

Unit Petroleum

Reno County, Kansas [NAD 83]

Section 5 T25S-R10W

Hornbaker 5 #1H

OH

Design: OH

Standard Survey Report

21 April, 2014





Unit Petroleum
 Project: Reno County, Kansas [NAD 83]
 Site: Section 5 T25S-R10W
 Well: Hornbaker 5 #1H
 Wellbore: OH
 Design: Design #3
 Lat: 37° 53' 51.515 N
 Long: 98° 26' 43.189 W
 Pad GL: 1768.00
 KB: 14' KB @ 1782.00usft (UDI 331)

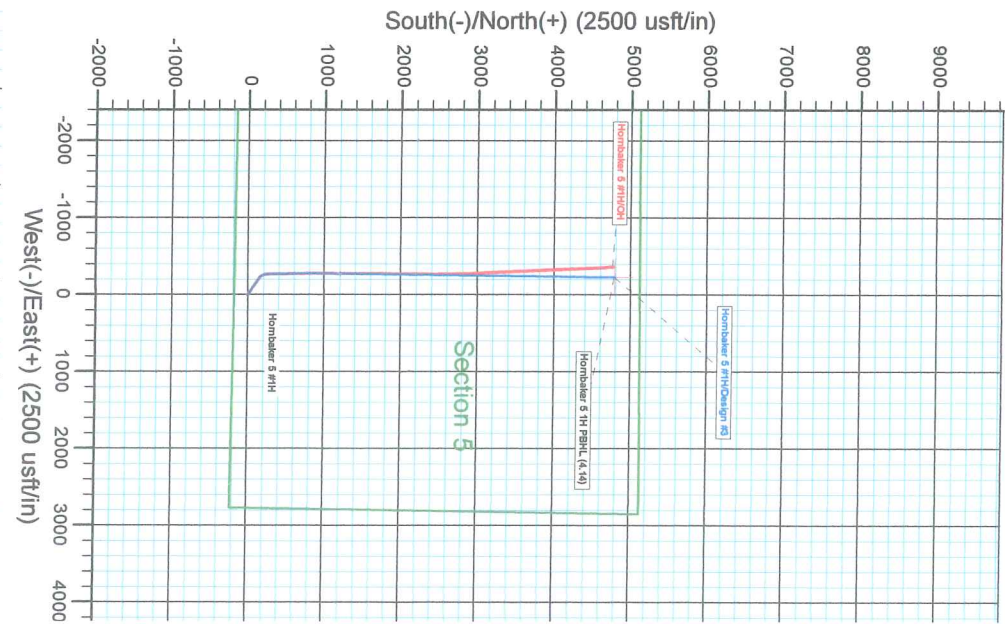
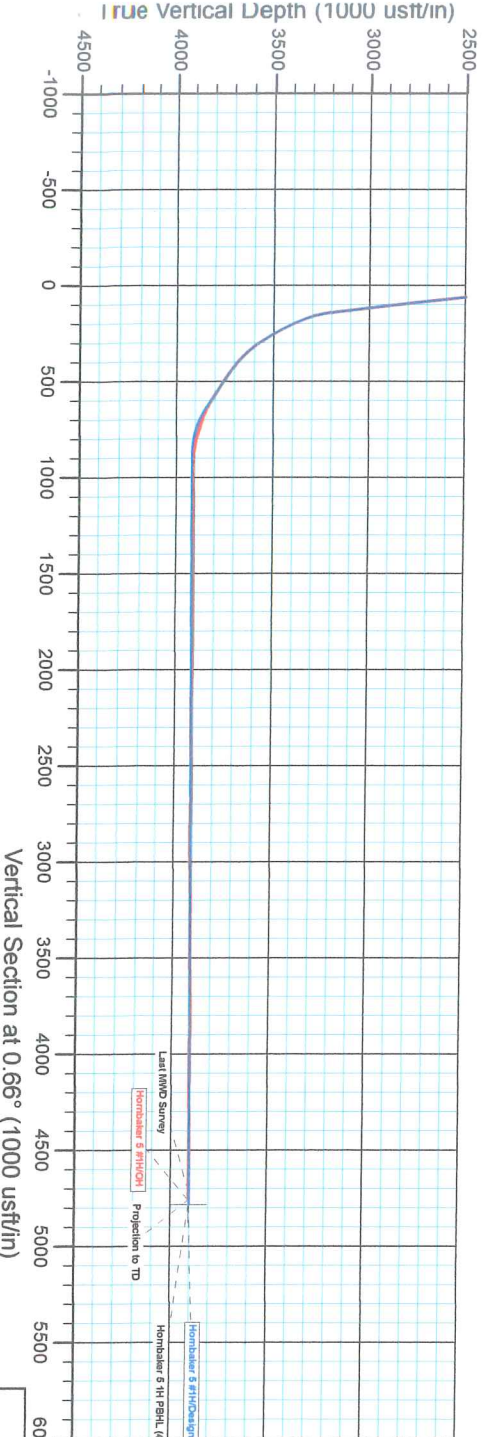
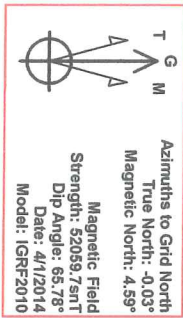


