

VERDAD RESOURCES

WATTENBERG FIELD

2N-63W-19 KBL PAD

KBL 1918-03H

Wellbore #1

Plan: Design #1

Standard Planning Report

10 July, 2019

Project: WATTENBERG FIELD
Site: 2N-63W-19 KBL PAD
Well: KBL 1918-03H
Wellbore: Wellbore #1
Design: Design #1

VERDAD RESOURCES

CASING DETAILS

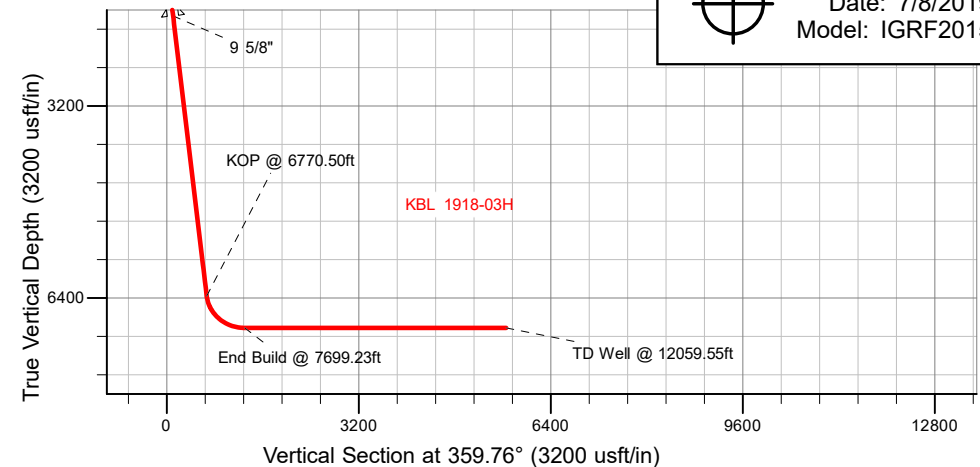
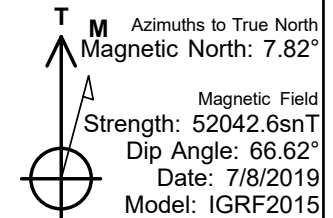
TVD	MD	Name	Size
1700.00	1752.59	9 5/8"	9-5/8

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	
3	1352.50	21.45	287.55	1327.62	59.83	-189.19	2.00	287.55	60.62	
4	6770.50	21.45	287.55	6370.36	657.27	-2078.27	0.00	0.00	665.97	
5	7699.23	90.00	359.76	6900.00	1289.08	-2279.04	9.00	73.37	1298.61	
6	12059.55	90.00	359.76	6900.00	5649.36	-2297.11	0.00	0.00	5658.93	KBL 1918-03H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KBL 1918-03H_SHL	0.00	0.00	0.00	40.121610	-104.478498
KBL 1918-03H_BHL	6900.00	5649.36	-2297.11	40.137118	-104.486714



SHL
1807' FSL
2141' FEL

LP
2180' FNL
1020' FWL

BHL
2180' FSL
1020' FWL

WELL DETAILS: KBL 1918-03H

GL = 4865'
RKB = 24' @ 4889.00usft (RIG)

Plan: Design #1 (KBL 1918-03H/Wellbore #1)

Date: 7/10/2019

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-03H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4889.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4889.00usft (RIG)
Site:	2N-63W-19 KBL PAD	North Reference:	True
Well:	KBL 1918-03H	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	2N-63W-19 KBL PAD			
Site Position:		Northing:	1,288,791.50 usft	Latitude: 40.121610
From:	Lat/Long	Easting:	3,285,630.62 usft	Longitude: -104.478606
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.66 °

Well	KBL 1918-03H			
Well Position	+N/-S	-0.01 usft	Northing:	1,288,791.83 usft
	+E/-W	30.20 usft	Easting:	3,285,660.82 usft
Position Uncertainty	3.28 usft	Wellhead Elevation:		Ground Level: 4,865.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/8/2019	7.82	66.62	52,042.57669983

