

# **SandRidge Energy**

**Comanche County (KS27S)**

**Sec 26-T33S-R17W**

**Schantz 3317 1-35H**

**Wellbore #1**

**Survey: MWD Surveys**

## **Standard Survey Report**

**10 October, 2012**

# Wolverine Directional, LLC

## Survey Report

<b>Company:</b> SandRidge Energy	<b>Local Co-ordinate Reference:</b> Well Schantz 3317 1-35H
<b>Project:</b> Comanche County (KS27S)	<b>TVD Reference:</b> WELL @ 0.0ft (Original Well Elev)
<b>Site:</b> Sec 26-T33S-R17W	<b>MD Reference:</b> WELL @ 0.0ft (Original Well Elev)
<b>Well:</b> Schantz 3317 1-35H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Wellbore #1	<b>Database:</b> EDM 2003.21 Single User Db

<b>Design</b> Wellbore #1				
<b>Audit Notes:</b>				
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0		
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	178.82

<b>Survey Program</b> Date 2012/10/10				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
768.0	9,910.0	MWD Surveys (Wellbore #1)	MWD	MWD - Standard

<b>Survey</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
768.0	0.10	249.60	768.0	-0.2	-0.6	0.2	0.01	0.01	0.00	
<b>First MWD Survey</b>										
952.0	0.50	258.80	952.0	-0.4	-1.6	0.4	0.22	0.22	5.00	
1,427.0	0.90	304.50	1,427.0	1.3	-6.7	-1.4	0.14	0.08	9.62	
1,903.0	0.20	285.00	1,902.9	3.6	-10.6	-3.8	0.15	-0.15	-4.10	
2,379.0	0.60	312.30	2,378.9	5.5	-13.2	-5.8	0.09	0.08	5.74	
2,856.0	0.40	329.30	2,855.9	8.6	-15.9	-8.9	0.05	-0.04	3.56	
3,330.0	0.60	320.90	3,329.9	12.0	-18.3	-12.3	0.04	0.04	-1.77	
3,807.0	0.40	335.20	3,806.9	15.4	-20.6	-15.8	0.05	-0.04	3.00	
3,902.0	0.50	274.00	3,901.9	15.7	-21.1	-16.2	0.49	0.11	-64.42	
3,997.0	0.30	222.10	3,996.9	15.6	-21.7	-16.0	0.41	-0.21	-54.63	
4,092.0	0.40	213.00	4,091.9	15.1	-22.1	-15.6	0.12	0.11	-9.58	
4,156.0	0.50	184.10	4,155.9	14.6	-22.2	-15.1	0.38	0.16	-45.16	
4,188.0	0.60	131.00	4,187.9	14.4	-22.1	-14.8	1.56	0.31	-165.94	
4,220.0	1.70	169.20	4,219.9	13.8	-21.9	-14.3	4.01	3.44	119.38	
4,252.0	4.30	177.30	4,251.8	12.2	-21.7	-12.6	8.21	8.13	25.31	
4,283.0	6.30	180.00	4,282.7	9.3	-21.7	-9.7	6.50	6.45	8.71	
4,315.0	8.30	180.40	4,314.4	5.2	-21.7	-5.7	6.25	6.25	1.25	
4,347.0	10.60	178.50	4,346.0	0.0	-21.6	-0.4	7.25	7.19	-5.94	
4,379.0	13.10	175.10	4,377.3	-6.6	-21.2	6.1	8.11	7.81	-10.63	
4,411.0	15.50	173.80	4,408.3	-14.4	-20.5	14.0	7.57	7.50	-4.06	
4,442.0	18.10	174.60	4,438.0	-23.4	-19.6	23.0	8.42	8.39	2.58	
4,474.0	20.60	175.20	4,468.2	-33.9	-18.6	33.5	7.84	7.81	1.88	
4,506.0	23.10	176.30	4,497.9	-45.8	-17.8	45.4	7.92	7.81	3.44	
4,537.0	25.20	177.70	4,526.1	-58.5	-17.1	58.1	7.02	6.77	4.52	
4,569.0	26.90	179.20	4,554.9	-72.5	-16.7	72.1	5.70	5.31	4.69	
4,601.0	28.60	180.60	4,583.2	-87.4	-16.7	87.0	5.69	5.31	4.38	
4,633.0	30.40	181.00	4,611.1	-103.2	-16.9	102.8	5.66	5.63	1.25	
4,664.0	32.50	182.10	4,637.5	-119.3	-17.4	118.9	7.02	6.77	3.55	
4,696.0	34.80	183.00	4,664.1	-137.0	-18.2	136.6	7.35	7.19	2.81	
4,728.0	37.10	181.80	4,690.1	-155.8	-18.9	155.4	7.52	7.19	-3.75	
4,760.0	39.30	180.40	4,715.2	-175.6	-19.3	175.2	7.39	6.88	-4.38	
4,791.0	41.20	178.40	4,738.9	-195.6	-19.1	195.2	7.41	6.13	-6.45	
4,823.0	43.40	177.80	4,762.5	-217.1	-18.4	216.7	6.99	6.88	-1.88	
4,855.0	45.50	178.40	4,785.4	-239.5	-17.6	239.1	6.69	6.56	1.88	
4,887.0	48.10	177.00	4,807.3	-262.8	-16.7	262.4	8.73	8.13	-4.38	
4,918.0	49.80	176.90	4,827.6	-286.2	-15.5	285.8	5.49	5.48	-0.32	
4,950.0	50.70	175.90	4,848.1	-310.7	-13.9	310.4	3.70	2.81	-3.13	



