

BTA Oil Producers, LLC

**Lea County, NM
Sec 7, T26-S, R33-E
8115 JV-P Mesa B #3H**

Wellbore #1

Design: Wellbore #1

QES Survey Report

22 September, 2016





Survey Report



Company:	BTA Oil Producers, LLC	Local Co-ordinate Reference:	Well 8115 JV-P Mesa B #3H
Project:	Lea County, NM	TVD Reference:	WELL @ 3258.6usft (Nomac #94)
Site:	Sec 7, T26-S, R33-E	MD Reference:	WELL @ 3258.6usft (Nomac #94)
Well:	8115 JV-P Mesa B #3H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM5002

Project	Lea County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Sec 7, T26-S, R33-E		
Site Position:		Northing:	383,097.10 usft
From:	Map	Easting:	724,292.10 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 3' 4.254 N
		Longitude:	103° 36' 33.855 W
		Grid Convergence:	0.38 °

Well	8115 JV-P Mesa B #3H		
Well Position	+N/-S	0.0 usft	Northing: 383,097.10 usft
	+E/-W	0.0 usft	Easting: 724,292.10 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 3' 4.254 N
		Longitude:	103° 36' 33.855 W
		Ground Level:	3,233.6 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2015	8/17/2016	(°)
			7.05
			Dip Angle
			(°)
			59.91
			Field Strength
			(nT)
			47,918

Design	Wellbore #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			1.91

Survey Program	Date 9/22/2016		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
100.0	4,662.0	GYRO (Wellbore #1)	Good_gyro
4,806.0	14,089.0	MWD Surveys (Wellbore #1)	MWD default
			Description
			Good Gyro
			MWD - Standard

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.42	141.29	100.0	-0.3	0.2	-0.3	0.42	0.42	0.00
200.0	0.41	188.72	200.0	-0.9	0.4	-0.9	0.33	-0.01	47.43
300.0	0.18	241.11	300.0	-1.4	0.2	-1.3	0.33	-0.23	52.39
400.0	0.30	268.92	400.0	-1.4	-0.2	-1.4	0.16	0.12	27.81
500.0	0.32	288.62	500.0	-1.4	-0.7	-1.4	0.11	0.02	19.70
600.0	0.89	272.78	600.0	-1.2	-1.8	-1.3	0.59	0.57	-15.84
700.0	0.95	270.46	700.0	-1.2	-3.4	-1.3	0.07	0.06	-2.32
800.0	0.83	276.35	800.0	-1.1	-4.9	-1.3	0.15	-0.12	5.89
900.0	0.92	270.04	900.0	-1.0	-6.4	-1.2	0.13	0.09	-6.31