SECTION DETAILS									
MD	3894.00	Inc	56.90	Azi	358.90	TVD	3746.05	+N/S	488.45
	4067.32		56.90		358.90		3840.96	-E/W	-268.75
	4346.43		90.25		0.71		3919.00	Dip	571.57
	8236.76						4787.31	Dieg	-212.10
								TFace	-224.01
								Vsect	0.00
									0.00
									630.32
									894.12
									4784.41

WELL DETAILS: Hornbaker 5 #1H					
+N/S	+E/W	Northing	Ground Level	1768.00	Slot
0.00	0.00	1780564.00	Easting	1328108.00	
			Latitude	37° 53' 51.515 N	
			Longitude	98° 26' 43.189 W	

PROJECT DETAILS: Reno County, Kansas [NAD 83]					
Geodetic System:	US State Plane 1983				
Datum:	North American Datum 1983				
Ellipsoid:	GRS 1980				
Zone:	Kansas Southern Zone				
System Datum:	Mean Sea Level				

NOTE: All Lease lines and Hard lines are estimates only and are subject to the customers' approval.



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Hornbaker 5 #1H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1782.00usft (UDI 331)
Site:	Section 5 T25S-R10W	MD Reference:	14' KB @ 1782.00usft (UDI 331)
Well:	Hornbaker 5 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

Project	Reno County, Kansas [NAD 83]		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		Using geodetic scale factor

Site	Section 5 T25S-R10W				
Site Position:		Northing:	1,760,564.00 usft	Latitude:	37° 53' 51.515 N
From:	Map	Easting:	1,328,108.00 usft	Longitude:	98° 26' 43.189 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.03 °

Well	Hornbaker 5 #1H					
Well Position	+N/-S	0.00 usft	Northing:	1,760,564.00 usft	Latitude:	37° 53' 51.515 N
	+E/-W	0.00 usft	Easting:	1,328,108.00 usft	Longitude:	98° 26' 43.189 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	1,768.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/1/2014	4.63	65.78	52,060

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.66	

Survey Program	Date 4/21/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,426.00	Gyro (OH)	CB-GYRO-MS	Camera based gyro multishot	
1,574.00	8,210.00	MWD (OH)	MWD	MWD - Standard	

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	0.56	131.00	100.00	-0.32	0.37	-0.32	0.56	0.56	0.00	
200.00	1.18	143.83	199.99	-1.47	1.35	-1.46	0.65	0.62	12.83	
300.00	1.21	158.68	299.96	-3.29	2.34	-3.26	0.31	0.03	14.85	
400.00	0.95	132.35	399.95	-4.83	3.33	-4.79	0.55	-0.26	-26.33	
500.00	0.15	117.69	499.94	-5.45	4.06	-5.40	0.81	-0.80	-14.66	
600.00	0.09	98.43	599.94	-5.52	4.26	-5.47	0.07	-0.06	-19.26	
700.00	0.36	93.57	699.94	-5.55	4.65	-5.50	0.27	0.27	-4.86	
800.00	0.14	124.74	799.94	-5.64	5.06	-5.58	0.25	-0.22	31.17	
900.00	0.25	139.57	899.94	-5.88	5.30	-5.82	0.12	0.11	14.83	