# Wolverine Directional, LLC

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<b>Project:</b>	Comanche County (KS27S)	<b>TVD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Site:</b>	Sec 26-T33S-R17W	<b>MD Reference:</b>	WELL @ 0.0ft (Original Well Elev)
<b>Well:</b>	Schantz 3317 1-35H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 2003.21 Single User Db

### Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,982.0	50.40	175.80	4,868.4	-335.4	-12.1	335.1	0.97	-0.94	-0.31
5,014.0	50.00	176.20	4,888.9	-359.9	-10.4	359.6	1.58	-1.25	1.25
5,045.0	49.90	176.00	4,908.9	-383.6	-8.8	383.3	0.59	-0.32	-0.65
5,077.0	49.80	175.20	4,929.5	-408.0	-6.9	407.7	1.94	-0.31	-2.50
5,109.0	49.90	175.90	4,950.1	-432.4	-5.0	432.2	1.70	0.31	2.19
5,140.0	52.00	176.20	4,969.7	-456.4	-3.4	456.2	6.82	6.77	0.97
5,172.0	54.90	177.20	4,988.7	-482.0	-1.9	481.9	9.40	9.06	3.13
5,204.0	58.30	177.10	5,006.3	-508.7	-0.6	508.6	10.63	10.63	-0.31
5,236.0	61.20	178.00	5,022.4	-536.3	0.6	536.2	9.38	9.06	2.81
5,267.0	63.90	176.80	5,036.7	-563.8	1.9	563.7	9.36	8.71	-3.87
5,299.0	66.60	176.20	5,050.1	-592.8	3.7	592.8	8.61	8.44	-1.88
5,331.0	69.20	177.40	5,062.2	-622.4	5.3	622.4	8.84	8.13	3.75
5,363.0	71.80	177.50	5,072.8	-652.5	6.6	652.5	8.13	8.13	0.31
5,394.0	74.50	177.20	5,081.8	-682.2	8.0	682.2	8.76	8.71	-0.97
5,426.0	77.10	178.40	5,089.7	-713.2	9.2	713.2	8.90	8.13	3.75
5,458.0	79.50	178.70	5,096.2	-744.5	10.0	744.5	7.56	7.50	0.94
5,490.0	82.10	177.90	5,101.3	-776.1	10.9	776.1	8.49	8.13	-2.50
5,585.0	85.50	179.80	5,111.5	-870.5	12.8	870.5	4.09	3.58	2.00
5,676.0	89.10	177.90	5,115.8	-961.3	14.7	961.4	4.47	3.96	-2.09
5,768.0	89.60	177.70	5,116.9	-1,053.3	18.2	1,053.4	0.59	0.54	-0.22
5,860.0	88.30	176.60	5,118.6	-1,145.1	22.8	1,145.3	1.85	-1.41	-1.20
5,952.0	92.20	179.20	5,118.2	-1,237.0	26.1	1,237.3	5.09	4.24	2.83
6,044.0	88.20	174.50	5,117.8	-1,328.9	31.2	1,329.2	6.71	-4.35	-5.11
6,136.0	88.60	175.80	5,120.4	-1,420.5	39.0	1,421.0	1.48	0.43	1.41
6,228.0	91.80	176.60	5,120.1	-1,512.3	45.1	1,512.9	3.59	3.48	0.87
6,320.0	92.70	175.40	5,116.5	-1,604.0	51.5	1,604.7	1.63	0.98	-1.30
6,412.0	92.30	176.40	5,112.5	-1,695.6	58.0	1,696.5	1.17	-0.43	1.09
6,504.0	92.00	175.70	5,109.0	-1,787.4	64.4	1,788.3	0.83	-0.33	-0.76
6,596.0	91.80	175.80	5,106.0	-1,879.1	71.2	1,880.1	0.24	-0.22	0.11
6,688.0	91.60	175.50	5,103.2	-1,970.8	78.2	1,971.9	0.39	-0.22	-0.33
6,780.0	91.60	173.80	5,100.7	-2,062.3	86.7	2,063.7	1.85	0.00	-1.85
6,872.0	91.60	175.00	5,098.1	-2,153.8	95.7	2,155.4	1.30	0.00	1.30
6,964.0	89.80	175.40	5,097.0	-2,245.5	103.4	2,247.2	2.00	-1.96	0.43
7,060.0	89.10	177.50	5,097.9	-2,341.3	109.3	2,343.1	2.31	-0.73	2.19
7,155.0	86.70	177.00	5,101.4	-2,436.1	113.9	2,438.0	2.58	-2.53	-0.53
7,251.0	88.90	178.60	5,105.1	-2,532.0	117.6	2,533.9	2.83	2.29	1.67
7,347.0	89.30	179.20	5,106.6	-2,627.9	119.4	2,629.9	0.75	0.42	0.63
7,442.0	90.90	180.60	5,106.4	-2,722.9	119.6	2,724.8	2.24	1.68	1.47
7,538.0	89.40	179.30	5,106.1	-2,818.9	119.7	2,820.8	2.07	-1.56	-1.35
7,633.0	91.40	180.40	5,105.5	-2,913.9	119.9	2,915.8	2.40	2.11	1.16
7,729.0	90.60	179.40	5,103.8	-3,009.9	120.1	3,011.7	1.33	-0.83	-1.04
7,824.0	91.70	178.60	5,101.9	-3,104.9	121.7	3,106.7	1.43	1.16	-0.84
7,920.0	91.60	177.60	5,099.1	-3,200.8	124.9	3,202.7	1.05	-0.10	-1.04
8,015.0	91.00	178.40	5,097.0	-3,295.7	128.2	3,297.6	1.05	-0.63	0.84
8,111.0	90.50	179.90	5,095.7	-3,391.7	129.7	3,393.6	1.65	-0.52	1.56
8,207.0	90.20	181.10	5,095.1	-3,487.7	128.8	3,489.6	1.29	-0.31	1.25
8,303.0	90.60	180.60	5,094.5	-3,583.7	127.4	3,585.5	0.67	0.42	-0.52
8,398.0	91.70	183.50	5,092.6	-3,678.6	124.0	3,680.3	3.26	1.16	3.05
8,494.0	90.70	182.90	5,090.5	-3,774.4	118.7	3,776.0	1.21	-1.04	-0.63
8,589.0	89.70	181.90	5,090.2	-3,869.3	114.7	3,870.8	1.49	-1.05	-1.05
8,685.0	89.20	181.60	5,091.1	-3,965.3	111.7	3,966.7	0.61	-0.52	-0.31
8,781.0	89.10	181.80	5,092.6	-4,061.2	108.9	4,062.6	0.23	-0.10	0.21
8,877.0	88.20	180.60	5,094.8	-4,157.2	106.9	4,158.5	1.56	-0.94	-1.25
8,972.0	89.90	181.40	5,096.4	-4,252.1	105.2	4,253.4	1.98	1.79	0.84