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Site: Sec 7, T26-S, R33-E
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Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8115 JV-P Mesa B #3H
TVD Reference: WELL @ 3258.6usft (Nomac #94)
MD Reference: WELL @ 3258.6usft (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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.94	278.31	999.9	-0.9	-8.0	-1.2	0.14	0.02	8.27
1,100.0	1.01	273.25	1,099.9	-0.7	-9.7	-1.0	0.11	0.07	-5.06
1,200.0	1.17	277.85	1,199.9	-0.5	-11.6	-0.9	0.18	0.16	4.60
1,300.0	1.27	273.04	1,299.9	-0.3	-13.7	-0.8	0.14	0.10	-4.81
1,400.0	1.32	273.10	1,399.9	-0.2	-16.0	-0.8	0.05	0.05	0.06
1,500.0	1.48	277.90	1,499.8	0.0	-18.4	-0.6	0.20	0.16	4.80
1,600.0	1.61	280.09	1,599.8	0.4	-21.1	-0.3	0.14	0.13	2.19
1,700.0	1.88	278.99	1,699.7	0.9	-24.1	0.1	0.27	0.27	-1.10
1,800.0	0.87	267.49	1,799.7	1.2	-26.5	0.3	1.04	-1.01	-11.50
1,900.0	2.02	89.93	1,899.7	1.1	-25.5	0.3	2.89	1.15	-177.56
2,000.0	2.20	83.73	1,999.6	1.4	-21.8	0.6	0.29	0.18	-6.20
2,100.0	2.22	87.43	2,099.6	1.6	-18.0	1.0	0.14	0.02	3.70
2,200.0	2.37	85.36	2,199.5	1.9	-14.0	1.4	0.17	0.15	-2.07
2,300.0	2.39	88.70	2,299.4	2.1	-9.8	1.8	0.14	0.02	3.34
2,400.0	0.61	110.57	2,399.4	2.0	-7.2	1.7	1.84	-1.78	21.87
2,500.0	0.48	147.45	2,499.3	1.4	-6.5	1.2	0.37	-0.13	36.88
2,600.0	0.49	154.15	2,599.3	0.7	-6.1	0.5	0.06	0.01	6.70
2,700.0	0.52	155.49	2,699.3	-0.1	-5.7	-0.3	0.03	0.03	1.34
2,800.0	0.71	165.48	2,799.3	-1.1	-5.4	-1.3	0.22	0.19	9.99
2,900.0	0.75	167.44	2,899.3	-2.3	-5.1	-2.5	0.05	0.04	1.96
3,000.0	0.94	166.56	2,999.3	-3.8	-4.7	-3.9	0.19	0.19	-0.88
3,100.0	1.04	174.71	3,099.3	-5.5	-4.5	-5.6	0.17	0.10	8.15
3,200.0	1.05	173.13	3,199.3	-7.3	-4.3	-7.4	0.03	0.01	-1.58
3,300.0	1.10	175.14	3,299.3	-9.2	-4.1	-9.3	0.06	0.05	2.01
3,400.0	1.46	150.50	3,399.2	-11.2	-3.4	-11.3	0.65	0.36	-24.64
3,500.0	1.87	131.15	3,499.2	-13.4	-1.5	-13.5	0.69	0.41	-19.35
3,600.0	2.49	110.44	3,599.1	-15.2	1.7	-15.2	0.99	0.62	-20.71
3,700.0	1.83	117.37	3,699.1	-16.7	5.2	-16.6	0.71	-0.66	6.93
3,800.0	0.91	161.98	3,799.0	-18.2	6.9	-18.0	1.34	-0.92	44.61
3,900.0	1.15	165.86	3,899.0	-20.0	7.3	-19.7	0.25	0.24	3.88
4,000.0	1.18	172.52	3,999.0	-22.0	7.7	-21.7	0.14	0.03	6.66
4,100.0	1.17	164.39	4,099.0	-24.0	8.1	-23.7	0.17	-0.01	-8.13
4,200.0	1.77	143.08	4,198.9	-26.2	9.3	-25.8	0.80	0.60	-21.31
4,300.0	2.55	133.10	4,298.9	-28.9	11.9	-28.5	0.86	0.78	-9.98
4,400.0	0.51	114.95	4,398.8	-30.6	13.9	-30.2	2.07	-2.04	-18.15
4,500.0	0.59	275.42	4,498.8	-30.8	13.8	-30.3	1.08	0.08	160.47
4,600.0	0.71	249.54	4,598.8	-30.9	12.7	-30.5	0.31	0.12	-25.88
Gyro Tie-In @ 4662' MD / 4661' TVD									
4,662.0	0.91	251.28	4,660.8	-31.2	11.9	-30.8	0.32	0.32	2.81
4,806.0	1.00	257.00	4,804.8	-31.9	9.6	-31.5	0.09	0.06	3.97
4,878.0	2.00	145.50	4,876.8	-33.1	9.7	-32.7	3.53	1.39	-154.86
4,973.0	3.10	138.70	4,971.7	-36.4	12.3	-35.9	1.20	1.16	-7.16
5,068.0	3.40	118.80	5,066.5	-39.6	16.5	-39.1	1.22	0.32	-20.95



