

VERDAD RESOURCES

WATTENBERG FIELD

9N-59W-01 TIMBRO 0101 PAD

TIMBRO 0101-16H

Wellbore #1

Plan: Design #1

Standard Planning Report

21 May, 2019

Project: WATTENBERG FIELD
Site: 9N-59W-01 TIMBRO 0101 PAD
Well: TIMBRO 0101-16H
Wellbore: Wellbore #1
Design: Design #1

VERDAD RESOURCES

CASING DETAILS

TVD	MD	Name	Size
1700.00	1748.01	9 5/8"	9-5/8

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
1122.50	18.45	63.26	1106.64	66.25	131.50	2.00	63.26	-64.99	
5600.99	18.45	63.26	5354.94	703.97	1397.27	0.00	0.00	-690.53	
6690.21	90.00	179.45	6050.00	75.62	1611.37	9.00	115.01	-60.14	
11407.54	90.00	179.45	6050.00	-4641.49	1656.50	0.00	0.00	4657.18	TIMBRO 0101-16H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
TIMBRO 0101-16H_SHL	0.00	0.00	0.00	40.786483	-103.924314
TIMBRO 0101-16H_BHL	6050.00	-4641.49	1656.50	40.773744	-103.918334

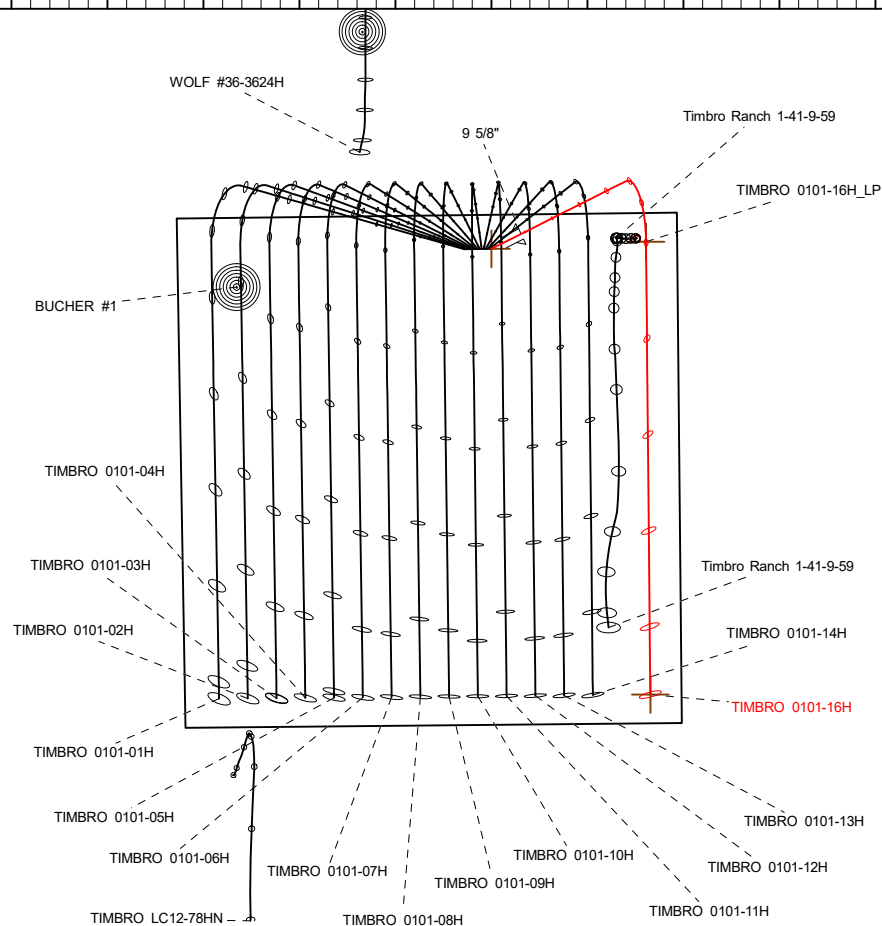
SHL
356' FNL
1937' FEL

LP
300' FNL
325' FEL

BHL
300' FSL
325' FEL

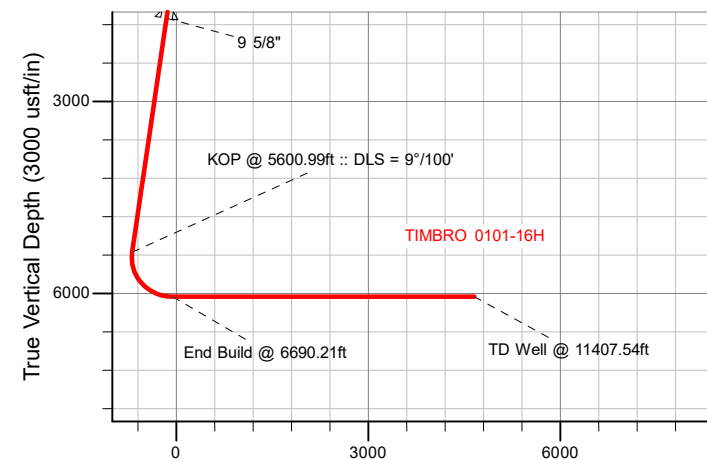
West(-)/East(+) (2000 usft/in)

-5000 -4000 -3000 -2000 -1000 0 1000 2000 3000 4000

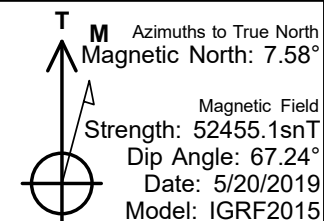


South(-)/North(+) (2000 usft/in)

2000
1000
0
-1000
-2000
-3000
-4000
-5000
-6000
-7000



Vertical Section at 179.45° (3000 usft/in)



WELL DETAILS: TIMBRO 0101-16H

GL = 4938'

RKB = 24' @ 4962.00usft (RIG)

Plan: Design #1 (TIMBRO 0101-16H/Wellbore #1)

Date: 5/21/2019

