

# **Unit Petroleum**

**Stafford County, Kansas [NAD 83]**

**Section 13 T25S-R11W**

**Loudenback 13 #1H**

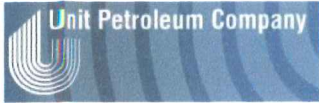
**Sidetrack**

**Design: Sidetrack**

## **Standard Survey Report**

**20 January, 2014**





Unit Petroleum  
 Project: Stafford County, Kansas [NAD 83]  
 Site: Section 13 T26S-R11W  
 Well: Loudenback 13 #1H  
 Wellbore: Sidetrack  
 Design: Sidetrack Design #2  
 Lat: 37° 52' 56.018 N  
 Long: 98° 28' 30.592 W  
 Pad GL: 1776.00  
 KB: 14' KB @ 1790.00usft (UDI 331)



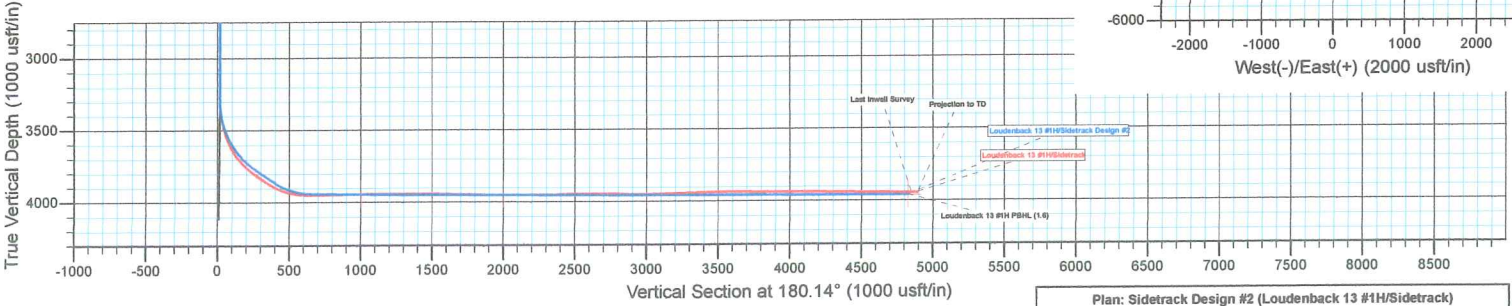
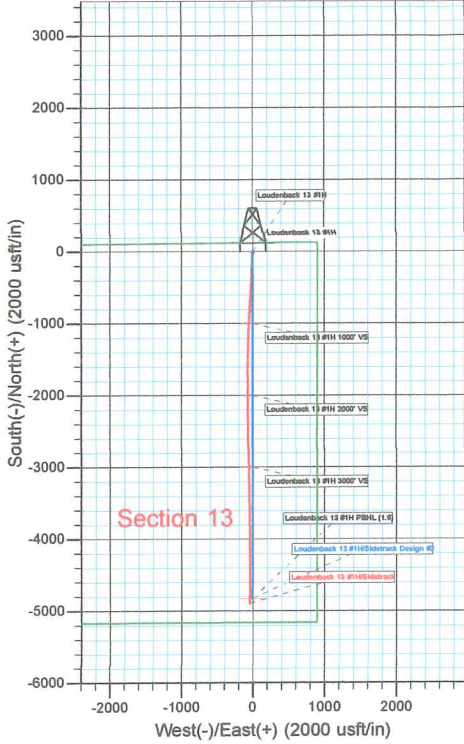
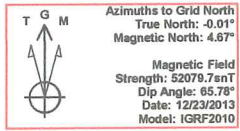
SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
3299.27	0.22	13.62	3299.00	-14.37	-7.64	0.00	0.00	14.39
3859.45	56.00	180.14	3774.49	-266.04	-7.98	10.04	166.56	266.05
4009.45	56.00	180.14	3858.37	-390.39	-8.29	0.00	0.00	390.41
4290.56	89.73	180.14	3940.00	-655.16	-8.93	12.00	0.00	655.18
4338.80	89.13	178.82	3940.48	-703.39	-8.50	3.01	-114.45	703.41
4635.50	89.13	178.82	3944.98	-1000.00	-2.39	0.00	0.00	1000.00
4885.06	89.73	180.18	3945.46	-1049.37	-1.85	3.00	66.20	1049.57
5635.52	89.73	180.18	3949.95	-2009.00	-4.94	0.00	0.00	2009.00
5637.11	89.71	180.14	3949.96	-2001.59	-4.94	2.81	-116.57	2001.59
6635.54	89.71	180.14	3955.02	-3000.00	-7.38	0.00	0.00	3000.01
6639.87	89.84	180.14	3955.03	-3004.33	-7.39	3.00	0.00	3004.34
8460.66	89.84	180.14	3960.12	-4825.31	-11.84	0.00	0.00	4825.32

