

VERDAD RESOURCES

**WATTENBERG FIELD
2N-63W-19 KBL PAD
KBL 1918-02H**

Wellbore #1

Plan: Design #1

Standard Planning Report

10 July, 2019

Project: WATTENBERG FIELD
Site: 2N-63W-19 KBL PAD
Well: KBL 1918-02H
Wellbore: Wellbore #1
Design: Design #1

VERDAD RESOURCES

CASING DETAILS

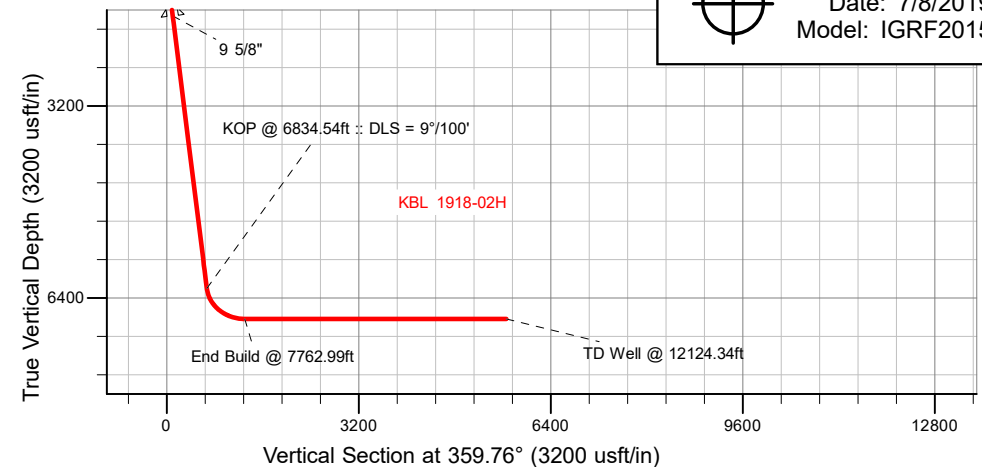
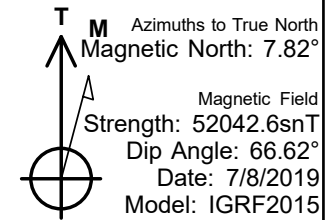
TVD	MD	Name	Size
1700.00	1767.80	9 5/8"	9-5/8

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	240.00	0.00	0.00	240.00	0.00	0.00	0.00	0.00	0.00	
3	1557.50	26.35	284.40	1511.55	74.02	-288.30	2.00	284.40	75.23	
4	6834.54	26.35	284.40	6240.30	656.51	-2556.95	0.00	0.00	667.22	
5	7762.99	90.00	359.76	6750.00	1288.10	-2803.84	9.00	76.83	1299.83	
6	12124.34	90.00	359.76	6750.00	5649.41	-2821.90	0.00	0.00	5661.18	KBL 1918-02H_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KBL 1918-02H_SHL	0.00	0.00	0.00	40.121610	-104.478552
KBL 1918-02H_BHL	6750.00	5649.41	-2821.90	40.137118	-104.488645



SHL
1807' FSL
2156' FEL

LP
2180' FNL
480' FWL

BHL
2180' FSL
480' FWL

WELL DETAILS: KBL 1918-02H

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

Plan: Design #1 (KBL 1918-02H/Wellbore #1)

Date: 7/10/2019

Hewlett-Packard

Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-02H
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 1918-02H	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 1918-02H			
Well Position	+N/-S	-0.01 usft	Northing:	1,288,791.66 usft
	+E/-W	15.10 usft	Easting:	3,285,645.72 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	52,042.57114310

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	12,124.34	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	
240.00	0.00	0.00	240.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,557.50	26.35	284.40	1,511.55	74.02	-288.30	2.00	2.00	0.00	284.40	
6,834.54	26.35	284.40	6,240.30	656.51	-2,556.95	0.00	0.00	0.00	0.00	
7,762.99	90.00	359.76	6,750.00	1,288.10	-2,803.84	9.00	6.86	8.12	76.83	
12,124.34	90.00	359.76	6,750.00	5,649.41	-2,821.91	0.00	0.00	0.00	0.00	KBL 1918-02H_BHL

