



# **Merit Energy**

**Finney County, KS (NAD 27)**

**River Bend 8**

**River Bend #8**

**River Bend #8**

**Design: River Bend #8**

## **Standard Survey Report**

**25 February, 2019**

***gyro/data***

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Plan: Design #2 (River Bend #8/River Bend #8)  
 Duke 9 @ 2858.30usft (Duke 9 ( 2846.3 GE + 12 KB = 2858.3))

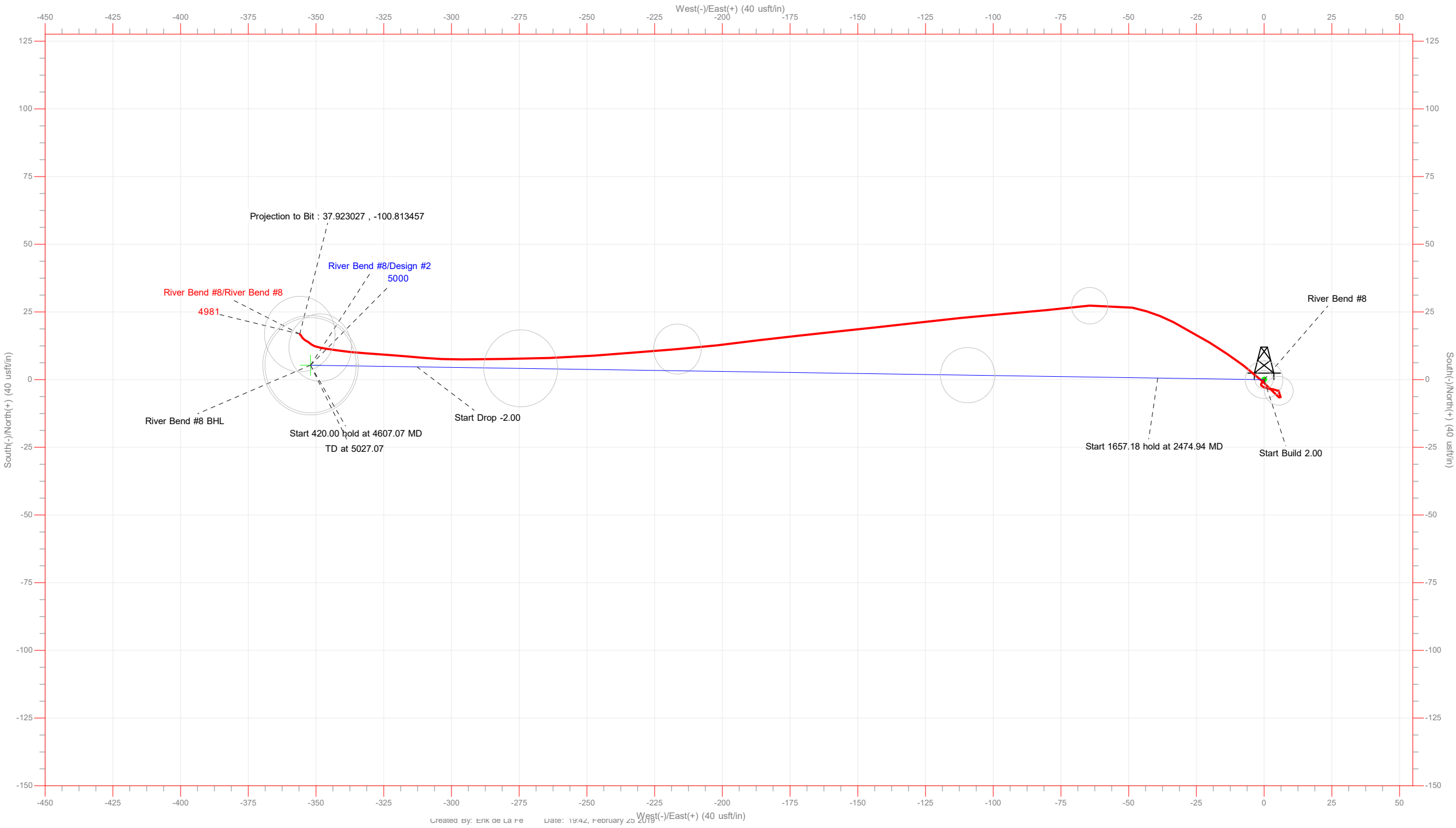
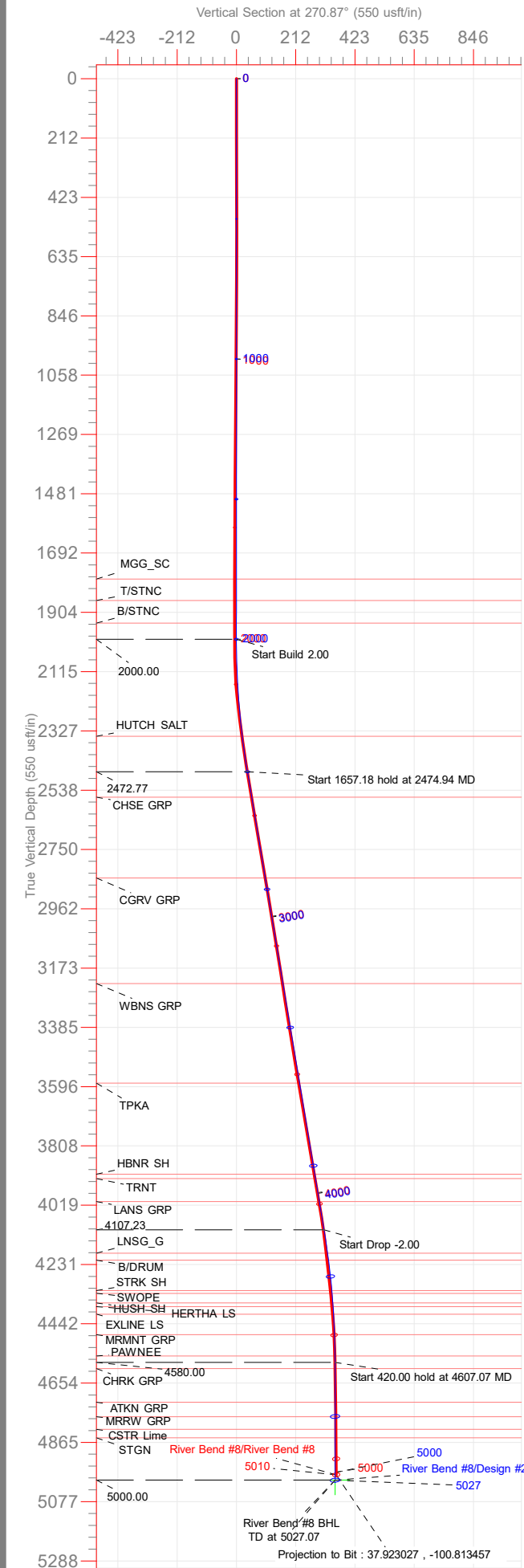
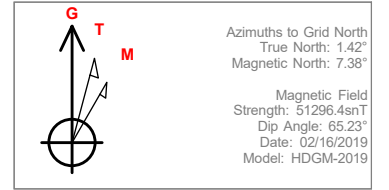
FORMATION TOPS ALONG WELLPATH		
TVDPath	MDPath	Formation
1785.00	1785.00	MGG_SC
1861.46	1861.46	T/STNC
1942.12	1942.12	B/STNC
2346.08	2346.93	HUTCH SALT
2563.31	2566.74	CHSE GRP
2851.59	2859.03	CGRV GRP
3228.49	3241.17	WBNS GRP
3583.68	3601.30	TPKA
3908.63	3930.76	HBNR SH
3924.00	3946.35	TRNT
4006.00	4029.49	LANS GRP
4190.00	4215.85	LNSG_G
4215.00	4241.07	B/DRUM
4324.00	4350.73	STRK SH
4334.00	4360.76	SWOPE
4368.00	4394.87	HUSH SH
4381.00	4407.91	HERTHA LS
4408.00	4434.96	EXLINE LS
4481.00	4508.05	MRMNT GRP
4557.00	4584.07	PAWNEE
4602.00	4629.07	CHRK GRP
4722.34	4749.41	ATKN GRP
4774.00	4801.07	MRRW GRP
4819.05	4846.12	CSTR Lime
4849.29	4876.36	STGN