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	359.76

Plan Survey Tool Program	Date	7/10/2019		
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	12,059.55	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	
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,352.50	21.45	287.55	1,327.62	59.83	-189.19	2.00	2.00	0.00	287.55	
6,770.50	21.45	287.55	6,370.36	657.27	-2,078.27	0.00	0.00	0.00	0.00	
7,699.23	90.00	359.76	6,900.00	1,289.08	-2,279.04	9.00	7.38	7.78	73.37	
12,059.55	90.00	359.76	6,900.00	5,649.36	-2,297.11	0.00	0.00	0.00	0.00	KBL 1918-03H_BHL

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-03H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4889.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4889.00usft (RIG)
Site:	2N-63W-19 KBL PAD	North Reference:	True
Well:	KBL 1918-03H	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
280.00	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 280.00ft									
300.00	0.40	287.55	300.00	0.02	-0.07	0.02	2.00	2.00	0.00
400.00	2.40	287.55	399.96	0.76	-2.40	0.77	2.00	2.00	0.00
500.00	4.40	287.55	499.78	2.55	-8.05	2.58	2.00	2.00	0.00
600.00	6.40	287.55	599.33	5.38	-17.02	5.45	2.00	2.00	0.00
700.00	8.40	287.55	698.50	9.27	-29.30	9.39	2.00	2.00	0.00
800.00	10.40	287.55	797.15	14.19	-44.87	14.38	2.00	2.00	0.00
900.00	12.40	287.55	895.17	20.15	-63.72	20.42	2.00	2.00	0.00
1,000.00	14.40	287.55	992.44	27.14	-85.81	27.50	2.00	2.00	0.00
1,100.00	16.40	287.55	1,088.85	35.15	-111.13	35.61	2.00	2.00	0.00
1,200.00	18.40	287.55	1,184.27	44.16	-139.64	44.75	2.00	2.00	0.00
1,300.00	20.40	287.55	1,278.59	54.18	-171.31	54.90	2.00	2.00	0.00
1,352.50	21.45	287.55	1,327.62	59.83	-189.19	60.62	2.00	2.00	0.00
Hold Tangent @ 1352.50ft									
1,400.00	21.45	287.55	1,371.83	65.07	-205.75	65.93	0.00	0.00	0.00
1,500.00	21.45	287.55	1,464.91	76.10	-240.62	77.10	0.00	0.00	0.00
1,600.00	21.45	287.55	1,557.98	87.12	-275.48	88.28	0.00	0.00	0.00
1,700.00	21.45	287.55	1,651.05	98.15	-310.35	99.45	0.00	0.00	0.00
1,752.59	21.45	287.55	1,700.00	103.95	-328.69	105.33	0.00	0.00	0.00
9 5/8"									
1,800.00	21.45	287.55	1,744.13	109.18	-345.22	110.62	0.00	0.00	0.00
1,900.00	21.45	287.55	1,837.20	120.20	-380.08	121.80	0.00	0.00	0.00
2,000.00	21.45	287.55	1,930.27	131.23	-414.95	132.97	0.00	0.00	0.00
2,100.00	21.45	287.55	2,023.35	142.26	-449.82	144.14	0.00	0.00	0.00
2,200.00	21.45	287.55	2,116.42	153.29	-484.68	155.31	0.00	0.00	0.00
2,300.00	21.45	287.55	2,209.50	164.31	-519.55	166.49	0.00	0.00	0.00
2,400.00	21.45	287.55	2,302.57	175.34	-554.42	177.66	0.00	0.00	0.00
2,500.00	21.45	287.55	2,395.64	186.37	-589.28	188.83	0.00	0.00	0.00
2,600.00	21.45	287.55	2,488.72	197.39	-624.15	200.01	0.00	0.00	0.00
2,700.00	21.45	287.55	2,581.79	208.42	-659.02	211.18	0.00	0.00	0.00
2,800.00	21.45	287.55	2,674.86	219.45	-693.88	222.35	0.00	0.00	0.00
2,900.00	21.45	287.55	2,767.94	230.47	-728.75	233.52	0.00	0.00	0.00
3,000.00	21.45	287.55	2,861.01	241.50	-763.62	244.70	0.00	0.00	0.00
3,100.00	21.45	287.55	2,954.09	252.53	-798.49	255.87	0.00	0.00	0.00
3,200.00	21.45	287.55	3,047.16	263.55	-833.35	267.04	0.00	0.00	0.00
3,300.00	21.45	287.55	3,140.23	274.58	-868.22	278.22	0.00	0.00	0.00
3,400.00	21.45	287.55	3,233.31	285.61	-903.09	289.39	0.00	0.00	0.00
3,500.00	21.45	287.55	3,326.38	296.64	-937.95	300.56	0.00	0.00	0.00
3,600.00	21.45	287.55	3,419.45	307.66	-972.82	311.73	0.00	0.00	0.00
3,700.00	21.45	287.55	3,512.53	318.69	-1,007.69	322.91	0.00	0.00	0.00
3,800.00	21.45	287.55	3,605.60	329.72	-1,042.55	334.08	0.00	0.00	0.00
3,900.00	21.45	287.55	3,698.67	340.74	-1,077.42	345.25	0.00	0.00	0.00
4,000.00	21.45	287.55	3,791.75	351.77	-1,112.29	356.43	0.00	0.00	0.00
4,100.00	21.45	287.55	3,884.82	362.80	-1,147.15	367.60	0.00	0.00	0.00
4,200.00	21.45	287.55	3,977.90	373.82	-1,182.02	378.77	0.00	0.00	0.00
4,300.00	21.45	287.55	4,070.97	384.85	-1,216.89	389.94	0.00	0.00	0.00
4,400.00	21.45	287.55	4,164.04	395.88	-1,251.75	401.12	0.00	0.00	0.00
4,500.00	21.45	287.55	4,257.12	406.90	-1,286.62	412.29	0.00	0.00	0.00
4,600.00	21.45	287.55	4,350.19	417.93	-1,321.49	423.46	0.00	0.00	0.00