WELL DETAILS: Loudenback 13 #1H						
			Ground Level: 1776.00			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1754947.00	1319501.00	37° 52' 56.018 N	98° 28' 30.592 W	

PROJECT DETAILS: Stafford 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

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Loudenback 13 #1H 1000' VS	3944.98	-1000.00	-2.39	37° 52' 46.132 N	98° 28' 30.625 W	Point
Loudenback 13 #1H 2000' VS	3949.95	-2000.00	-4.94	37° 52' 36.247 N	98° 28' 30.660 W	Point
Loudenback 13 #1H 3000' VS	3955.02	-3000.00	-7.38	37° 52' 26.361 N	98° 28' 30.694 W	Point
Loudenback 13 #1H PBHL (1.6)	3960.12	-4825.31	-11.84	37° 52' 8.316 N	98° 28' 30.756 W	Point

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



Plan: Sidetrack Design #2 (Loudenback 13 #1H/Sidetrack)  
 Created By: Derek Stephens Date: 8:52, January 20 2014



<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Loudenback 13 #1H
<b>Project:</b>	Stafford County, Kansas [NAD 83]	<b>TVD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Site:</b>	Section 13 T25S-R11W	<b>MD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Well:</b>	Loudenback 13 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack	<b>Database:</b>	EDM 5000.1 Single User Db

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

<b>Site:</b>	Section 13 T25S-R11W				
<b>Site Position:</b>		<b>Northing:</b>	1,754,947.00 usft	<b>Latitude:</b>	37° 52' 56.018 N
<b>From:</b>	Map	<b>Easting:</b>	1,319,501.00 usft	<b>Longitude:</b>	98° 28' 30.592 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.02 °

<b>Well:</b>	Loudenback 13 #1H					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	1,754,947.00 usft	<b>Latitude:</b>	37° 52' 56.018 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,319,501.00 usft	<b>Longitude:</b>	98° 28' 30.592 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	1,776.00 usft

<b>Wellbore:</b>	Sidetrack				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/23/2013	4.68	65.78	52,080

<b>Design:</b>	Sidetrack				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	3,082.49
<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	0.00	

<b>Survey Program</b>	<b>Date</b>	1/20/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
71.61	3,082.49	Gyro (Pilot Hole)	CB-GYRO-MS	Camera based gyro multishot	
3,176.58	8,556.00	MWD (Sidetrack)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured</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 (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
<b>Depth (usft)</b>										
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71.61	0.52	232.91	71.61	-0.20	-0.26	-0.20	0.73	0.73	0.00	0.00
165.70	0.56	210.76	165.69	-0.85	-0.83	-0.85	0.22	0.04	-23.54	-23.54
259.79	0.53	198.59	259.78	-1.66	-1.21	-1.66	0.13	-0.03	-12.93	-12.93
353.88	0.75	116.13	353.87	-2.34	-0.79	-2.34	0.91	0.23	-87.64	-87.64
447.97	0.50	202.51	447.95	-2.99	-0.40	-2.99	0.93	-0.27	91.81	91.81
542.06	0.57	213.01	542.04	-3.76	-0.81	-3.76	0.13	0.07	11.16	11.16
636.15	1.19	173.62	636.12	-5.13	-0.96	-5.13	0.88	0.66	-41.86	-41.86
730.24	1.20	193.86	730.19	-7.05	-1.08	-7.05	0.45	0.01	21.51	21.51
824.33	1.21	150.19	824.26	-8.87	-0.83	-8.87	0.95	0.01	-46.41	-46.41





