

SandRidge Energy

Comanche County (KS27S)

Sec 12-T34S-R20W

Sally 3420 1-21H

Wellbore #1

Survey: Survey #1

Standard Survey Report

09 August, 2012

Wolverine Directional, LLC

Survey Report

Company: SandRidge Energy	Local Co-ordinate Reference: Well Sally 3420 1-21H
Project: Comanche County (KS27S)	TVD Reference: WELL @ 0.0ft (Original Well Elev)
Site: Sec 12-T34S-R20W	MD Reference: WELL @ 0.0ft (Original Well Elev)
Well: Sally 3420 1-21H	North Reference: Grid
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Wellbore #1	Database: EDM 2003.21 Single User Db

Design Wellbore #1				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0		
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.21

Survey Program Date 2012/08/09				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
769.0	12,182.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
769.0	0.50	208.00	769.0	-3.0	-1.6	3.0	0.07	0.07	0.00	
First MWD Survey										
1,043.0	0.80	199.80	1,043.0	-5.8	-2.8	5.8	0.11	0.11	-2.99	
1,328.0	0.50	260.00	1,328.0	-7.9	-4.7	7.9	0.25	-0.11	21.12	
1,805.0	1.20	221.80	1,804.9	-12.0	-10.1	12.0	0.18	0.15	-8.01	
2,091.0	1.30	212.90	2,090.8	-16.9	-13.8	17.0	0.08	0.03	-3.11	
2,376.0	0.00	274.70	2,375.8	-19.7	-15.6	19.7	0.46	-0.46	0.00	
2,662.0	0.00	268.20	2,661.8	-19.7	-15.6	19.7	0.00	0.00	0.00	
2,948.0	0.40	291.30	2,947.8	-19.3	-16.5	19.4	0.14	0.14	0.00	
3,231.0	1.20	26.60	3,230.8	-16.3	-16.1	16.3	0.46	0.28	33.67	
3,517.0	0.70	39.50	3,516.7	-12.3	-13.6	12.3	0.19	-0.17	4.51	
3,802.0	0.70	48.00	3,801.7	-9.8	-11.2	9.8	0.04	0.00	2.98	
3,898.0	0.30	185.40	3,897.7	-9.6	-10.8	9.7	0.98	-0.42	143.13	
3,992.0	0.60	171.80	3,991.7	-10.3	-10.8	10.4	0.34	0.32	-14.47	
4,088.0	0.60	206.30	4,087.7	-11.3	-10.9	11.3	0.37	0.00	35.94	
4,183.0	0.30	173.00	4,182.7	-12.0	-11.1	12.0	0.41	-0.32	-35.05	
4,247.0	0.40	200.00	4,246.7	-12.4	-11.2	12.4	0.30	0.16	42.19	
4,277.0	0.40	198.80	4,276.7	-12.6	-11.3	12.6	0.03	0.00	-4.00	
4,309.0	1.00	178.50	4,308.7	-12.9	-11.3	13.0	2.00	1.88	-63.44	
4,341.0	3.00	180.30	4,340.7	-14.1	-11.3	14.1	6.25	6.25	5.63	
4,372.0	5.70	182.10	4,371.6	-16.4	-11.3	16.5	8.72	8.71	5.81	
4,404.0	8.30	182.50	4,403.4	-20.3	-11.5	20.4	8.13	8.13	1.25	
4,436.0	10.60	182.30	4,434.9	-25.6	-11.7	25.6	7.19	7.19	-0.63	
4,468.0	13.20	181.30	4,466.2	-32.2	-11.9	32.2	8.15	8.13	-3.13	
4,499.0	15.80	182.80	4,496.2	-39.9	-12.2	40.0	8.47	8.39	4.84	
4,531.0	18.30	183.40	4,526.8	-49.3	-12.7	49.3	7.83	7.81	1.88	
4,563.0	20.00	182.80	4,557.1	-59.8	-13.3	59.8	5.35	5.31	-1.88	
4,595.0	21.20	181.00	4,587.0	-71.0	-13.7	71.1	4.24	3.75	-5.63	
4,627.0	22.50	179.40	4,616.7	-82.9	-13.7	83.0	4.47	4.06	-5.00	
4,658.0	25.00	179.30	4,645.1	-95.4	-13.5	95.4	8.07	8.06	-0.32	
4,690.0	26.80	180.20	4,673.9	-109.4	-13.5	109.4	5.76	5.63	2.81	
4,722.0	28.70	180.60	4,702.2	-124.3	-13.6	124.3	5.97	5.94	1.25	
4,753.0	29.60	180.90	4,729.3	-139.4	-13.8	139.4	2.94	2.90	0.97	
4,785.0	31.50	180.00	4,756.8	-155.6	-13.9	155.7	6.11	5.94	-2.81	
4,817.0	33.50	178.90	4,783.8	-172.8	-13.7	172.9	6.52	6.25	-3.44	
4,849.0	35.20	177.40	4,810.2	-190.9	-13.2	190.9	5.93	5.31	-4.69	
4,881.0	37.70	177.90	4,836.0	-209.9	-12.4	209.9	7.87	7.81	1.56	
4,912.0	39.80	179.40	4,860.1	-229.3	-11.9	229.3	7.42	6.77	4.84	