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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)
5,163.0	3.70	117.80	5,161.4	-42.4	21.7	-41.7	0.32	0.32	-1.05
5,258.0	3.30	117.60	5,256.2	-45.1	26.8	-44.2	0.42	-0.42	-0.21
5,353.0	3.50	116.00	5,351.0	-47.7	31.8	-46.6	0.23	0.21	-1.68
5,448.0	3.30	115.60	5,445.8	-50.1	36.9	-48.9	0.21	-0.21	-0.42
5,543.0	3.30	117.80	5,540.7	-52.6	41.8	-51.2	0.13	0.00	2.32
5,639.0	3.30	116.90	5,636.5	-55.1	46.7	-53.5	0.05	0.00	-0.94
5,734.0	3.00	116.50	5,731.4	-57.5	51.4	-55.7	0.32	-0.32	-0.42
5,829.0	2.60	116.30	5,826.3	-59.5	55.5	-57.6	0.42	-0.42	-0.21
5,924.0	2.50	116.70	5,921.2	-61.4	59.3	-59.4	0.11	-0.11	0.42
6,019.0	3.80	121.30	6,016.0	-64.0	63.8	-61.8	1.39	1.37	4.84
6,113.0	3.80	123.60	6,109.8	-67.3	69.1	-65.0	0.16	0.00	2.45
6,208.0	3.30	124.60	6,204.6	-70.6	74.0	-68.1	0.53	-0.53	1.05
6,303.0	3.50	127.10	6,299.5	-73.9	78.5	-71.3	0.26	0.21	2.63
6,398.0	4.20	129.90	6,394.3	-77.9	83.5	-75.1	0.76	0.74	2.95
6,493.0	4.10	130.10	6,489.0	-82.3	88.8	-79.3	0.11	-0.11	0.21
6,588.0	3.70	130.80	6,583.8	-86.5	93.7	-83.3	0.42	-0.42	0.74
6,683.0	3.80	129.70	6,678.6	-90.5	98.4	-87.2	0.13	0.11	-1.16
6,778.0	3.40	130.10	6,773.4	-94.3	103.0	-90.9	0.42	-0.42	0.42
6,873.0	5.40	135.30	6,868.1	-99.3	108.3	-95.7	2.14	2.11	5.47
6,968.0	5.10	135.90	6,962.7	-105.5	114.4	-101.7	0.32	-0.32	0.63
7,063.0	5.10	139.40	7,057.3	-111.8	120.1	-107.7	0.33	0.00	3.68
7,158.0	5.20	121.60	7,152.0	-117.2	126.5	-113.0	1.68	0.11	-18.74
7,253.0	4.90	120.60	7,246.6	-121.6	133.7	-117.0	0.33	-0.32	-1.05
7,348.0	4.60	129.50	7,341.3	-126.1	140.1	-121.3	0.84	-0.32	9.37
7,443.0	4.20	131.80	7,436.0	-130.8	145.6	-125.9	0.46	-0.42	2.42
7,538.0	4.00	132.50	7,530.7	-135.4	150.7	-130.3	0.22	-0.21	0.74
7,633.0	4.00	137.40	7,625.5	-140.0	155.3	-134.8	0.36	0.00	5.16
7,728.0	3.70	135.50	7,720.3	-144.7	159.7	-139.3	0.34	-0.32	-2.00
7,823.0	3.50	140.30	7,815.1	-149.1	163.7	-143.5	0.38	-0.21	5.05
7,918.0	3.20	129.20	7,909.9	-153.0	167.6	-147.3	0.75	-0.32	-11.68
8,013.0	3.20	130.10	8,004.8	-156.4	171.7	-150.6	0.05	0.00	0.95
8,108.0	4.10	125.70	8,099.6	-160.1	176.5	-154.1	0.99	0.95	-4.63
8,203.0	4.20	124.30	8,194.4	-164.0	182.1	-157.8	0.15	0.11	-1.47
8,298.0	4.00	126.00	8,289.1	-167.9	187.7	-161.6	0.25	-0.21	1.79
8,393.0	2.10	118.30	8,384.0	-170.7	191.9	-164.2	2.04	-2.00	-8.11
8,487.0	2.00	114.90	8,477.9	-172.2	194.9	-165.6	0.17	-0.11	-3.62
8,582.0	0.30	116.50	8,572.9	-173.0	196.6	-166.3	1.79	-1.79	1.68
8,619.0	0.20	74.70	8,609.9	-173.0	196.8	-166.4	0.54	-0.27	-112.97
8,887.0	2.10	7.40	8,677.9	-171.8	197.1	-165.1	2.99	2.79	-98.97
8,782.0	13.60	10.50	8,771.8	-159.0	199.3	-152.3	12.11	12.11	3.26
8,877.0	21.70	3.10	8,862.3	-130.4	202.3	-123.6	8.83	8.53	-7.79
8,971.0	31.90	7.50	8,946.1	-88.3	206.5	-81.4	11.05	10.85	4.68
9,067.0	42.80	4.90	9,022.3	-30.5	212.6	-23.4	11.47	11.35	-2.71