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Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well KBL 1918-02H
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 1918-02H	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
240.00	0.00	0.00	240.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 240.00ft									
300.00	1.20	284.40	300.00	0.16	-0.61	0.16	2.00	2.00	0.00
400.00	3.20	284.40	399.92	1.11	-4.33	1.13	2.00	2.00	0.00
500.00	5.20	284.40	499.64	2.93	-11.42	2.98	2.00	2.00	0.00
600.00	7.20	284.40	599.05	5.62	-21.88	5.71	2.00	2.00	0.00
700.00	9.20	284.40	698.03	9.16	-35.69	9.31	2.00	2.00	0.00
800.00	11.20	284.40	796.44	13.57	-52.85	13.79	2.00	2.00	0.00
900.00	13.20	284.40	894.18	18.82	-73.31	19.13	2.00	2.00	0.00
1,000.00	15.20	284.40	991.12	24.92	-97.07	25.33	2.00	2.00	0.00
1,100.00	17.20	284.40	1,087.14	31.86	-124.09	32.38	2.00	2.00	0.00
1,200.00	19.20	284.40	1,182.13	39.63	-154.34	40.27	2.00	2.00	0.00
1,300.00	21.20	284.40	1,275.98	48.22	-187.79	49.00	2.00	2.00	0.00
1,400.00	23.20	284.40	1,368.56	57.61	-224.38	58.55	2.00	2.00	0.00
1,500.00	25.20	284.40	1,459.77	67.81	-264.08	68.91	2.00	2.00	0.00
1,557.50	26.35	284.40	1,511.55	74.02	-288.30	75.23	2.00	2.00	0.00
Hold Tangent @ 1557.50ft									
1,600.00	26.35	284.40	1,549.63	78.71	-306.57	80.00	0.00	0.00	0.00
1,700.00	26.35	284.40	1,639.24	89.75	-349.56	91.22	0.00	0.00	0.00
1,767.80	26.35	284.40	1,700.00	97.24	-378.71	98.82	0.00	0.00	0.00
9 5/8"									
1,800.00	26.35	284.40	1,728.85	100.79	-392.55	102.43	0.00	0.00	0.00
1,900.00	26.35	284.40	1,818.46	111.83	-435.55	113.65	0.00	0.00	0.00
2,000.00	26.35	284.40	1,908.07	122.87	-478.54	124.87	0.00	0.00	0.00
2,100.00	26.35	284.40	1,997.68	133.91	-521.53	136.09	0.00	0.00	0.00
2,200.00	26.35	284.40	2,087.29	144.94	-564.52	147.31	0.00	0.00	0.00
2,300.00	26.35	284.40	2,176.90	155.98	-607.51	158.53	0.00	0.00	0.00
2,400.00	26.35	284.40	2,266.51	167.02	-650.50	169.74	0.00	0.00	0.00
2,500.00	26.35	284.40	2,356.12	178.06	-693.49	180.96	0.00	0.00	0.00
2,600.00	26.35	284.40	2,445.73	189.10	-736.48	192.18	0.00	0.00	0.00
2,700.00	26.35	284.40	2,535.34	200.13	-779.47	203.40	0.00	0.00	0.00
2,800.00	26.35	284.40	2,624.95	211.17	-822.46	214.62	0.00	0.00	0.00
2,900.00	26.35	284.40	2,714.56	222.21	-865.45	225.83	0.00	0.00	0.00
3,000.00	26.35	284.40	2,804.17	233.25	-908.45	237.05	0.00	0.00	0.00
3,100.00	26.35	284.40	2,893.78	244.29	-951.44	248.27	0.00	0.00	0.00
3,200.00	26.35	284.40	2,983.39	255.33	-994.43	259.49	0.00	0.00	0.00
3,300.00	26.35	284.40	3,073.00	266.36	-1,037.42	270.71	0.00	0.00	0.00
3,400.00	26.35	284.40	3,162.61	277.40	-1,080.41	281.93	0.00	0.00	0.00
3,500.00	26.35	284.40	3,252.22	288.44	-1,123.40	293.14	0.00	0.00	0.00
3,600.00	26.35	284.40	3,341.83	299.48	-1,166.39	304.36	0.00	0.00	0.00
3,700.00	26.35	284.40	3,431.44	310.52	-1,209.38	315.58	0.00	0.00	0.00
3,800.00	26.35	284.40	3,521.05	321.55	-1,252.37	326.80	0.00	0.00	0.00
3,900.00	26.35	284.40	3,610.66	332.59	-1,295.36	338.02	0.00	0.00	0.00
4,000.00	26.35	284.40	3,700.27	343.63	-1,338.35	349.23	0.00	0.00	0.00
4,100.00	26.35	284.40	3,789.88	354.67	-1,381.35	360.45	0.00	0.00	0.00
4,200.00	26.35	284.40	3,879.49	365.71	-1,424.34	371.67	0.00	0.00	0.00
4,300.00	26.35	284.40	3,969.10	376.75	-1,467.33	382.89	0.00	0.00	0.00
4,400.00	26.35	284.40	4,058.71	387.78	-1,510.32	394.11	0.00	0.00	0.00
4,500.00	26.35	284.40	4,148.32	398.82	-1,553.31	405.32	0.00	0.00	0.00
4,600.00	26.35	284.40	4,237.93	409.86	-1,596.30	416.54	0.00	0.00	0.00