<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Loudenback 13 #1H
<b>Project:</b>	Stafford County, Kansas [NAD 83]	<b>TVD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Site:</b>	Section 13 T25S-R11W	<b>MD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Well:</b>	Loudenback 13 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack	<b>Database:</b>	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)
918.42	1.25	174.12	918.33	-10.75	-0.23	-10.75	0.54	0.04	25.43
1,012.51	1.07	196.46	1,012.40	-12.62	-0.37	-12.62	0.51	-0.19	23.74
1,106.60	0.91	170.90	1,106.48	-14.20	-0.50	-14.20	0.49	-0.17	-27.17
1,200.69	0.82	139.65	1,200.55	-15.45	0.05	-15.45	0.50	-0.10	-33.21
1,294.78	0.96	133.62	1,294.63	-16.51	1.06	-16.51	0.18	0.15	-6.41
1,388.87	0.90	160.75	1,388.71	-17.75	1.87	-17.75	0.47	-0.06	28.83
1,482.96	1.00	183.34	1,482.79	-19.26	2.07	-19.26	0.41	0.11	24.01
1,577.05	0.73	213.11	1,576.87	-20.59	1.69	-20.59	0.55	-0.29	31.64
1,671.14	0.52	251.21	1,670.95	-21.23	0.96	-21.23	0.48	-0.22	40.49
1,765.23	0.47	265.78	1,765.04	-21.39	0.17	-21.39	0.14	-0.05	15.49
1,859.32	0.57	282.32	1,859.13	-21.32	-0.67	-21.32	0.19	0.11	17.58
1,953.41	0.74	295.49	1,953.21	-20.96	-1.68	-20.96	0.24	0.18	14.00
2,047.50	0.64	302.79	2,047.29	-20.41	-2.67	-20.41	0.14	-0.11	7.76
2,141.59	0.86	316.47	2,141.38	-19.62	-3.59	-19.62	0.30	0.23	14.54
2,235.68	0.84	325.24	2,235.45	-18.54	-4.47	-18.54	0.14	-0.02	9.32
2,329.77	0.87	336.36	2,329.53	-17.32	-5.15	-17.32	0.18	0.03	11.82
2,423.86	0.74	290.40	2,423.62	-16.45	-6.01	-16.45	0.68	-0.14	-48.85
2,517.95	0.60	289.10	2,517.70	-16.08	-7.04	-16.08	0.15	-0.15	-1.38
2,612.04	0.57	251.59	2,611.78	-16.06	-7.95	-16.06	0.40	-0.03	-39.87
2,706.13	0.33	206.29	2,705.87	-16.46	-8.52	-16.46	0.44	-0.26	-48.15
2,800.22	0.23	90.41	2,799.96	-16.70	-8.45	-16.70	0.51	-0.11	-123.16
2,894.31	0.20	19.85	2,894.05	-16.55	-8.20	-16.55	0.27	-0.03	-74.99
2,988.40	0.24	10.81	2,988.14	-16.20	-8.11	-16.20	0.06	0.04	-9.61
3,082.49	0.41	16.02	3,082.23	-15.68	-7.98	-15.68	0.18	0.18	5.54
3,176.58	0.47	13.81	3,176.32	-14.98	-7.80	-14.98	0.07	0.06	-2.35
3,270.67	0.18	14.21	3,270.40	-14.46	-7.67	-14.46	0.31	-0.31	0.43
3,284.00	0.30	212.80	3,283.73	-14.47	-7.68	-14.47	3.56	0.90	-1,210.88
3,316.00	1.80	183.50	3,315.73	-15.05	-7.76	-15.05	4.83	4.69	-91.56
3,347.00	4.10	179.80	3,346.69	-16.64	-7.78	-16.64	7.44	7.42	-11.94
3,379.00	6.70	182.60	3,378.54	-19.65	-7.86	-19.65	8.16	8.13	8.75
3,411.00	9.00	186.70	3,410.24	-24.00	-8.24	-24.00	7.39	7.19	12.81
3,443.00	11.30	185.70	3,441.74	-29.61	-8.85	-29.61	7.21	7.19	-3.13
3,474.00	13.50	183.70	3,472.01	-36.24	-9.38	-36.24	7.23	7.10	-6.45
3,505.00	16.00	181.90	3,501.99	-44.12	-9.76	-44.12	8.20	8.06	-5.81
3,537.00	18.90	180.70	3,532.51	-53.72	-9.97	-53.72	9.13	9.06	-3.75
3,568.00	21.90	180.90	3,561.56	-64.52	-10.12	-64.52	9.68	9.68	0.65
3,600.00	24.90	181.50	3,590.93	-77.22	-10.39	-77.22	9.40	9.38	1.88
3,632.00	28.00	182.40	3,619.58	-91.47	-10.88	-91.47	9.77	9.69	2.81
3,663.00	31.40	182.60	3,646.50	-106.81	-11.55	-106.81	10.97	10.97	0.65
3,695.00	35.00	182.30	3,673.27	-124.31	-12.30	-124.31	11.26	11.25	-0.94
3,727.00	38.50	182.20	3,698.91	-143.44	-13.05	-143.44	10.94	10.94	-0.31
3,757.00	42.10	182.40	3,721.78	-162.82	-13.83	-162.82	12.01	12.00	0.67
3,787.00	45.20	183.40	3,743.49	-183.50	-14.88	-183.50	10.59	10.33	3.33