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Well:	Hornbaker 5 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)
1,000.00	0.28	145.71	999.94	-6.24	5.58	-6.18	0.04	0.03	6.14
1,100.00	0.35	152.01	1,099.94	-6.72	5.86	-6.65	0.08	0.07	6.30
1,200.00	0.44	163.62	1,199.93	-7.35	6.11	-7.28	0.12	0.09	11.61
1,300.00	0.54	153.59	1,299.93	-8.14	6.43	-8.07	0.13	0.10	-10.03
1,400.00	0.53	133.76	1,399.93	-8.89	6.98	-8.81	0.18	-0.01	-19.83
1,426.00	0.62	128.18	1,425.93	-9.06	7.17	-8.97	0.41	0.35	-21.46
1,574.00	0.20	110.30	1,573.92	-9.64	8.05	-9.55	0.29	-0.28	-12.08
1,637.00	1.60	312.50	1,636.91	-9.09	7.50	-9.00	2.84	2.22	-250.48
1,700.00	2.80	313.80	1,699.87	-7.43	5.74	-7.36	1.91	1.90	2.06
1,764.00	4.50	314.10	1,763.73	-4.60	2.81	-4.56	2.66	2.66	0.47
1,827.00	6.20	315.40	1,826.46	-0.45	-1.35	-0.47	2.71	2.70	2.06
1,890.00	6.90	314.90	1,889.05	4.64	-6.42	4.57	1.11	1.11	-0.79
1,954.00	8.10	310.40	1,952.50	10.28	-12.58	10.13	2.09	1.88	-7.03
2,017.00	9.00	306.30	2,014.80	16.07	-19.93	15.84	1.72	1.43	-6.51
2,080.00	9.40	304.50	2,076.99	21.90	-28.14	21.58	0.78	0.63	-2.86
2,143.00	10.30	302.50	2,139.06	27.84	-37.13	27.41	1.53	1.43	-3.17
2,206.00	11.60	299.40	2,200.91	33.98	-47.40	33.43	2.26	2.06	-4.92
2,269.00	11.60	298.90	2,262.62	40.15	-58.47	39.47	0.16	0.00	-0.79
2,333.00	11.60	299.50	2,325.32	46.43	-69.70	45.62	0.19	0.00	0.94
2,395.00	11.60	300.40	2,386.05	52.65	-80.50	51.72	0.29	0.00	1.45
2,458.00	11.40	300.40	2,447.79	59.01	-91.34	57.95	0.32	-0.32	0.00
2,521.00	11.30	300.70	2,509.55	65.31	-102.01	64.13	0.18	-0.16	0.48
2,583.00	11.40	302.40	2,570.34	71.69	-112.41	70.39	0.56	0.16	2.74
2,646.00	11.40	303.40	2,632.10	78.46	-122.86	77.03	0.31	0.00	1.59
2,710.00	11.40	303.90	2,694.84	85.46	-133.39	83.92	0.15	0.00	0.78
2,774.00	11.30	304.90	2,757.58	92.58	-143.79	90.92	0.34	-0.16	1.56
2,837.00	11.40	305.80	2,819.35	99.75	-153.90	97.97	0.32	0.16	1.43
2,901.00	12.10	304.70	2,882.01	107.27	-164.54	105.37	1.15	1.09	-1.72
2,964.00	12.00	305.10	2,943.62	114.80	-175.33	112.77	0.21	-0.16	0.63
3,028.00	11.80	304.80	3,006.25	122.36	-186.15	120.21	0.33	-0.31	-0.47
3,092.00	11.90	304.90	3,068.88	129.87	-196.93	127.59	0.16	0.16	0.16
3,155.00	11.90	305.40	3,130.53	137.35	-207.55	134.95	0.16	0.00	0.79
3,196.00	11.40	304.70	3,170.68	142.10	-214.33	139.62	1.27	-1.22	-1.71
3,228.00	11.90	305.80	3,202.02	145.83	-219.61	143.29	1.71	1.56	3.44
3,260.00	13.80	313.00	3,233.22	150.37	-225.08	147.76	7.75	5.94	22.50
3,292.00	16.30	321.50	3,264.13	156.48	-230.66	153.82	10.40	7.81	26.56
3,324.00	18.90	326.90	3,294.63	164.34	-236.29	161.61	9.59	8.13	16.88
3,355.00	21.10	332.00	3,323.76	173.48	-241.65	170.68	9.05	7.10	16.45
3,387.00	23.10	336.50	3,353.41	184.32	-246.86	181.47	8.18	6.25	14.06
3,419.00	24.80	340.70	3,382.66	196.41	-251.58	193.50	7.52	5.31	13.13
3,450.00	25.90	344.50	3,410.67	209.08	-255.54	206.12	6.33	3.55	12.26
3,482.00	27.20	348.00	3,439.30	222.97	-258.93	219.97	6.35	4.06	10.94
3,513.00	28.90	351.40	3,466.66	237.30	-261.52	234.28	7.53	5.48	10.97