Wolverine Directional, LLC

Survey Report

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Project:	Comanche County (KS27S)	TVD Reference:	WELL @ 0.0ft (Original Well Elev)
Site:	Sec 12-T34S-R20W	MD Reference:	WELL @ 0.0ft (Original Well Elev)
Well:	Sally 3420 1-21H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)	
4,944.0	42.10	179.70	4,884.3	-250.2	-11.8	250.3	7.21	7.19	0.94	
4,976.0	44.70	179.60	4,907.6	-272.2	-11.6	272.3	8.13	8.13	-0.31	
5,007.0	48.00	179.90	4,928.9	-294.6	-11.5	294.7	10.67	10.65	0.97	
5,039.0	50.40	179.70	4,949.9	-318.9	-11.5	318.9	7.51	7.50	-0.63	
5,071.0	51.10	179.60	4,970.1	-343.6	-11.3	343.7	2.20	2.19	-0.31	
5,103.0	51.00	178.90	4,990.2	-368.5	-11.0	368.6	1.73	-0.31	-2.19	
5,135.0	50.60	178.70	5,010.4	-393.3	-10.5	393.4	1.34	-1.25	-0.63	
5,166.0	50.50	178.80	5,030.1	-417.3	-9.9	417.3	0.41	-0.32	0.32	
5,198.0	50.40	178.00	5,050.5	-441.9	-9.2	442.0	1.95	-0.31	-2.50	
5,230.0	49.80	177.70	5,071.0	-466.5	-8.3	466.5	2.01	-1.88	-0.94	
5,262.0	50.60	178.10	5,091.5	-491.0	-7.4	491.0	2.68	2.50	1.25	
5,293.0	53.30	177.80	5,110.6	-515.4	-6.5	515.4	8.74	8.71	-0.97	
5,325.0	56.30	178.70	5,129.1	-541.5	-5.8	541.6	9.65	9.38	2.81	
5,357.0	60.70	179.20	5,145.8	-568.8	-5.3	568.8	13.81	13.75	1.56	
5,389.0	64.90	180.30	5,160.4	-597.3	-5.1	597.3	13.48	13.13	3.44	
5,420.0	68.30	181.30	5,172.7	-625.7	-5.5	625.7	11.36	10.97	3.23	
5,452.0	71.30	181.60	5,183.8	-655.7	-6.3	655.8	9.42	9.38	0.94	
5,484.0	73.60	181.50	5,193.4	-686.2	-7.1	686.3	7.19	7.19	-0.31	
5,516.0	75.70	181.00	5,201.9	-717.1	-7.8	717.1	6.73	6.56	-1.56	
5,547.0	78.30	181.20	5,208.9	-747.3	-8.4	747.3	8.41	8.39	0.65	
5,579.0	82.20	180.90	5,214.3	-778.8	-9.0	778.8	12.22	12.19	-0.94	
5,616.0	85.70	181.10	5,218.2	-815.6	-9.6	815.6	9.47	9.46	0.54	
5,697.0	88.00	179.60	5,222.6	-896.5	-10.1	896.5	3.39	2.84	-1.85	
5,758.0	88.00	178.80	5,224.8	-957.4	-9.2	957.4	1.31	0.00	-1.31	
5,850.0	89.80	178.10	5,226.5	-1,049.4	-6.7	1,049.4	2.10	1.96	-0.76	