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<b>Site:</b>	Section 13 T25S-R11W	<b>MD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Well:</b>	Loudenback 13 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack	<b>Database:</b>	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)	
3,820.00	49.00	183.60	3,765.95	-207.63	-16.36	-207.63	11.52	11.52	0.61	
3,852.00	53.00	182.90	3,786.08	-232.45	-17.76	-232.45	12.61	12.50	-2.19	
3,884.00	55.30	182.10	3,804.82	-258.36	-18.89	-258.36	7.47	7.19	-2.50	
3,915.00	55.50	182.10	3,822.43	-283.86	-19.83	-283.86	0.65	0.65	0.00	
3,947.00	55.80	182.60	3,840.48	-310.26	-20.91	-310.26	1.59	0.94	1.56	
3,979.00	56.20	182.70	3,858.38	-336.76	-22.14	-336.76	1.28	1.25	0.31	
4,010.00	58.40	182.50	3,875.12	-362.82	-23.32	-362.82	7.12	7.10	-0.65	
4,042.00	61.80	182.60	3,891.07	-390.53	-24.55	-390.53	10.63	10.63	0.31	
4,073.00	65.60	182.70	3,904.80	-418.28	-25.84	-418.28	12.26	12.26	0.32	
4,105.00	69.60	182.60	3,917.00	-447.83	-27.21	-447.83	12.50	12.50	-0.31	
4,137.00	73.50	182.60	3,927.12	-478.15	-28.58	-478.15	12.19	12.19	0.00	
4,158.00	76.30	182.50	3,932.59	-498.40	-29.48	-498.40	13.34	13.33	-0.48	
4,256.00	86.40	183.10	3,947.31	-595.05	-34.22	-595.05	10.32	10.31	0.61	
4,286.00	89.50	184.00	3,948.38	-624.96	-36.07	-624.96	10.76	10.33	3.00	
4,317.00	90.00	184.20	3,948.52	-655.88	-38.29	-655.88	1.74	1.61	0.65	
4,379.00	90.60	184.60	3,948.20	-717.70	-43.05	-717.70	1.16	0.97	0.65	
4,441.00	91.30	184.10	3,947.17	-779.51	-47.75	-779.51	1.39	1.13	-0.81	
4,502.00	91.70	183.50	3,945.57	-840.36	-51.79	-840.36	1.18	0.66	-0.98	
4,564.00	90.30	183.20	3,944.49	-902.24	-55.41	-902.24	2.31	-2.26	-0.48	
4,626.00	90.70	182.90	3,943.95	-964.15	-58.71	-964.15	0.81	0.65	-0.48	
4,659.02	91.30	182.79	3,943.37	-997.13	-60.35	-997.13	1.83	1.80	-0.33	
<b>Loudenback 13 #1H 1000' VS</b>										
4,687.00	91.80	182.70	3,942.62	-1,025.06	-61.69	-1,025.06	1.83	1.80	-0.33	
4,748.00	89.20	182.30	3,942.08	-1,086.00	-64.35	-1,086.00	4.31	-4.26	-0.66	
4,810.00	89.40	182.20	3,942.84	-1,147.94	-66.78	-1,147.94	0.36	0.32	-0.16	
4,871.00	90.00	181.70	3,943.16	-1,208.91	-68.86	-1,208.91	1.28	0.98	-0.82	
4,933.00	90.30	181.10	3,943.00	-1,270.89	-70.37	-1,270.89	1.08	0.48	-0.97	
4,995.00	91.30	180.90	3,942.13	-1,332.87	-71.46	-1,332.87	1.64	1.61	-0.32	
5,056.00	89.80	181.10	3,941.55	-1,393.86	-72.52	-1,393.86	2.48	-2.46	0.33	
5,119.00	89.30	181.50	3,942.04	-1,456.84	-73.95	-1,456.84	1.02	-0.79	0.63	
5,180.00	89.70	181.30	3,942.57	-1,517.82	-75.44	-1,517.82	0.73	0.66	-0.33	
5,242.00	88.60	181.10	3,943.49	-1,579.80	-76.74	-1,579.80	1.80	-1.77	-0.32	
5,305.00	89.30	180.90	3,944.65	-1,642.78	-77.84	-1,642.78	1.16	1.11	-0.32	
5,367.00	88.80	180.70	3,945.68	-1,704.76	-78.70	-1,704.76	0.87	-0.81	-0.32	
5,429.00	89.50	180.00	3,946.60	-1,766.75	-79.08	-1,766.75	1.60	1.13	-1.13	
5,491.00	88.30	179.60	3,947.79	-1,828.74	-78.87	-1,828.74	2.04	-1.94	-0.65	
5,552.00	88.50	179.50	3,949.49	-1,889.71	-78.39	-1,889.71	0.37	0.33	-0.16	
5,614.00	89.50	179.30	3,950.57	-1,951.70	-77.74	-1,951.70	1.64	1.61	-0.32	
5,663.06	90.38	179.46	3,950.62	-2,000.75	-77.21	-2,000.75	1.83	1.80	0.33	
<b>Loudenback 13 #1H 2000' VS</b>										
5,675.00	90.60	179.50	3,950.52	-2,012.70	-77.10	-2,012.70	1.83	1.80	0.33	
5,737.00	89.70	179.80	3,950.36	-2,074.69	-76.72	-2,074.69	1.53	-1.45	0.48	
5,798.00	90.00	179.60	3,950.52	-2,135.69	-76.40	-2,135.69	0.59	0.49	-0.33	
5,860.00	90.30	179.40	3,950.35	-2,197.69	-75.86	-2,197.69	0.58	0.48	-0.32	