PROJECT DETAILS: Finney County, KS (NAD 27)	
Geodetic System:	US State Plane 1927 (Exact solution)
Datum:	NAD 1927 (NADCON CONUS)
Ellipsoid:	Clarke 1866
Zone:	Kansas South 1502
North Reference:	Grid
System Datum:	Mean Sea Level
To convert a Magnetic Direction to a Grid Direction, Add 7.38°	
To convert a True Direction to a Grid Direction, Add 1.42°	

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSact	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	2474.94	9.50	270.87	2472.77	0.60	-39.27	2.00	270.87	39.28	
4	4132.12	9.50	270.87	4107.23	4.74	-312.73	0.00	0.00	312.76	
5	4607.07	0.00	360.00	4580.00	5.34	-352.00	2.00	180.00	352.04	River Bend #8 BHL
6	5027.07	0.00	360.00	5000.00	5.34	-352.00	0.00	0.00	352.04	

CASING DETAILS	
No casing data is available	
Notice: Casing Depths are Estimates Only	

WELLBORE TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape Point
River Bend #8 BHL	5000.00	5.34	-352.00	465725.93	1332748.00	



<b>Company:</b>	Merit Energy	<b>Local Co-ordinate Reference:</b>	Well River Bend #8
<b>Project:</b>	Finney County, KS (NAD 27)	<b>TVD Reference:</b>	Duke 9 @ 2858.30usft (Duke 9 ( 2846.3 GE + 12 KB = 2858.3))
<b>Site:</b>	River Bend 8	<b>MD Reference:</b>	Duke 9 @ 2858.30usft (Duke 9 ( 2846.3 GE + 12 KB = 2858.3))
<b>Well:</b>	River Bend #8	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	River Bend #8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	River Bend #8	<b>Database:</b>	Gyrodata NWDB

<b>Project</b>	Finney County, KS (NAD 27)		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Kansas South 1502		

<b>Site</b>	River Bend 8				
<b>Site Position:</b>		<b>Northing:</b>	465,720.59 usft	<b>Latitude:</b>	37.923005
<b>From:</b>	Map	<b>Easting:</b>	1,333,100.00 usft	<b>Longitude:</b>	-100.812222
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13.20 in	<b>Grid Convergence:</b>	-1.42 °

<b>Well</b>	River Bend #8					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	465,720.59 usft	<b>Latitude:</b>	37.923005
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,333,100.00 usft	<b>Longitude:</b>	-100.812222
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	2,846.30 usft

<b>Wellbore</b>	River Bend #8				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM-2019	02/16/19	5.96	65.23	51,296.39

<b>Design</b>	River Bend #8				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	304.38	

<b>Survey Program</b>	<b>Date</b>	02/25/19		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
190.00	1,724.00	Survey #1 (River Bend #8)	MWD - OSWG	OSWG MWD - Standard
1,877.00	5,010.00	Survey #2 (River Bend #8)	MWD+HDGM	OSWG MWD + HDGM

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
190.00	0.40	218.10	190.00	-0.52	-0.41	0.04	0.21	0.21	0.00	
388.00	0.30	205.10	387.99	-1.54	-1.06	0.00	0.06	-0.05	-6.57	
539.00	0.20	151.10	538.99	-2.12	-1.10	-0.29	0.16	-0.07	-35.76	
693.00	0.20	106.10	692.99	-2.43	-0.71	-0.79	0.10	0.00	-29.22	
849.00	0.40	124.10	848.99	-2.81	0.00	-1.59	0.14	0.13	11.54	
1,005.00	0.40	99.10	1,004.99	-3.21	0.99	-2.63	0.11	0.00	-16.03	
1,161.00	0.60	96.10	1,160.98	-3.38	2.34	-3.84	0.13	0.13	-1.92	