5,942.0	88.60	177.00	5,227.8	-1,141.3	-2.8	1,141.3	1.77	-1.30	-1.20	
6,034.0	90.10	179.10	5,228.9	-1,233.2	0.3	1,233.2	2.80	1.63	2.28	
6,126.0	90.50	178.90	5,228.4	-1,325.2	1.9	1,325.2	0.49	0.43	-0.22	
6,219.0	89.80	178.90	5,228.1	-1,418.2	3.7	1,418.1	0.75	-0.75	0.00	
6,311.0	88.60	178.60	5,229.4	-1,510.1	5.7	1,510.1	1.34	-1.30	-0.33	
6,402.0	90.20	179.60	5,230.4	-1,601.1	7.1	1,601.1	2.07	1.76	1.10	
6,494.0	89.90	179.20	5,230.3	-1,693.1	8.1	1,693.1	0.54	-0.33	-0.43	
6,586.0	89.80	179.30	5,230.5	-1,785.1	9.3	1,785.0	0.15	-0.11	0.11	
6,678.0	91.10	179.60	5,229.8	-1,877.1	10.2	1,877.0	1.45	1.41	0.33	
6,774.0	90.40	179.20	5,228.6	-1,973.1	11.2	1,973.0	0.84	-0.73	-0.42	
6,869.0	90.30	178.30	5,228.0	-2,068.0	13.3	2,068.0	0.95	-0.11	-0.95	
6,965.0	90.80	180.60	5,227.1	-2,164.0	14.2	2,164.0	2.45	0.52	2.40	
7,061.0	91.50	180.40	5,225.1	-2,260.0	13.4	2,259.9	0.76	0.73	-0.21	
7,156.0	91.10	179.80	5,223.0	-2,355.0	13.2	2,354.9	0.76	-0.42	-0.63	
7,252.0	90.30	181.00	5,221.8	-2,451.0	12.5	2,450.9	1.50	-0.83	1.25	
7,348.0	90.10	180.70	5,221.5	-2,547.0	11.1	2,546.9	0.38	-0.21	-0.31	
7,444.0	89.50	181.00	5,221.8	-2,642.9	9.7	2,642.9	0.70	-0.63	0.31	
7,539.0	88.70	179.80	5,223.3	-2,737.9	9.0	2,737.9	1.52	-0.84	-1.26	
7,660.0	90.00	180.10	5,224.7	-2,858.9	9.1	2,858.9	1.10	1.07	0.25	
7,756.0	89.90	179.30	5,224.7	-2,954.9	9.6	2,954.9	0.84	-0.10	-0.83	
7,851.0	89.60	182.60	5,225.2	-3,049.9	8.0	3,049.8	3.49	-0.32	3.47	
7,946.0	89.60	182.10	5,225.8	-3,144.8	4.1	3,144.8	0.53	0.00	-0.53	
8,042.0	89.60	182.30	5,226.5	-3,240.7	0.5	3,240.7	0.21	0.00	0.21	
8,137.0	89.80	181.30	5,227.0	-3,335.7	-2.5	3,335.7	1.07	0.21	-1.05	
8,233.0	89.60	180.40	5,227.5	-3,431.7	-4.0	3,431.7	0.96	-0.21	-0.94	
8,328.0	87.80	181.30	5,229.6	-3,526.6	-5.4	3,526.6	2.12	-1.89	0.95	
8,424.0	90.60	181.50	5,231.0	-3,622.6	-7.7	3,622.6	2.92	2.92	0.21	
8,520.0	90.90	181.00	5,229.7	-3,718.6	-9.8	3,718.6	0.61	0.31	-0.52	
8,615.0	88.00	180.70	5,230.6	-3,813.5	-11.2	3,813.5	3.07	-3.05	-0.32	