<b>Company:</b>	Unit Petroleum	<b>Local Co-ordinate Reference:</b>	Well Loudenback 13 #1H
<b>Project:</b>	Stafford County, Kansas [NAD 83]	<b>TVD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Site:</b>	Section 13 T25S-R11W	<b>MD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Well:</b>	Loudenback 13 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack	<b>Database:</b>	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)	
5,922.00	90.30	179.20	3,950.03	-2,259.69	-75.10	-2,259.69	0.32	0.00	-0.32	
5,983.00	90.50	179.20	3,949.60	-2,320.68	-74.25	-2,320.68	0.33	0.33	0.00	
6,045.00	90.90	179.00	3,948.85	-2,382.67	-73.28	-2,382.67	0.72	0.65	-0.32	
6,106.00	90.90	179.20	3,947.89	-2,443.65	-72.32	-2,443.65	0.33	0.00	0.33	
6,168.00	91.60	179.20	3,946.54	-2,505.63	-71.45	-2,505.63	1.13	1.13	0.00	
6,229.00	90.50	179.10	3,945.42	-2,566.61	-70.55	-2,566.61	1.81	-1.80	-0.16	
6,291.00	90.60	179.10	3,944.82	-2,628.60	-69.58	-2,628.60	0.16	0.16	0.00	
6,353.00	88.60	178.70	3,945.26	-2,690.58	-68.38	-2,690.58	3.29	-3.23	-0.65	
6,414.00	89.10	178.60	3,946.48	-2,751.55	-66.95	-2,751.55	0.84	0.82	-0.16	
6,476.00	89.20	179.00	3,947.40	-2,813.53	-65.65	-2,813.53	0.66	0.16	0.65	
6,537.00	88.80	179.00	3,948.46	-2,874.52	-64.59	-2,874.52	0.66	-0.66	0.00	
6,599.00	89.10	179.20	3,949.60	-2,936.50	-63.61	-2,936.50	0.58	0.48	0.32	
6,660.00	90.80	179.60	3,949.65	-2,997.49	-62.97	-2,997.49	2.86	2.79	0.66	
6,663.09	90.82	179.57	3,949.61	-3,000.58	-62.95	-3,000.58	1.26	0.81	-0.97	
<b>Loudenback 13 #1H 3000' VS</b>										
6,722.00	91.30	179.00	3,948.52	-3,059.48	-62.22	-3,059.48	1.26	0.81	-0.97	
6,784.00	91.80	179.00	3,946.84	-3,121.44	-61.13	-3,121.44	0.81	0.81	0.00	
6,845.00	92.40	178.90	3,944.60	-3,182.39	-60.02	-3,182.39	1.00	0.98	-0.16	
6,907.00	91.40	178.60	3,942.55	-3,244.34	-58.67	-3,244.34	1.68	-1.61	-0.48	
6,968.00	91.70	178.60	3,940.90	-3,305.30	-57.18	-3,305.30	0.49	0.49	0.00	
7,030.00	91.10	179.10	3,939.38	-3,367.27	-55.93	-3,367.27	1.26	-0.97	0.81	
7,092.00	92.00	179.00	3,937.71	-3,429.24	-54.90	-3,429.24	1.46	1.45	-0.16	
7,153.00	91.30	178.80	3,935.95	-3,490.20	-53.73	-3,490.20	1.19	-1.15	-0.33	
7,215.00	90.50	179.60	3,934.98	-3,552.19	-52.87	-3,552.19	1.82	-1.29	1.29	
7,276.00	90.60	179.40	3,934.39	-3,613.18	-52.34	-3,613.18	0.37	0.16	-0.33	