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-03H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4889.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4889.00usft (RIG)
Site:	2N-63W-19 KBL PAD	North Reference:	True
Well:	KBL 1918-03H	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)
4,700.00	21.45	287.55	4,443.26	428.96	-1,356.35	434.64	0.00	0.00	0.00
4,800.00	21.45	287.55	4,536.34	439.99	-1,391.22	445.81	0.00	0.00	0.00
4,900.00	21.45	287.55	4,629.41	451.01	-1,426.09	456.98	0.00	0.00	0.00
5,000.00	21.45	287.55	4,722.49	462.04	-1,460.95	468.15	0.00	0.00	0.00
5,100.00	21.45	287.55	4,815.56	473.07	-1,495.82	479.33	0.00	0.00	0.00
5,200.00	21.45	287.55	4,908.63	484.09	-1,530.69	490.50	0.00	0.00	0.00
5,300.00	21.45	287.55	5,001.71	495.12	-1,565.55	501.67	0.00	0.00	0.00
5,400.00	21.45	287.55	5,094.78	506.15	-1,600.42	512.85	0.00	0.00	0.00
5,500.00	21.45	287.55	5,187.85	517.17	-1,635.29	524.02	0.00	0.00	0.00
5,600.00	21.45	287.55	5,280.93	528.20	-1,670.15	535.19	0.00	0.00	0.00
5,700.00	21.45	287.55	5,374.00	539.23	-1,705.02	546.36	0.00	0.00	0.00
5,800.00	21.45	287.55	5,467.08	550.25	-1,739.89	557.54	0.00	0.00	0.00
5,900.00	21.45	287.55	5,560.15	561.28	-1,774.75	568.71	0.00	0.00	0.00
6,000.00	21.45	287.55	5,653.22	572.31	-1,809.62	579.88	0.00	0.00	0.00
6,100.00	21.45	287.55	5,746.30	583.34	-1,844.49	591.06	0.00	0.00	0.00
6,200.00	21.45	287.55	5,839.37	594.36	-1,879.36	602.23	0.00	0.00	0.00
6,300.00	21.45	287.55	5,932.44	605.39	-1,914.22	613.40	0.00	0.00	0.00
6,400.00	21.45	287.55	6,025.52	616.42	-1,949.09	624.57	0.00	0.00	0.00
6,500.00	21.45	287.55	6,118.59	627.44	-1,983.96	635.75	0.00	0.00	0.00
6,600.00	21.45	287.55	6,211.67	638.47	-2,018.82	646.92	0.00	0.00	0.00
6,700.00	21.45	287.55	6,304.74	649.50	-2,053.69	658.09	0.00	0.00	0.00
6,770.50	21.45	287.55	6,370.36	657.27	-2,078.27	665.97	0.00	0.00	0.00
KOP @ 6770.50ft									
6,800.00	22.35	294.25	6,397.73	661.20	-2,088.53	669.94	9.00	3.04	22.72
6,900.00	27.08	312.72	6,488.68	684.50	-2,122.65	693.38	9.00	4.73	18.47
7,000.00	33.49	325.33	6,575.08	722.70	-2,155.13	731.73	9.00	6.41	12.61