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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)
3,545.00	29.60	355.00	3,494.58	252.82	-263.37	249.77	5.92	2.19	11.25
3,577.00	30.60	357.40	3,522.27	268.83	-264.43	265.77	4.89	3.13	7.50
3,607.00	32.80	358.40	3,547.79	284.59	-265.00	281.52	7.54	7.33	3.33
3,639.00	34.70	359.10	3,574.39	302.36	-265.39	299.28	6.06	5.94	2.19
3,671.00	37.70	359.60	3,600.21	321.26	-265.60	318.18	9.42	9.38	1.56
3,702.00	41.50	359.10	3,624.10	341.01	-265.83	337.93	12.30	12.26	-1.61
3,734.00	45.60	358.60	3,647.28	363.05	-266.27	359.96	12.86	12.81	-1.56
3,766.00	47.60	358.90	3,669.27	386.29	-266.78	383.19	6.29	6.25	0.94
3,798.00	50.10	358.90	3,690.32	410.38	-267.24	407.28	7.81	7.81	0.00
3,830.00	53.50	358.90	3,710.11	435.52	-267.72	432.41	10.63	10.63	0.00
3,860.00	56.40	358.80	3,727.34	460.07	-268.22	456.95	9.67	9.67	-0.33
3,894.00	56.80	358.90	3,746.05	488.45	-268.79	485.32	1.20	1.18	0.29
3,925.00	57.00	358.70	3,762.98	514.42	-269.33	511.28	0.84	0.65	-0.65
3,957.00	57.30	358.80	3,780.34	541.29	-269.92	538.15	0.97	0.94	0.31
3,988.00	57.70	358.60	3,797.00	567.43	-270.51	564.28	1.40	1.29	-0.65
4,019.00	58.10	358.70	3,813.47	593.68	-271.13	590.52	1.32	1.29	0.32
4,035.00	58.30	358.80	3,821.90	607.28	-271.42	604.11	1.36	1.25	0.63
4,083.00	65.30	358.50	3,844.57	649.54	-272.42	646.36	14.59	14.58	-0.63
4,114.00	69.40	358.40	3,856.51	678.14	-273.20	674.94	13.23	13.23	-0.32
4,146.00	70.90	358.70	3,867.37	708.22	-273.96	705.02	4.77	4.69	0.94
4,178.00	72.30	359.30	3,877.47	738.58	-274.49	735.37	4.72	4.38	1.88
4,209.00	74.90	359.70	3,886.22	768.32	-274.75	765.10	8.48	8.39	1.29
4,241.00	77.20	359.40	3,893.94	799.37	-274.99	796.15	7.24	7.19	-0.94
4,272.00	79.30	359.90	3,900.25	829.72	-275.18	826.49	6.96	6.77	1.61
4,304.00	81.40	0.50	3,905.61	861.26	-275.07	858.04	6.82	6.56	1.88
4,333.00	84.80	0.80	3,909.10	890.05	-274.74	886.82	11.77	11.72	1.03
4,416.00	90.60	0.70	3,912.43	972.94	-273.65	969.72	6.99	6.99	-0.12
4,478.00	91.00	0.10	3,911.56	1,034.93	-273.22	1,031.71	1.16	0.65	-0.97
4,541.00	90.30	0.50	3,910.85	1,097.93	-272.89	1,094.71	1.28	-1.11	0.63
4,602.00	90.60	0.40	3,910.37	1,158.92	-272.41	1,155.71	0.52	0.49	-0.16
4,665.00	91.00	0.60	3,909.49	1,221.91	-271.86	1,218.70	0.71	0.63	0.32
4,726.00	89.60	0.70	3,909.17	1,282.91	-271.17	1,279.70	2.30	-2.30	0.16
4,789.00	90.20	0.40	3,909.28	1,345.90	-270.57	1,342.70	1.06	0.95	-0.48
4,851.00	90.90	0.10	3,908.68	1,407.90	-270.30	1,404.69	1.23	1.13	-0.48
4,914.00	89.40	0.20	3,908.52	1,470.90	-270.13	1,467.69	2.39	-2.38	0.16
4,975.00	89.30	0.30	3,909.21	1,531.89	-269.86	1,528.68	0.23	-0.16	0.16
5,037.00	89.80	359.80	3,909.70	1,593.89	-269.81	1,590.68	1.14	0.81	-0.81
5,099.00	89.80	0.30	3,909.91	1,655.89	-269.76	1,652.67	0.81	0.00	0.81
5,160.00	89.80	0.20	3,910.13	1,716.89	-269.49	1,713.67	0.16	0.00	-0.16
5,222.00	90.00	0.50	3,910.24	1,778.89	-269.11	1,775.67	0.58	0.32	0.48
5,283.00	90.10	359.80	3,910.18	1,839.89	-268.95	1,836.67	1.16	0.16	-1.15
5,345.00	90.10	0.30	3,910.07	1,901.89	-268.90	1,898.66	0.81	0.00	0.81
5,406.00	89.80	0.70	3,910.13	1,962.88	-268.37	1,959.66	0.82	-0.49	0.66

