	
17,821.0	93.40	176.90	12,931.4	-4,749.3	931.7	4,839.8	1.39	1.35	-0.31	
TD @ 17876.0' MD / 12928.1' TVD										
17,876.0	93.40	176.90	12,928.1	-4,804.1	934.7	4,894.2	0.00	0.00	0.00	

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
160.0	160.0	-2.8	-0.2	First MWD Survey @ 160.0' MD / 160.0' TVD	
2,785.8	2,768.4	74.1	203.1	Cross 280' HL@ 2785.8' MD / 2768.4' TVD	
3,091.7	3,070.1	91.9	250.1	Cross 280' HL@ 3091.7' MD / 3070.1' TVD	
12,980.9	12,804.3	61.5	968.4	Cross 280' HL@ 12980.9' MD / 12804.3' TVD	
17,596.9	12,938.7	-4,525.6	921.6	Cross 330' HL@ 17596.9' MD / 12938.7' TVD	
17,876.0	12,928.1	-4,804.1	934.7	TD @ 17876.0' MD / 12928.1' TVD	