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-16H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4962.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4962.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	WATTENBERG FIELD		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		9N-59W-01 TIMBRO 0101 PAD			
Site Position:		Northing:	1,533,230.40 usft	Latitude:	40.786474
From:	Lat/Long	Easting:	3,436,039.96 usft	Longitude:	-103.925326
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.02 °

Well	TIMBRO 0101-16H					
Well Position	+N/-S	3.38 usft	Northing:	1,533,238.75 usft	Latitude:	40.786483
	+E/-W	279.97 usft	Easting:	3,436,319.82 usft	Longitude:	-103.924315
Position Uncertainty		3.28 usft	Wellhead Elevation:		Ground Level:	4,938.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/20/2019	7.58	67.24	52,455.10779742

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	179.45

Plan Survey Tool Program	Date	5/21/2019		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	1,700.00	Design #1 (Wellbore #1)	ISCWSA REV 2 MWD Fixed:v2:standard declination
2	1,700.00	11,407.54	Design #1 (Wellbore #1)	ISCWSA REV 2 MWD Fixed:v2:standard declination

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,122.50	18.45	63.26	1,106.64	66.25	131.50	2.00	2.00	0.00	63.26	
5,600.99	18.45	63.26	5,354.94	703.98	1,397.27	0.00	0.00	0.00	0.00	
6,690.21	90.00	179.45	6,050.00	75.62	1,611.37	9.00	6.57	10.67	115.01	
11,407.54	90.00	179.45	6,050.00	-4,641.49	1,656.50	0.00	0.00	0.00	0.00	TIMBRO 0101-16H_E