7,338.00	89.40	179.80	3,934.39	-3,675.18	-51.90	-3,675.18	2.04	-1.94	0.65	
7,400.00	89.50	179.70	3,934.99	-3,737.18	-51.63	-3,737.18	0.23	0.16	-0.16	
7,462.00	90.20	179.50	3,935.15	-3,799.17	-51.20	-3,799.17	1.17	1.13	-0.32	
7,523.00	90.40	179.90	3,934.83	-3,860.17	-50.88	-3,860.17	0.73	0.33	0.66	
7,584.00	89.10	179.90	3,935.10	-3,921.17	-50.77	-3,921.17	2.13	-2.13	0.00	
7,646.00	90.50	179.60	3,935.31	-3,983.17	-50.50	-3,983.17	2.31	2.26	-0.48	
7,708.00	89.50	179.30	3,935.31	-4,045.16	-49.91	-4,045.16	1.68	-1.61	-0.48	
7,769.00	90.00	179.70	3,935.58	-4,106.16	-49.38	-4,106.16	1.05	0.82	0.66	
7,831.00	88.80	179.50	3,936.23	-4,168.15	-48.94	-4,168.15	1.96	-1.94	-0.32	
7,893.00	89.30	179.40	3,937.26	-4,230.14	-48.35	-4,230.14	0.82	0.81	-0.16	
7,955.00	90.20	179.00	3,937.53	-4,292.14	-47.48	-4,292.14	1.59	1.45	-0.65	
8,016.00	88.60	179.20	3,938.16	-4,353.12	-46.52	-4,353.12	2.64	-2.62	0.33	
8,078.00	89.10	179.50	3,939.41	-4,415.11	-45.82	-4,415.11	0.94	0.81	0.48	
8,140.00	89.70	179.60	3,940.06	-4,477.10	-45.33	-4,477.10	0.98	0.97	0.16	
8,201.00	90.30	179.30	3,940.06	-4,538.10	-44.75	-4,538.10	1.10	0.98	-0.49	
8,263.00	88.40	180.50	3,940.76	-4,600.09	-44.64	-4,600.09	3.62	-3.06	1.94	
8,325.00	89.20	180.10	3,942.06	-4,662.07	-44.96	-4,662.07	1.44	1.29	-0.65	
8,386.00	89.60	180.70	3,942.70	-4,723.07	-45.39	-4,723.07	1.18	0.66	0.98	



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<b>Site:</b>	Section 13 T25S-R11W	<b>MD Reference:</b>	14' KB @ 1790.00usft (UDI 331)
<b>Well:</b>	Loudenback 13 #1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Sidetrack	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Sidetrack	<b>Database:</b>	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)	
8,448.00	89.80	180.80	3,943.02	-4,785.06	-46.20	-4,785.06	0.36	0.32	0.16	
8,487.76	90.06	180.80	3,943.07	-4,824.82	-46.76	-4,824.82	0.65	0.65	0.00	
<b>Loudenback 13 #1H PBHL (1.6)</b>										
8,510.00	90.20	180.80	3,943.02	-4,847.06	-47.07	-4,847.06	0.65	0.65	0.00	
<b>Last Inwell Survey</b>										
8,556.00	90.20	180.80	3,942.86	-4,893.05	-47.71	-4,893.05	0.00	0.00	0.00	
<b>Projection to TD</b>										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,510.00	3,943.02	-4,847.06	-47.07	Last Inwell Survey	
8,556.00	3,942.86	-4,893.05	-47.71	Projection to TD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_