# Wolverine Directional, LLC

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<b>Well:</b> Schantz 3317 1-35H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Wellbore #1	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Wellbore #1	<b>Database:</b> EDM 2003.21 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,068.0	90.20	179.80	5,096.3	-4,348.1	104.2	4,349.3	1.70	0.31	-1.67
9,163.0	89.10	180.00	5,096.9	-4,443.1	104.4	4,444.3	1.18	-1.16	0.21
9,259.0	88.80	179.70	5,098.7	-4,539.1	104.6	4,540.3	0.44	-0.31	-0.31
9,355.0	89.20	179.20	5,100.3	-4,635.1	105.6	4,636.3	0.67	0.42	-0.52
9,450.0	89.50	179.50	5,101.4	-4,730.1	106.6	4,731.3	0.45	0.32	0.32
9,546.0	90.10	179.80	5,101.7	-4,826.1	107.2	4,827.2	0.70	0.63	0.31
9,642.0	90.20	179.60	5,101.5	-4,922.1	107.7	4,923.2	0.23	0.10	-0.21
9,737.0	91.00	176.80	5,100.5	-5,017.0	110.7	5,018.2	3.07	0.84	-2.95
9,833.0	90.90	176.60	5,098.9	-5,112.8	116.2	5,114.1	0.23	-0.10	-0.21
9,860.0	90.80	176.50	5,098.5	-5,139.8	117.9	5,141.1	0.52	-0.37	-0.37
<b>Last MWD Survey</b>									
9,909.4	90.80	176.50	5,097.8	-5,189.1	120.9	5,190.5	0.00	0.00	0.00
<b>Schantz 3317 1-35H PBHL</b>									
9,910.0	90.80	176.50	5,097.8	-5,189.7	120.9	5,191.1	0.00	0.00	0.00
<b>Proj to TD</b>									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
768.0	768.0	-0.2	-0.6	First MWD Survey
9,860.0	5,098.5	-5,139.8	117.9	Last MWD Survey
9,910.0	5,097.8	-5,189.7	120.9	Proj to TD

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