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Planning Report

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Company:	VERDAD RESOURCES	TVD Reference:	RKB = 24' @ 4889.00usft (RIG)
Project:	WATTENBERG FIELD	MD Reference:	RKB = 24' @ 4889.00usft (RIG)
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Well:	KBL 1918-02H	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	26.35	284.40	4,327.54	420.90	-1,639.29	427.76	0.00	0.00	0.00
4,800.00	26.35	284.40	4,417.15	431.94	-1,682.28	438.98	0.00	0.00	0.00
4,900.00	26.35	284.40	4,506.76	442.97	-1,725.27	450.20	0.00	0.00	0.00
5,000.00	26.35	284.40	4,596.37	454.01	-1,768.26	461.42	0.00	0.00	0.00
5,100.00	26.35	284.40	4,685.98	465.05	-1,811.25	472.63	0.00	0.00	0.00
5,200.00	26.35	284.40	4,775.59	476.09	-1,854.25	483.85	0.00	0.00	0.00
5,300.00	26.35	284.40	4,865.20	487.13	-1,897.24	495.07	0.00	0.00	0.00
5,400.00	26.35	284.40	4,954.81	498.17	-1,940.23	506.29	0.00	0.00	0.00
5,500.00	26.35	284.40	5,044.42	509.20	-1,983.22	517.51	0.00	0.00	0.00
5,600.00	26.35	284.40	5,134.03	520.24	-2,026.21	528.72	0.00	0.00	0.00
5,700.00	26.35	284.40	5,223.64	531.28	-2,069.20	539.94	0.00	0.00	0.00
5,800.00	26.35	284.40	5,313.25	542.32	-2,112.19	551.16	0.00	0.00	0.00
5,900.00	26.35	284.40	5,402.86	553.36	-2,155.18	562.38	0.00	0.00	0.00
6,000.00	26.35	284.40	5,492.47	564.39	-2,198.17	573.60	0.00	0.00	0.00
6,100.00	26.35	284.40	5,582.08	575.43	-2,241.16	584.82	0.00	0.00	0.00
6,200.00	26.35	284.40	5,671.69	586.47	-2,284.15	596.03	0.00	0.00	0.00
6,300.00	26.35	284.40	5,761.30	597.51	-2,327.14	607.25	0.00	0.00	0.00
6,400.00	26.35	284.40	5,850.91	608.55	-2,370.14	618.47	0.00	0.00	0.00
6,500.00	26.35	284.40	5,940.52	619.59	-2,413.13	629.69	0.00	0.00	0.00
6,600.00	26.35	284.40	6,030.13	630.62	-2,456.12	640.91	0.00	0.00	0.00
6,700.00	26.35	284.40	6,119.74	641.66	-2,499.11	652.12	0.00	0.00	0.00
6,800.00	26.35	284.40	6,209.35	652.70	-2,542.10	663.34	0.00	0.00	0.00
6,834.54	26.35	284.40	6,240.30	656.51	-2,556.95	667.22	0.00	0.00	0.00
KOP @ 6834.54ft :: DLS = 9°/100'									
6,900.00	28.24	296.59	6,298.51	667.07	-2,584.89	677.89	9.00	2.89	18.63