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-16H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4962.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4962.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 200.00ft									
300.00	2.00	63.26	299.98	0.79	1.56	-0.77	2.00	2.00	0.00
400.00	4.00	63.26	399.84	3.14	6.23	-3.08	2.00	2.00	0.00
500.00	6.00	63.26	499.45	7.06	14.02	-6.93	2.00	2.00	0.00
600.00	8.00	63.26	598.70	12.54	24.90	-12.30	2.00	2.00	0.00
700.00	10.00	63.26	697.47	19.58	38.87	-19.21	2.00	2.00	0.00
800.00	12.00	63.26	795.62	28.17	55.91	-27.63	2.00	2.00	0.00
900.00	14.00	63.26	893.06	38.29	76.00	-37.56	2.00	2.00	0.00
1,000.00	16.00	63.26	989.64	49.93	99.11	-48.98	2.00	2.00	0.00
1,100.00	18.00	63.26	1,085.27	63.09	125.22	-61.88	2.00	2.00	0.00
1,122.50	18.45	63.26	1,106.64	66.25	131.50	-64.99	2.00	2.00	0.00
Hold Tangent @ 1122.50ft									
1,200.00	18.45	63.26	1,180.16	77.29	153.41	-75.81	0.00	0.00	0.00
1,300.00	18.45	63.26	1,275.02	91.53	181.67	-89.78	0.00	0.00	0.00
1,400.00	18.45	63.26	1,369.88	105.77	209.93	-103.75	0.00	0.00	0.00
1,500.00	18.45	63.26	1,464.74	120.01	238.20	-117.72	0.00	0.00	0.00
1,600.00	18.45	63.26	1,559.60	134.25	266.46	-131.68	0.00	0.00	0.00
1,700.00	18.45	63.26	1,654.46	148.49	294.72	-145.65	0.00	0.00	0.00
1,748.01	18.45	63.26	1,700.00	155.32	308.29	-152.36	0.00	0.00	0.00
9 5/8"									
1,800.00	18.45	63.26	1,749.32	162.73	322.99	-159.62	0.00	0.00	0.00
1,900.00	18.45	63.26	1,844.18	176.97	351.25	-173.59	0.00	0.00	0.00
2,000.00	18.45	63.26	1,939.04	191.21	379.51	-187.55	0.00	0.00	0.00
2,100.00	18.45	63.26	2,033.90	205.45	407.78	-201.52	0.00	0.00	0.00
2,200.00	18.45	63.26	2,128.76	219.69	436.04	-215.49	0.00	0.00	0.00
2,300.00	18.45	63.26	2,223.62	233.93	464.30	-229.46	0.00	0.00	0.00
2,400.00	18.45	63.26	2,318.48	248.17	492.56	-243.43	0.00	0.00	0.00
2,500.00	18.45	63.26	2,413.34	262.40	520.83	-257.39	0.00	0.00	0.00
2,600.00	18.45	63.26	2,508.20	276.64	549.09	-271.36	0.00	0.00	0.00
2,700.00	18.45	63.26	2,603.06	290.88	577.35	-285.33	0.00	0.00	0.00
2,800.00	18.45	63.26	2,697.92	305.12	605.62	-299.30	0.00	0.00	0.00
2,900.00	18.45	63.26	2,792.78	319.36	633.88	-313.26	0.00	0.00	0.00
3,000.00	18.45	63.26	2,887.64	333.60	662.14	-327.23	0.00	0.00	0.00
3,100.00	18.45	63.26	2,982.50	347.84	690.41	-341.20	0.00	0.00	0.00
3,200.00	18.45	63.26	3,077.36	362.08	718.67	-355.17	0.00	0.00	0.00
3,300.00	18.45	63.26	3,172.22	376.32	746.93	-369.13	0.00	0.00	0.00
3,400.00	18.45	63.26	3,267.08	390.56	775.20	-383.10	0.00	0.00	0.00
3,500.00	18.45	63.26	3,361.94	404.80	803.46	-397.07	0.00	0.00	0.00
3,600.00	18.45	63.26	3,456.80	419.04	831.72	-411.04	0.00	0.00	0.00
3,700.00	18.45	63.26	3,551.66	433.28	859.99	-425.01	0.00	0.00	0.00
3,800.00	18.45	63.26	3,646.52	447.52	888.25	-438.97	0.00	0.00	0.00
3,900.00	18.45	63.26	3,741.38	461.76	916.51	-452.94	0.00	0.00	0.00
4,000.00	18.45	63.26	3,836.24	476.00	944.78	-466.91	0.00	0.00	0.00
4,100.00	18.45	63.26	3,931.10	490.24	973.04	-480.88	0.00	0.00	0.00
4,200.00	18.45	63.26	4,025.96	504.48	1,001.30	-494.84	0.00	0.00	0.00
4,300.00	18.45	63.26	4,120.82	518.72	1,029.57	-508.81	0.00	0.00	0.00
4,400.00	18.45	63.26	4,215.68	532.96	1,057.83	-522.78	0.00	0.00	0.00
4,500.00	18.45	63.26	4,310.54	547.20	1,086.09	-536.75	0.00	0.00	0.00
4,600.00	18.45	63.26	4,405.40	561.44	1,114.36	-550.71	0.00	0.00	0.00
4,700.00	18.45	63.26	4,500.26	575.68	1,142.62	-564.68	0.00	0.00	0.00