Wolverine Directional, LLC

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Site: Sec 12-T34S-R20W	MD Reference: WELL @ 0.0ft (Original Well Elev)
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Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
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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)
8,711.0	86.50	180.40	5,235.2	-3,909.4	-12.1	3,909.4	1.59	-1.56	-0.31
8,807.0	88.30	180.80	5,239.6	-4,005.3	-13.1	4,005.3	1.92	1.88	0.42
8,902.0	90.20	180.50	5,240.8	-4,100.3	-14.2	4,100.3	2.02	2.00	-0.32
8,998.0	91.30	181.40	5,239.6	-4,196.3	-15.8	4,196.3	1.48	1.15	0.94
9,094.0	92.10	180.30	5,236.7	-4,292.2	-17.2	4,292.2	1.42	0.83	-1.15
9,190.0	90.70	180.10	5,234.4	-4,388.2	-17.6	4,388.2	1.47	-1.46	-0.21
9,285.0	91.10	180.30	5,232.9	-4,483.2	-17.9	4,483.2	0.47	0.42	0.21
9,381.0	88.70	179.60	5,233.1	-4,579.2	-17.8	4,579.2	2.60	-2.50	-0.73
9,477.0	88.90	179.90	5,235.1	-4,675.1	-17.4	4,675.2	0.38	0.21	0.31
9,573.0	90.00	178.50	5,236.0	-4,771.1	-16.0	4,771.1	1.85	1.15	-1.46
9,669.0	90.40	177.90	5,235.7	-4,867.1	-13.0	4,867.1	0.75	0.42	-0.63
9,764.0	89.70	178.20	5,235.6	-4,962.0	-9.8	4,962.0	0.80	-0.74	0.32
9,860.0	89.40	179.20	5,236.3	-5,058.0	-7.6	5,058.0	1.09	-0.31	1.04
9,956.0	89.70	179.30	5,237.1	-5,154.0	-6.4	5,154.0	0.33	0.31	0.10
10,051.0	90.00	178.70	5,237.3	-5,249.0	-4.7	5,248.9	0.71	0.32	-0.63
10,147.0	90.00	178.00	5,237.3	-5,344.9	-1.9	5,344.9	0.73	0.00	-0.73
10,243.0	91.60	180.40	5,236.0	-5,440.9	-0.6	5,440.9	3.00	1.67	2.50
10,338.0	90.80	181.10	5,234.0	-5,535.9	-1.8	5,535.8	1.12	-0.84	0.74
10,434.0	88.50	180.20	5,234.6	-5,631.8	-2.9	5,631.8	2.57	-2.40	-0.94
10,529.0	88.00	181.10	5,237.5	-5,726.8	-4.0	5,726.8	1.08	-0.53	0.95
10,625.0	87.10	181.10	5,241.6	-5,822.7	-5.9	5,822.7	0.94	-0.94	0.00
10,720.0	88.30	182.30	5,245.4	-5,917.6	-8.7	5,917.6	1.79	1.26	1.26
10,815.0	86.60	180.80	5,249.6	-6,012.4	-11.2	6,012.4	2.39	-1.79	-1.58
10,911.0	90.40	180.70	5,252.2	-6,108.4	-12.5	6,108.4	3.96	3.96	-0.10
11,006.0	90.20	181.10	5,251.7	-6,203.4	-14.0	6,203.4	0.47	-0.21	0.42
11,102.0	90.70	181.10	5,250.9	-6,299.3	-15.8	6,299.3	0.52	0.52	0.00
11,198.0	91.30	180.50	5,249.2	-6,395.3	-17.2	6,395.3	0.88	0.63	-0.63
11,294.0	91.30	180.70	5,247.1	-6,491.3	-18.2	6,491.3	0.21	0.00	0.21
11,390.0	91.30	180.80	5,244.9	-6,587.2	-19.4	6,587.3	0.10	0.00	0.10
11,486.0	89.90	179.30	5,243.9	-6,683.2	-19.5	6,683.3	2.14	-1.46	-1.56
11,581.0	89.80	179.40	5,244.1	-6,778.2	-18.4	6,778.2	0.15	-0.11	0.11
11,677.0	90.60	178.80	5,243.8	-6,874.2	-16.9	6,874.2	1.04	0.83	-0.63
Last MWD Survey									
12,182.0	90.60	178.80	5,238.5	-7,379.1	-6.4	7,379.0	0.00	0.00	0.00
Proj to TD - Sally 3420 1-12H PHBL									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
769.0	769.0	-3.0	-1.6	First MWD Survey
11,677.0	5,243.8	-6,874.2	-16.9	Last MWD Survey
12,182.0	5,238.5	-7,379.1	-6.4	Proj to TD

Checked By: _____ Approved By: _____ Date: _____