7,000.00	32.86	311.86	6,384.74	695.82	-2,626.33	706.82	9.00	4.62	15.27
7,100.00	38.89	323.31	6,465.83	739.19	-2,665.37	750.35	9.00	6.03	11.45
7,200.00	45.77	331.95	6,539.77	796.10	-2,701.05	807.41	9.00	6.88	8.64
7,300.00	53.16	338.72	6,604.76	865.15	-2,732.48	876.59	9.00	7.39	6.77
7,400.00	60.87	344.27	6,659.19	944.65	-2,758.89	956.19	9.00	7.71	5.55
7,500.00	68.78	349.04	6,701.71	1,032.63	-2,779.64	1,044.26	9.00	7.90	4.76
7,600.00	76.80	353.31	6,731.29	1,126.93	-2,794.20	1,138.62	9.00	8.02	4.27
7,700.00	84.89	357.31	6,747.20	1,225.22	-2,802.23	1,236.95	9.00	8.09	4.00
7,762.99	90.00	359.76	6,750.00	1,288.10	-2,803.84	1,299.83	9.00	8.11	3.90
End Build @ 7762.99ft									
7,800.00	90.00	359.76	6,750.00	1,325.11	-2,803.99	1,336.85	0.00	0.00	0.00
7,900.00	90.00	359.76	6,750.00	1,425.11	-2,804.41	1,436.85	0.00	0.00	0.00
8,000.00	90.00	359.76	6,750.00	1,525.11	-2,804.82	1,536.85	0.00	0.00	0.00
8,100.00	90.00	359.76	6,750.00	1,625.11	-2,805.23	1,636.85	0.00	0.00	0.00
8,200.00	90.00	359.76	6,750.00	1,725.11	-2,805.65	1,736.85	0.00	0.00	0.00
8,300.00	90.00	359.76	6,750.00	1,825.11	-2,806.06	1,836.85	0.00	0.00	0.00
8,400.00	90.00	359.76	6,750.00	1,925.11	-2,806.48	1,936.85	0.00	0.00	0.00
8,500.00	90.00	359.76	6,750.00	2,025.11	-2,806.89	2,036.85	0.00	0.00	0.00
8,600.00	90.00	359.76	6,750.00	2,125.11	-2,807.31	2,136.85	0.00	0.00	0.00
8,700.00	90.00	359.76	6,750.00	2,225.11	-2,807.72	2,236.85	0.00	0.00	0.00
8,800.00	90.00	359.76	6,750.00	2,325.10	-2,808.13	2,336.85	0.00	0.00	0.00
8,900.00	90.00	359.76	6,750.00	2,425.10	-2,808.55	2,436.85	0.00	0.00	0.00
9,000.00	90.00	359.76	6,750.00	2,525.10	-2,808.96	2,536.85	0.00	0.00	0.00
9,100.00	90.00	359.76	6,750.00	2,625.10	-2,809.38	2,636.85	0.00	0.00	0.00
9,200.00	90.00	359.76	6,750.00	2,725.10	-2,809.79	2,736.85	0.00	0.00	0.00
9,300.00	90.00	359.76	6,750.00	2,825.10	-2,810.21	2,836.85	0.00	0.00	0.00
9,400.00	90.00	359.76	6,750.00	2,925.10	-2,810.62	2,936.85	0.00	0.00	0.00
9,500.00	90.00	359.76	6,750.00	3,025.10	-2,811.03	3,036.85	0.00	0.00	0.00
9,600.00	90.00	359.76	6,750.00	3,125.10	-2,811.45	3,136.85	0.00	0.00	0.00