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Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4962.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4962.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)
4,800.00	18.45	63.26	4,595.12	589.92	1,170.88	-578.65	0.00	0.00	0.00
4,900.00	18.45	63.26	4,689.98	604.16	1,199.15	-592.62	0.00	0.00	0.00
5,000.00	18.45	63.26	4,784.84	618.40	1,227.41	-606.59	0.00	0.00	0.00
5,100.00	18.45	63.26	4,879.70	632.64	1,255.67	-620.55	0.00	0.00	0.00
5,200.00	18.45	63.26	4,974.56	646.88	1,283.93	-634.52	0.00	0.00	0.00
5,300.00	18.45	63.26	5,069.42	661.12	1,312.20	-648.49	0.00	0.00	0.00
5,400.00	18.45	63.26	5,164.28	675.35	1,340.46	-662.46	0.00	0.00	0.00
5,500.00	18.45	63.26	5,259.14	689.59	1,368.72	-676.42	0.00	0.00	0.00
5,600.00	18.45	63.26	5,354.00	703.83	1,396.99	-690.39	0.00	0.00	0.00
5,600.99	18.45	63.26	5,354.94	703.98	1,397.27	-690.53	0.00	0.00	0.00
KOP @ 5600.99ft :: DLS = 9°/100'									
5,700.00	16.69	92.52	5,449.51	710.41	1,425.52	-696.70	9.00	-1.78	29.55
5,800.00	19.30	120.73	5,544.79	701.32	1,454.13	-687.33	9.00	2.61	28.20
5,900.00	24.98	139.47	5,637.49	676.77	1,482.12	-662.51	9.00	5.68	18.75
6,000.00	32.14	150.99	5,725.33	637.38	1,508.79	-622.87	9.00	7.15	11.52
6,100.00	39.98	158.53	5,806.15	584.11	1,533.50	-569.37	9.00	7.84	7.54
6,200.00	48.17	163.91	5,877.96	518.28	1,555.63	-503.33	9.00	8.19	5.38
6,300.00	56.56	168.05	5,938.98	441.51	1,574.63	-426.38	9.00	8.39	4.14
6,400.00	65.06	171.45	5,987.73	355.69	1,590.05	-340.41	9.00	8.50	3.40
6,500.00	73.62	174.40	6,022.98	262.92	1,601.49	-247.54	9.00	8.57	2.96
6,600.00	82.22	177.11	6,043.89	165.50	1,608.68	-150.05	9.00	8.60	2.71
6,690.21	90.00	179.45	6,050.00	75.62	1,611.37	-60.14	9.00	8.62	2.60
End Build @ 6690.21ft									
6,700.00	90.00	179.45	6,050.00	65.83	1,611.46	-50.35	0.00	0.00	0.00
6,800.00	90.00	179.45	6,050.00	-34.17	1,612.42	49.65	0.00	0.00	0.00
6,900.00	90.00	179.45	6,050.00	-134.17	1,613.38	149.65	0.00	0.00	0.00
7,000.00	90.00	179.45	6,050.00	-234.16	1,614.34	249.65	0.00	0.00	0.00
7,100.00	90.00	179.45	6,050.00	-334.16	1,615.29	349.65	0.00	0.00	0.00
7,200.00	90.00	179.45	6,050.00	-434.15	1,616.25	449.65	0.00	0.00	0.00
7,300.00	90.00	179.45	6,050.00	-534.15	1,617.21	549.65	0.00	0.00	0.00
7,400.00	90.00	179.45	6,050.00	-634.14	1,618.16	649.65	0.00	0.00	0.00
7,500.00	90.00	179.45	6,050.00	-734.14	1,619.12	749.65	0.00	0.00	0.00
7,600.00	90.00	179.45	6,050.00	-834.13	1,620.08	849.65	0.00	0.00	0.00
7,700.00	90.00	179.45	6,050.00	-934.13	1,621.03	949.65	0.00	0.00	0.00
7,800.00	90.00	179.45	6,050.00	-1,034.12	1,621.99	1,049.65	0.00	0.00	0.00
7,900.00	90.00	179.45	6,050.00	-1,134.12	1,622.95	1,149.65	0.00	0.00	0.00
8,000.00	90.00	179.45	6,050.00	-1,234.12	1,623.90	1,249.65	0.00	0.00	0.00
8,100.00	90.00	179.45	6,050.00	-1,334.11	1,624.86	1,349.65	0.00	0.00	0.00
8,200.00	90.00	179.45	6,050.00	-1,434.11	1,625.82	1,449.65	0.00	0.00	0.00
8,300.00	90.00	179.45	6,050.00	-1,534.10	1,626.77	1,549.65	0.00	0.00	0.00
8,400.00	90.00	179.45	6,050.00	-1,634.10	1,627.73	1,649.65	0.00	0.00	0.00
8,500.00	90.00	179.45	6,050.00	-1,734.09	1,628.69	1,749.65	0.00	0.00	0.00
8,600.00	90.00	179.45	6,050.00	-1,834.09	1,629.64	1,849.65	0.00	0.00	0.00
8,700.00	90.00	179.45	6,050.00	-1,934.08	1,630.60	1,949.65	0.00	0.00	0.00
8,800.00	90.00	179.45	6,050.00	-2,034.08	1,631.56	2,049.65	0.00	0.00	0.00
8,900.00	90.00	179.45	6,050.00	-2,134.07	1,632.51	2,149.65	0.00	0.00	0.00
9,000.00	90.00	179.45	6,050.00	-2,234.07	1,633.47	2,249.65	0.00	0.00	0.00
9,100.00	90.00	179.45	6,050.00	-2,334.06	1,634.43	2,349.65	0.00	0.00	0.00
9,200.00	90.00	179.45	6,050.00	-2,434.06	1,635.38	2,449.65	0.00	0.00	0.00
9,300.00	90.00	179.45	6,050.00	-2,534.06	1,636.34	2,549.65	0.00	0.00	0.00
9,400.00	90.00	179.45	6,050.00	-2,634.05	1,637.30	2,649.65	0.00	0.00	0.00
9,500.00	90.00	179.45	6,050.00	-2,734.05	1,638.25	2,749.65	0.00	0.00	0.00
9,600.00	90.00	179.45	6,050.00	-2,834.04	1,639.21	2,849.65	0.00	0.00	0.00
9,700.00	90.00	179.45	6,050.00	-2,934.04	1,640.17	2,949.65	0.00	0.00	0.00