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9,162.0	49.40	357.70	9,088.2	37.8	213.9	44.9	8.83	6.95	-7.58
9,256.0	58.60	358.00	9,143.4	113.7	211.1	120.7	9.79	9.79	0.32
Crossed Hard Line @ 9288' MD / 9159' TVD									
9,288.2	61.54	359.07	9,159.4	141.6	210.4	148.5	9.58	9.14	3.32
9,351.0	67.30	1.00	9,186.5	198.2	210.4	205.1	9.58	9.17	3.07
9,446.0	76.20	1.40	9,216.3	288.3	212.3	295.2	9.38	9.37	0.42
9,541.0	80.50	355.20	9,235.5	381.3	209.5	388.0	7.83	4.53	-6.53
9,636.0	87.50	358.60	9,245.4	475.5	204.5	482.1	8.18	7.37	3.58
9,757.0	89.00	357.90	9,249.1	596.4	200.8	602.8	1.37	1.24	-0.58
9,852.0	89.70	358.20	9,250.2	691.3	197.5	697.5	0.80	0.74	0.32
9,947.0	90.30	358.00	9,250.2	786.3	194.4	792.3	0.67	0.63	-0.21
10,042.0	91.70	358.20	9,248.5	881.2	191.2	887.1	1.49	1.47	0.21
10,137.0	90.80	358.20	9,246.4	976.2	188.3	981.9	0.95	-0.95	0.00
10,232.0	91.40	359.30	9,244.6	1,071.1	186.2	1,076.7	1.32	0.63	1.16
10,327.0	92.20	359.50	9,241.6	1,166.1	185.2	1,171.6	0.87	0.84	0.21
10,422.0	90.30	359.10	9,239.5	1,261.0	184.0	1,266.5	2.04	-2.00	-0.42
10,517.0	91.10	358.80	9,238.4	1,356.0	182.3	1,361.3	0.90	0.84	-0.32
10,612.0	89.60	0.50	9,237.8	1,451.0	181.7	1,456.2	2.39	-1.58	1.79
10,707.0	90.50	1.60	9,237.7	1,546.0	183.4	1,551.2	1.50	0.95	1.16
10,802.0	90.90	0.70	9,236.6	1,640.9	185.4	1,646.2	1.04	0.42	-0.95
10,897.0	92.30	0.20	9,233.9	1,735.9	186.1	1,741.1	1.56	1.47	-0.53
10,992.0	91.80	0.30	9,230.5	1,830.8	186.5	1,836.0	0.54	-0.53	0.11
11,087.0	89.00	1.40	9,229.8	1,925.8	187.9	1,931.0	3.17	-2.95	1.16
11,182.0	89.00	0.90	9,231.5	2,020.8	189.8	2,026.0	0.53	0.00	-0.53
11,277.0	89.30	0.50	9,232.9	2,115.8	191.0	2,121.0	0.53	0.32	-0.42
11,372.0	90.00	358.80	9,233.5	2,210.8	190.4	2,215.9	1.94	0.74	-1.79
11,467.0	90.80	0.00	9,232.8	2,305.7	189.4	2,310.8	1.52	0.84	1.26
11,562.0	91.20	359.50	9,231.2	2,400.7	189.0	2,405.7	0.67	0.42	-0.53
11,657.0	91.90	358.80	9,228.6	2,495.7	187.6	2,500.6	1.04	0.74	-0.74
11,752.0	92.00	358.40	9,225.4	2,590.6	185.3	2,595.3	0.43	0.11	-0.42
11,846.0	92.20	358.80	9,221.9	2,684.5	183.0	2,689.1	0.48	0.21	0.43
11,941.0	93.60	358.60	9,217.1	2,779.4	180.8	2,783.8	1.49	1.47	-0.21
12,036.0	92.20	359.80	9,212.3	2,874.2	179.5	2,878.6	1.94	-1.47	1.26
12,131.0	93.50	359.60	9,207.6	2,969.1	179.0	2,973.4	1.38	1.37	-0.21
12,226.0	91.00	0.90	9,203.9	3,064.0	179.4	3,068.3	2.97	-2.63	1.37
12,321.0	89.60	1.40	9,203.4	3,159.0	181.3	3,163.3	1.56	-1.47	0.53
12,416.0	90.30	0.50	9,203.4	3,254.0	182.9	3,258.3	1.20	0.74	-0.95
12,511.0	90.80	2.30	9,202.5	3,348.9	185.2	3,353.3	1.97	0.53	1.89
12,605.0	89.30	0.20	9,202.5	3,442.9	187.3	3,447.2	2.75	-1.60	-2.23
12,700.0	89.10	0.90	9,203.8	3,537.9	188.2	3,542.2	0.77	-0.21	0.74
12,795.0	90.00	0.00	9,204.5	3,632.9	188.9	3,637.2	1.34	0.95	-0.95
12,890.0	90.00	0.90	9,204.5	3,727.9	189.7	3,732.1	0.95	0.00	0.95
12,984.0	91.10	359.80	9,203.6	3,821.9	190.2	3,826.1	1.65	1.17	-1.17
13,079.0	91.70	359.10	9,201.3	3,916.8	189.3	3,921.0	0.97	0.63	-0.74



Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM
Site: Sec 7, T26-S, R33-E
Well: 8115 JV-P Mesa B #3H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8115 JV-P Mesa B #3H
TVD Reference: WELL @ 3258.6usft (Nomac #94)
MD Reference: WELL @ 3258.6usft (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)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,149.0	92.40	359.30	9,198.8	3,986.8	188.4	3,990.9	1.04	1.00	0.29
13,244.0	90.80	358.00	9,196.1	4,081.7	186.1	4,085.7	2.17	-1.68	-1.37
13,338.0	90.80	358.20	9,194.8	4,175.7	183.0	4,179.4	0.21	0.00	0.21
13,433.0	91.10	358.90	9,193.3	4,270.6	180.6	4,274.3	0.80	0.32	0.74
13,528.0	91.40	0.00	9,191.2	4,365.6	179.7	4,369.2	1.20	0.32	1.16
13,623.0	91.40	0.00	9,188.9	4,460.6	179.7	4,464.1	0.00	0.00	0.00
13,718.0	92.80	359.50	9,185.5	4,555.5	179.3	4,559.0	1.37	1.26	-0.53
13,813.0	92.30	358.00	9,181.5	4,650.4	177.2	4,653.7	1.61	-0.32	-1.58
13,908.0	92.70	357.90	9,177.3	4,745.2	173.8	4,748.4	0.43	0.42	-0.11
Crossed Hard Line @ 13922' MD / 9177' TVD									
13,922.2	92.73	358.03	9,176.7	4,759.4	173.3	4,762.5	0.97	0.21	0.95
14,003.0	92.90	358.80	9,172.7	4,840.1	171.1	4,843.1	0.97	0.21	0.95
14,041.0	93.10	357.50	9,170.7	4,878.0	169.9	4,881.0	3.46	0.53	-3.42
TD @ 14089' MD / 9168' TVD									
14,089.0	93.10	357.50	9,168.1	4,925.9	167.8	4,928.8	0.00	0.00	0.00

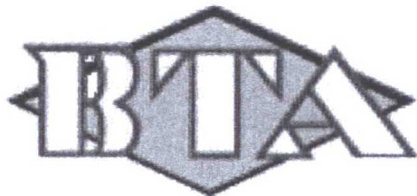
Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,662.0	4,660.8	-31.2	11.9	Gyro Tie-In @ 4662' MD / 4661' TVD
9,288.2	9,159.4	141.8	210.4	Crossed Hard Line @ 9288' MD / 9159' TVD
13,922.2	9,176.7	4,759.4	173.3	Crossed Hard Line @ 13922' MD / 9177' TVD
14,089.0	9,168.1	4,925.9	167.8	TD @ 14089' MD / 9168' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: BTA Oil Producers, LLC
 8115 JV-P Mesa B #3H
 Lea County, NM
 Rig: Normac #04
 Created By: Shane Robbins
 Date: 9/22/2016

8115 JV-P Mesa B #3H
 Lea County, NM
 Q160*** & WT-160***
 Design #3



Azimuths to Grid North

Correction: 6.66°
 Magnetic Field
 Strength: 47918.1snT
 Dip Angle: 59.91°
 Date: 8/17/2016
 Model: IGRF2015

PROJECT DETAILS: Lea County, NM

Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1886
Zone:	New Mexico East 3001
System Datum:	Mean Sea Level

WELL DETAILS: 8115 JV-P Mesa B #3H

	Ground Level:	5235.6
+N/-S	+E/-W	Nothing
0.0	0.0	381097.10 724590.10
		33° 5' 4.264 N 101° 58' 23.866 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
4662.0	0.91	251.28	4660.8	-31.2	11.9	-30.8	94.2	Gyro Tie-In @ 4662' MD / 4661' TVD
9289.2	81.94	358.07	9198.4	141.8	210.4	148.8	960.9	Crossed Hard Line @ 9289' MD / 9199' TVD
13922.2	92.73	358.03	9178.7	4718.4	123.3	4762.8	6955.1	Crossed Hard Line @ 13922' MD / 9177' TVD
14089.0	93.10	357.90	9168.1	4928.9	167.8	4928.8	5436.7	TD @ 14089' MD / 9168' TVD