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Survey										
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5,468.00	89.40	0.40	3,910.56	2,024.88	-267.77	2,021.66	0.81	-0.65	-0.48	
5,529.00	89.60	0.50	3,911.09	2,085.87	-267.29	2,082.66	0.37	0.33	0.16	
5,591.00	89.70	1.00	3,911.47	2,147.87	-266.48	2,144.66	0.82	0.16	0.81	
5,652.00	89.30	1.00	3,912.00	2,208.86	-265.42	2,205.65	0.66	-0.66	0.00	
5,714.00	90.20	0.80	3,912.27	2,270.85	-264.44	2,267.65	1.49	1.45	-0.32	
5,776.00	90.20	0.20	3,912.06	2,332.84	-263.90	2,329.65	0.97	0.00	-0.97	
5,837.00	90.40	0.50	3,911.74	2,393.84	-263.53	2,390.65	0.59	0.33	0.49	
5,899.00	90.60	0.10	3,911.20	2,455.84	-263.20	2,452.64	0.72	0.32	-0.65	
5,961.00	90.30	359.10	3,910.71	2,517.83	-263.64	2,514.63	1.68	-0.48	-1.61	
6,023.00	90.10	359.60	3,910.49	2,579.83	-264.34	2,576.61	0.87	-0.32	0.81	
6,084.00	90.10	358.90	3,910.39	2,640.82	-265.14	2,637.60	1.15	0.00	-1.15	
6,146.00	89.30	359.00	3,910.71	2,702.81	-266.27	2,699.57	1.30	-1.29	0.16	
6,207.00	88.40	358.40	3,911.94	2,763.78	-267.66	2,760.52	1.77	-1.48	-0.98	
6,269.00	89.70	358.20	3,912.96	2,825.75	-269.50	2,822.45	2.12	2.10	-0.32	
6,330.00	90.40	357.80	3,912.91	2,886.71	-271.63	2,883.39	1.32	1.15	-0.66	
6,392.00	90.80	357.70	3,912.26	2,948.66	-274.06	2,945.31	0.67	0.65	-0.16	
6,454.00	91.20	357.60	3,911.18	3,010.60	-276.60	3,007.21	0.67	0.65	-0.16	
6,516.00	91.10	357.40	3,909.94	3,072.52	-279.31	3,069.10	0.36	-0.16	-0.32	
6,578.00	90.60	357.60	3,909.02	3,134.46	-282.01	3,131.00	0.87	-0.81	0.32	
6,640.00	91.30	357.10	3,907.99	3,196.38	-284.88	3,192.89	1.39	1.13	-0.81	
6,702.00	89.40	357.50	3,907.61	3,258.31	-287.80	3,254.78	3.13	-3.06	0.65	
6,764.00	89.80	357.70	3,908.04	3,320.25	-290.39	3,316.69	0.72	0.65	0.32	
6,825.00	89.70	357.50	3,908.31	3,381.20	-292.95	3,377.60	0.37	-0.16	-0.33	
6,887.00	90.00	356.90	3,908.47	3,443.13	-295.97	3,439.49	1.08	0.48	-0.97	
6,949.00	90.60	356.50	3,908.15	3,505.02	-299.54	3,501.34	1.16	0.97	-0.65	
7,011.00	90.50	356.60	3,907.55	3,566.91	-303.27	3,563.18	0.23	-0.16	0.16	