Hewlett-Packard

Planning Report

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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 1918-02H	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	6,750.00	3,225.10	-2,811.86	3,236.85	0.00	0.00	0.00	
9,800.00	90.00	359.76	6,750.00	3,325.10	-2,812.28	3,336.85	0.00	0.00	0.00	
9,900.00	90.00	359.76	6,750.00	3,425.09	-2,812.69	3,436.85	0.00	0.00	0.00	
10,000.00	90.00	359.76	6,750.00	3,525.09	-2,813.11	3,536.85	0.00	0.00	0.00	
10,100.00	90.00	359.76	6,750.00	3,625.09	-2,813.52	3,636.85	0.00	0.00	0.00	
10,200.00	90.00	359.76	6,750.00	3,725.09	-2,813.93	3,736.85	0.00	0.00	0.00	
10,300.00	90.00	359.76	6,750.00	3,825.09	-2,814.35	3,836.85	0.00	0.00	0.00	
10,400.00	90.00	359.76	6,750.00	3,925.09	-2,814.76	3,936.85	0.00	0.00	0.00	
10,500.00	90.00	359.76	6,750.00	4,025.09	-2,815.18	4,036.85	0.00	0.00	0.00	
10,600.00	90.00	359.76	6,750.00	4,125.09	-2,815.59	4,136.85	0.00	0.00	0.00	
10,700.00	90.00	359.76	6,750.00	4,225.09	-2,816.00	4,236.85	0.00	0.00	0.00	
10,800.00	90.00	359.76	6,750.00	4,325.09	-2,816.42	4,336.85	0.00	0.00	0.00	
10,900.00	90.00	359.76	6,750.00	4,425.09	-2,816.83	4,436.85	0.00	0.00	0.00	
11,000.00	90.00	359.76	6,750.00	4,525.09	-2,817.25	4,536.85	0.00	0.00	0.00	
11,100.00	90.00	359.76	6,750.00	4,625.08	-2,817.66	4,636.85	0.00	0.00	0.00	
11,200.00	90.00	359.76	6,750.00	4,725.08	-2,818.08	4,736.85	0.00	0.00	0.00	
11,300.00	90.00	359.76	6,750.00	4,825.08	-2,818.49	4,836.85	0.00	0.00	0.00	
11,400.00	90.00	359.76	6,750.00	4,925.08	-2,818.90	4,936.85	0.00	0.00	0.00	
11,500.00	90.00	359.76	6,750.00	5,025.08	-2,819.32	5,036.85	0.00	0.00	0.00	
11,600.00	90.00	359.76	6,750.00	5,125.08	-2,819.73	5,136.85	0.00	0.00	0.00	
11,700.00	90.00	359.76	6,750.00	5,225.08	-2,820.15	5,236.85	0.00	0.00	0.00	
11,800.00	90.00	359.76	6,750.00	5,325.08	-2,820.56	5,336.85	0.00	0.00	0.00	
11,900.00	90.00	359.76	6,750.00	5,425.08	-2,820.98	5,436.85	0.00	0.00	0.00	
12,000.00	90.00	359.76	6,750.00	5,525.08	-2,821.39	5,536.85	0.00	0.00	0.00	
12,100.00	90.00	359.76	6,750.00	5,625.08	-2,821.80	5,636.85	0.00	0.00	0.00	
12,124.34	90.00	359.76	6,750.00	5,649.41	-2,821.91	5,661.18	0.00	0.00	0.00	
TD Well @ 12124.34ft										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,767.80	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	
240.00	240.00	0.00	0.00	Begin Nudge @ 240.00ft	
1,557.50	1,511.55	74.02	-288.30	Hold Tangent @ 1557.50ft	
6,834.54	6,240.30	656.51	-2,556.95	KOP @ 6834.54ft :: DLS = 9°/100'	
7,762.99	6,750.00	1,288.10	-2,803.84	End Build @ 7762.99ft	
12,124.34	6,750.00	5,649.41	-2,821.91	TD Well @ 12124.34ft	