7,100.00	40.79	334.07	6,654.80	774.88	-2,185.17	784.03	9.00	7.31	8.75
7,200.00	48.59	340.50	6,725.87	839.74	-2,212.03	849.00	9.00	7.79	6.42
7,300.00	56.66	345.51	6,786.55	915.68	-2,235.05	925.04	9.00	8.07	5.02
7,400.00	64.90	349.67	6,835.34	1,000.85	-2,253.66	1,010.28	9.00	8.24	4.16
7,500.00	73.24	353.29	6,871.04	1,093.13	-2,267.40	1,102.62	9.00	8.34	3.62
7,600.00	81.64	356.61	6,892.77	1,190.26	-2,275.93	1,199.78	9.00	8.40	3.32
7,699.23	90.00	359.76	6,900.00	1,289.08	-2,279.04	1,298.61	9.00	8.43	3.18
End Build @ 7699.23ft									
7,700.00	90.00	359.76	6,900.00	1,289.85	-2,279.05	1,299.38	0.00	0.00	0.00
7,800.00	90.00	359.76	6,900.00	1,389.85	-2,279.46	1,399.38	0.00	0.00	0.00
7,900.00	90.00	359.76	6,900.00	1,489.84	-2,279.87	1,499.38	0.00	0.00	0.00
8,000.00	90.00	359.76	6,900.00	1,589.84	-2,280.29	1,599.38	0.00	0.00	0.00
8,100.00	90.00	359.76	6,900.00	1,689.84	-2,280.70	1,699.38	0.00	0.00	0.00
8,200.00	90.00	359.76	6,900.00	1,789.84	-2,281.12	1,799.38	0.00	0.00	0.00
8,300.00	90.00	359.76	6,900.00	1,889.84	-2,281.53	1,899.38	0.00	0.00	0.00
8,400.00	90.00	359.76	6,900.00	1,989.84	-2,281.95	1,999.38	0.00	0.00	0.00
8,500.00	90.00	359.76	6,900.00	2,089.84	-2,282.36	2,099.38	0.00	0.00	0.00
8,600.00	90.00	359.76	6,900.00	2,189.84	-2,282.78	2,199.38	0.00	0.00	0.00
8,700.00	90.00	359.76	6,900.00	2,289.84	-2,283.19	2,299.38	0.00	0.00	0.00
8,800.00	90.00	359.76	6,900.00	2,389.84	-2,283.60	2,399.38	0.00	0.00	0.00
8,900.00	90.00	359.76	6,900.00	2,489.84	-2,284.02	2,499.38	0.00	0.00	0.00
9,000.00	90.00	359.76	6,900.00	2,589.84	-2,284.43	2,599.38	0.00	0.00	0.00
9,100.00	90.00	359.76	6,900.00	2,689.83	-2,284.85	2,699.38	0.00	0.00	0.00
9,200.00	90.00	359.76	6,900.00	2,789.83	-2,285.26	2,799.38	0.00	0.00	0.00
9,300.00	90.00	359.76	6,900.00	2,889.83	-2,285.68	2,899.38	0.00	0.00	0.00
9,400.00	90.00	359.76	6,900.00	2,989.83	-2,286.09	2,999.38	0.00	0.00	0.00
9,500.00	90.00	359.76	6,900.00	3,089.83	-2,286.51	3,099.38	0.00	0.00	0.00
9,600.00	90.00	359.76	6,900.00	3,189.83	-2,286.92	3,199.38	0.00	0.00	0.00