7,072.00	91.30	356.70	3,906.59	3,627.79	-306.84	3,624.02	1.32	1.31	0.16	
7,134.00	90.70	357.00	3,905.51	3,689.69	-310.25	3,685.87	1.08	-0.97	0.48	
7,196.00	90.30	357.30	3,904.97	3,751.61	-313.33	3,747.75	0.81	-0.65	0.48	
7,258.00	89.40	357.30	3,905.13	3,813.54	-316.25	3,809.65	1.45	-1.45	0.00	
7,319.00	89.20	357.60	3,905.88	3,874.48	-318.96	3,870.55	0.59	-0.33	0.49	
7,381.00	89.90	358.20	3,906.36	3,936.43	-321.23	3,932.47	1.49	1.13	0.97	
7,443.00	89.00	358.30	3,906.96	3,998.40	-323.13	3,994.41	1.46	-1.45	0.16	
7,505.00	89.80	358.50	3,907.61	4,060.37	-324.86	4,056.36	1.33	1.29	0.32	
7,567.00	90.60	357.80	3,907.39	4,122.34	-326.86	4,118.30	1.71	1.29	-1.13	
7,629.00	91.00	357.80	3,906.53	4,184.29	-329.24	4,180.22	0.65	0.65	0.00	
7,691.00	91.70	357.40	3,905.07	4,246.21	-331.83	4,242.11	1.30	1.13	-0.65	
7,753.00	90.10	357.40	3,904.09	4,308.14	-334.65	4,304.00	2.58	-2.58	0.00	
7,814.00	89.80	357.00	3,904.14	4,369.07	-337.63	4,364.89	0.82	-0.49	-0.66	
7,907.00	89.80	357.00	3,904.47	4,461.94	-342.49	4,457.70	0.00	0.00	0.00	
7,999.00	89.80	357.00	3,904.79	4,553.81	-347.31	4,549.51	0.00	0.00	0.00	
8,092.00	89.80	357.00	3,905.12	4,646.68	-352.18	4,642.32	0.00	0.00	0.00	
8,166.00	89.80	357.00	3,905.37	4,720.58	-356.05	4,716.17	0.00	0.00	0.00	

Last MWD Survey



Company:	Unit Petroleum	Local Co-ordinate Reference:	Well Hornbaker 5 #1H
Project:	Reno County, Kansas [NAD 83]	TVD Reference:	14' KB @ 1782.00usft (UDI 331)
Site:	Section 5 T25S-R10W	MD Reference:	14' KB @ 1782.00usft (UDI 331)
Well:	Hornbaker 5 #1H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000.1 Single User Db

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)
8,210.00	89.80	357.00	3,905.53	4,764.52	-358.35	4,760.08	0.00	0.00	0.00
Projection to TD - Hornbaker 5 1H PBHL (4.14)									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,166.00	3,905.37	4,720.58	-356.05	Last MWD Survey
8,210.00	3,905.53	4,764.52	-358.35	Projection to TD

Checked By: _____ Approved By: _____ Date: _____