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well TIMBRO 0101-16H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4962.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4962.00usft (RIG)
Site:	9N-59W-01 TIMBRO 0101 PAD	North Reference:	True
Well:	TIMBRO 0101-16H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned 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)	
9,800.00	90.00	179.45	6,050.00	-3,034.03	1,641.12	3,049.65	0.00	0.00	0.00	
9,900.00	90.00	179.45	6,050.00	-3,134.03	1,642.08	3,149.65	0.00	0.00	0.00	
10,000.00	90.00	179.45	6,050.00	-3,234.02	1,643.04	3,249.65	0.00	0.00	0.00	
10,100.00	90.00	179.45	6,050.00	-3,334.02	1,643.99	3,349.65	0.00	0.00	0.00	
10,200.00	90.00	179.45	6,050.00	-3,434.01	1,644.95	3,449.65	0.00	0.00	0.00	
10,300.00	90.00	179.45	6,050.00	-3,534.01	1,645.91	3,549.65	0.00	0.00	0.00	
10,400.00	90.00	179.45	6,050.00	-3,634.01	1,646.86	3,649.65	0.00	0.00	0.00	
10,500.00	90.00	179.45	6,050.00	-3,734.00	1,647.82	3,749.65	0.00	0.00	0.00	
10,600.00	90.00	179.45	6,050.00	-3,834.00	1,648.78	3,849.65	0.00	0.00	0.00	
10,700.00	90.00	179.45	6,050.00	-3,933.99	1,649.73	3,949.65	0.00	0.00	0.00	
10,800.00	90.00	179.45	6,050.00	-4,033.99	1,650.69	4,049.65	0.00	0.00	0.00	
10,900.00	90.00	179.45	6,050.00	-4,133.98	1,651.65	4,149.65	0.00	0.00	0.00	
11,000.00	90.00	179.45	6,050.00	-4,233.98	1,652.60	4,249.65	0.00	0.00	0.00	
11,100.00	90.00	179.45	6,050.00	-4,333.97	1,653.56	4,349.65	0.00	0.00	0.00	
11,200.00	90.00	179.45	6,050.00	-4,433.97	1,654.52	4,449.65	0.00	0.00	0.00	
11,300.00	90.00	179.45	6,050.00	-4,533.96	1,655.47	4,549.65	0.00	0.00	0.00	
11,400.00	90.00	179.45	6,050.00	-4,633.96	1,656.43	4,649.65	0.00	0.00	0.00	
11,407.54	90.00	179.45	6,050.00	-4,641.49	1,656.50	4,657.18	0.00	0.00	0.00	
TD Well @ 11407.54ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
1,748.01	1,700.00	9 5/8"		9-5/8	13-1/2

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
200.00	200.00	0.00	0.00	Begin Nudge @ 200.00ft	
1,122.50	1,106.64	66.25	131.50	Hold Tangent @ 1122.50ft	
5,600.99	5,354.94	703.98	1,397.27	KOP @ 5600.99ft :: DLS = 9°/100'	
6,690.21	6,050.00	75.62	1,611.37	End Build @ 6690.21ft	
11,407.54	6,050.00	-4,641.49	1,656.50	TD Well @ 11407.54ft	