<b>Company:</b>	Merit Energy	<b>Local Co-ordinate Reference:</b>	Well River Bend #8
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<b>Well:</b>	River Bend #8	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	River Bend #8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	River Bend #8	<b>Database:</b>	Gyrodata NWDB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,317.00	0.60	109.10	1,316.97	-3.73	3.93	-5.35	0.09	0.00	8.33
1,443.00	0.40	108.10	1,442.97	-4.09	4.97	-6.41	0.16	-0.16	-0.79
1,601.00	0.10	340.10	1,600.97	-4.13	5.45	-6.83	0.30	-0.19	-81.01
1,724.00	0.00	166.67	1,723.97	-4.03	5.41	-6.74	0.08	-0.08	0.00
1,877.00	0.83	166.67	1,876.96	-5.10	5.66	-7.56	0.54	0.54	0.00
1,972.00	0.90	159.00	1,971.95	-6.47	6.09	-8.68	0.14	0.07	-8.07
2,066.00	1.29	305.31	2,065.94	-6.55	5.49	-8.23	2.23	0.41	155.65
2,161.00	5.83	316.21	2,160.74	-2.44	1.28	-2.44	4.81	4.78	11.47
2,255.00	8.64	306.95	2,253.98	5.25	-7.67	9.29	3.23	2.99	-9.85
2,351.00	9.24	301.74	2,348.82	13.64	-19.99	24.20	1.05	0.62	-5.43
2,445.00	9.79	297.30	2,441.52	21.27	-33.51	39.67	0.98	0.59	-4.72
2,540.00	9.75	281.48	2,535.16	26.58	-48.57	55.09	2.82	-0.04	-16.65
2,635.00	9.66	263.86	2,628.82	27.33	-64.38	68.57	3.12	-0.09	-18.55
2,730.00	9.78	264.50	2,722.46	25.70	-80.34	80.82	0.17	0.13	0.67
2,824.00	9.68	265.11	2,815.11	24.26	-96.16	93.06	0.15	-0.11	0.65
2,919.00	9.61	264.29	2,908.77	22.79	-112.01	105.31	0.16	-0.07	-0.86
3,013.00	9.39	263.15	3,001.48	21.10	-127.43	117.08	0.31	-0.23	-1.21
3,107.00	9.33	263.98	3,094.22	19.38	-142.62	128.65	0.16	-0.06	0.88
3,201.00	9.15	263.67	3,187.00	17.76	-157.63	140.12	0.20	-0.19	-0.33
3,294.00	8.70	264.09	3,278.88	16.22	-171.97	151.09	0.49	-0.48	0.45
3,387.00	9.65	262.85	3,370.69	14.53	-186.70	162.30	1.04	1.02	-1.33
3,479.00	9.47	263.57	3,461.41	12.72	-201.87	173.80	0.23	-0.20	0.78
3,571.00	9.01	265.48	3,552.22	11.30	-216.58	185.13	0.60	-0.50	2.08
3,664.00	9.72	265.42	3,643.98	10.10	-231.66	196.90	0.76	0.76	-0.06
3,755.00	9.97	265.84	3,733.64	8.92	-247.18	209.04	0.29	0.27	0.46
3,850.00	10.07	267.93	3,827.19	8.02	-263.68	222.15	0.40	0.11	2.20
3,945.00	10.15	269.49	3,920.71	7.65	-280.35	235.70	0.30	0.08	1.64
4,040.00	9.20	269.50	4,014.36	7.51	-296.31	248.80	1.00	-1.00	0.01
4,135.00	7.77	275.37	4,108.32	8.04	-310.30	260.65	1.76	-1.51	6.18
4,229.00	6.37	274.21	4,201.60	9.02	-321.83	270.71	1.50	-1.49	-1.23
4,323.00	6.43	274.10	4,295.02	9.78	-332.28	279.77	0.07	0.06	-0.12
4,418.00	5.24	278.11	4,389.52	10.77	-341.88	288.25	1.32	-1.25	4.22
4,511.00	2.96	281.18	4,482.28	11.84	-348.44	294.27	2.46	-2.45	3.30
4,606.00	1.20	309.05	4,577.21	12.94	-351.62	297.51	2.08	-1.85	29.34
4,702.00	0.85	303.65	4,673.20	13.97	-352.99	299.23	0.38	-0.36	-5.62
4,795.00	0.81	299.60	4,766.19	14.67	-354.14	300.57	0.08	-0.04	-4.35
4,889.00	0.71	328.10	4,860.18	15.50	-355.03	301.77	0.41	-0.11	30.32
4,953.00	0.81	323.92	4,924.18	16.20	-355.50	302.56	0.18	0.16	-6.53
5,010.00	0.81	323.92	4,981.17	16.85	-355.98	303.31	0.00	0.00	0.00

Projection to Bit : 37.923027 , -100.813457 - River Bend #8 BHL

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<b>Design:</b>	River Bend #8	<b>Database:</b>	Gyrodata NWDB

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,010.00	4,981.17	16.85	-355.98	Projection to Bit : 37.923027 , -100.813457

Checked By: _____	Approved By: _____	Date: _____
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