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-03H
Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4889.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4889.00usft (RIG)
Site:	2N-63W-19 KBL PAD	North Reference:	True
Well:	KBL 1918-03H	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)	
9,700.00	90.00	359.76	6,900.00	3,289.83	-2,287.33	3,299.38	0.00	0.00	0.00	
9,800.00	90.00	359.76	6,900.00	3,389.83	-2,287.75	3,399.38	0.00	0.00	0.00	
9,900.00	90.00	359.76	6,900.00	3,489.83	-2,288.16	3,499.38	0.00	0.00	0.00	
10,000.00	90.00	359.76	6,900.00	3,589.83	-2,288.58	3,599.38	0.00	0.00	0.00	
10,100.00	90.00	359.76	6,900.00	3,689.83	-2,288.99	3,699.38	0.00	0.00	0.00	
10,200.00	90.00	359.76	6,900.00	3,789.82	-2,289.41	3,799.38	0.00	0.00	0.00	
10,300.00	90.00	359.76	6,900.00	3,889.82	-2,289.82	3,899.38	0.00	0.00	0.00	
10,400.00	90.00	359.76	6,900.00	3,989.82	-2,290.24	3,999.38	0.00	0.00	0.00	
10,500.00	90.00	359.76	6,900.00	4,089.82	-2,290.65	4,099.38	0.00	0.00	0.00	
10,600.00	90.00	359.76	6,900.00	4,189.82	-2,291.07	4,199.38	0.00	0.00	0.00	
10,700.00	90.00	359.76	6,900.00	4,289.82	-2,291.48	4,299.38	0.00	0.00	0.00	
10,800.00	90.00	359.76	6,900.00	4,389.82	-2,291.89	4,399.38	0.00	0.00	0.00	
10,900.00	90.00	359.76	6,900.00	4,489.82	-2,292.31	4,499.38	0.00	0.00	0.00	
11,000.00	90.00	359.76	6,900.00	4,589.82	-2,292.72	4,599.38	0.00	0.00	0.00	
11,100.00	90.00	359.76	6,900.00	4,689.82	-2,293.14	4,699.38	0.00	0.00	0.00	
11,200.00	90.00	359.76	6,900.00	4,789.82	-2,293.55	4,799.38	0.00	0.00	0.00	
11,300.00	90.00	359.76	6,900.00	4,889.82	-2,293.97	4,899.38	0.00	0.00	0.00	
11,400.00	90.00	359.76	6,900.00	4,989.81	-2,294.38	4,999.38	0.00	0.00	0.00	
11,500.00	90.00	359.76	6,900.00	5,089.81	-2,294.80	5,099.38	0.00	0.00	0.00	
11,600.00	90.00	359.76	6,900.00	5,189.81	-2,295.21	5,199.38	0.00	0.00	0.00	
11,700.00	90.00	359.76	6,900.00	5,289.81	-2,295.62	5,299.38	0.00	0.00	0.00	
11,800.00	90.00	359.76	6,900.00	5,389.81	-2,296.04	5,399.38	0.00	0.00	0.00	
11,900.00	90.00	359.76	6,900.00	5,489.81	-2,296.45	5,499.38	0.00	0.00	0.00	
12,000.00	90.00	359.76	6,900.00	5,589.81	-2,296.87	5,599.38	0.00	0.00	0.00	
12,059.55	90.00	359.76	6,900.00	5,649.36	-2,297.11	5,658.93	0.00	0.00	0.00	
TD Well @ 12059.55ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,752.59	1,700.00	9 5/8"	9-5/8	13-1/2	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
280.00	280.00	0.00	0.00	Begin Nudge @ 280.00ft	
1,352.50	1,327.62	59.83	-189.19	Hold Tangent @ 1352.50ft	
6,770.50	6,370.36	657.27	-2,078.27	KOP @ 6770.50ft	
7,699.23	6,900.00	1,289.08	-2,279.04	End Build @ 7699.23ft	
12,059.55	6,900.00	5,649.36	-2,297.11	TD Well @ 12059.55ft	