

# **SandRidge Energy**

**North Park Basin**

**T7N-R80W-S16**

**Ray Ranch 0780 5-16H**

**Wellbore #1**

**Plan: Design #1**

## **Standard Survey Report**

**08 July, 2016**

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Ray Ranch 0780 5-16H
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	KB @ 8152.0usft
<b>Site:</b>	T7N-R80W-S16	<b>MD Reference:</b>	KB @ 8152.0usft
<b>Well:</b>	Ray Ranch 0780 5-16H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	EDMProd

<b>Project</b>	North Park Basin		
<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>	Colorado Northern Zone		

Site		T7N-R80W-S16			
Site Position:		Northing:	1,453,179.12 usft	Latitude:	40° 34' 26.505 N
From:	Map	Easting:	2,754,928.85 usft	Longitude:	106° 22' 55.973 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.57 °

Well	Ray Ranch 0780 5-16H					
Well Position	+N/-S	0.0 usft	Northing:	1,453,284.12 usft	Latitude:	40° 34' 27.543 N
	+E/-W	0.0 usft	Easting:	2,754,928.85 usft	Longitude:	106° 22' 55.987 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,136.0 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/31/2009	9.88	66.97	53,186

Design	Design #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	11.76	

<b>Survey Tool Program</b>	<b>Date</b>	7/8/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	12,289.1	Design #1 (Wellbore #1)	Sperry MWD	Fixed:v2:standard declination	

<b>Planned 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 (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00	

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<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Ray Ranch 0780 5-16H
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	KB @ 8152.0usft
<b>Site:</b>	T7N-R80W-S16	<b>MD Reference:</b>	KB @ 8152.0usft
<b>Well:</b>	Ray Ranch 0780 5-16H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	EDMProd

### Planned 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)
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
4,000.0	2.00	139.40	4,000.0	-1.3	1.1	-1.1	2.00	2.00	0.00
4,100.0	4.00	139.40	4,099.8	-5.3	4.5	-4.3	2.00	2.00	0.00
4,200.0	6.00	139.40	4,199.5	-11.9	10.2	-9.6	2.00	2.00	0.00
4,300.0	8.00	139.40	4,298.7	-21.2	18.1	-17.0	2.00	2.00	0.00
4,400.0	10.00	139.40	4,397.5	-33.0	28.3	-26.6	2.00	2.00	0.00
4,500.0	12.00	139.40	4,495.6	-47.5	40.7	-38.2	2.00	2.00	0.00
4,600.0	14.00	139.40	4,593.1	-64.6	55.4	-52.0	2.00	2.00	0.00
4,700.0	16.00	139.40	4,689.6	-84.3	72.2	-67.8	2.00	2.00	0.00
4,761.1	17.22	139.40	4,748.2	-97.5	83.6	-78.5	2.00	2.00	0.00
Start 2679.9 hold at 4761.1 MD									
4,800.0	17.22	139.40	4,785.3	-106.3	91.1	-85.5	0.00	0.00	0.00
4,900.0	17.22	139.40	4,880.9	-128.7	110.4	-103.6	0.00	0.00	0.00
5,000.0	17.22	139.40	4,976.4	-151.2	129.6	-121.6	0.00	0.00	0.00

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	EDMPProd

### Planned 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)
5,100.0	17.22	139.40	5,071.9	-173.7	148.9	-139.7	0.00	0.00	0.00
5,200.0	17.22	139.40	5,167.4	-196.2	168.2	-157.8	0.00	0.00	0.00
5,300.0	17.22	139.40	5,262.9	-218.7	187.4	-175.9	0.00	0.00	0.00
5,400.0	17.22	139.40	5,358.4	-241.2	206.7	-194.0	0.00	0.00	0.00
5,500.0	17.22	139.40	5,454.0	-263.6	226.0	-212.1	0.00	0.00	0.00
5,600.0	17.22	139.40	5,549.5	-286.1	245.2	-230.1	0.00	0.00	0.00
5,700.0	17.22	139.40	5,645.0	-308.6	264.5	-248.2	0.00	0.00	0.00
5,800.0	17.22	139.40	5,740.5	-331.1	283.8	-266.3	0.00	0.00	0.00
5,900.0	17.22	139.40	5,836.0	-353.6	303.0	-284.4	0.00	0.00	0.00
6,000.0	17.22	139.40	5,931.5	-376.0	322.3	-302.5	0.00	0.00	0.00
6,100.0	17.22	139.40	6,027.1	-398.5	341.6	-320.6	0.00	0.00	0.00
6,200.0	17.22	139.40	6,122.6	-421.0	360.9	-338.6	0.00	0.00	0.00
6,300.0	17.22	139.40	6,218.1	-443.5	380.1	-356.7	0.00	0.00	0.00
6,400.0	17.22	139.40	6,313.6	-466.0	399.4	-374.8	0.00	0.00	0.00
6,500.0	17.22	139.40	6,409.1	-488.4	418.7	-392.9	0.00	0.00	0.00
6,600.0	17.22	139.40	6,504.6	-510.9	437.9	-411.0	0.00	0.00	0.00
6,700.0	17.22	139.40	6,600.2	-533.4	457.2	-429.1	0.00	0.00	0.00
6,800.0	17.22	139.40	6,695.7	-555.9	476.5	-447.1	0.00	0.00	0.00
6,900.0	17.22	139.40	6,791.2	-578.4	495.7	-465.2	0.00	0.00	0.00
7,000.0	17.22	139.40	6,886.7	-600.8	515.0	-483.3	0.00	0.00	0.00
7,100.0	17.22	139.40	6,982.2	-623.3	534.3	-501.4	0.00	0.00	0.00
7,200.0	17.22	139.40	7,077.7	-645.8	553.5	-519.5	0.00	0.00	0.00
7,300.0	17.22	139.40	7,173.2	-668.3	572.8	-537.6	0.00	0.00	0.00
7,400.0	17.22	139.40	7,268.8	-690.8	592.1	-555.6	0.00	0.00	0.00
7,441.1	17.22	139.40	7,308.0	-700.0	600.0	-563.1	0.00	0.00	0.00
<b>Start DLS 8.00 TFO -141.76</b>									
7,450.0	16.67	137.86	7,316.5	-702.0	601.7	-564.6	8.00	-6.22	-17.27
7,500.0	13.82	127.11	7,364.8	-710.9	611.3	-571.4	8.00	-5.69	-21.50
7,550.0	11.66	111.75	7,413.6	-716.4	620.8	-574.9	8.00	-4.33	-30.71
7,600.0	10.60	91.65	7,462.6	-718.4	630.1	-574.9	8.00	-2.11	-40.21
7,650.0	10.98	70.26	7,511.8	-716.9	639.1	-571.6	8.00	0.76	-42.77
7,700.0	12.66	52.43	7,560.7	-711.9	648.0	-565.0	8.00	3.37	-35.65
7,750.0	15.23	39.61	7,609.3	-703.5	656.5	-555.0	8.00	5.12	-25.66
7,800.0	18.30	30.69	7,657.1	-691.7	664.7	-541.8	8.00	6.15	-17.84
7,850.0	21.67	24.35	7,704.1	-676.5	672.5	-525.3	8.00	6.74	-12.66
7,900.0	25.22	19.69	7,750.0	-658.1	679.9	-505.8	8.00	7.09	-9.32
7,950.0	28.87	16.13	7,794.5	-636.5	686.9	-483.2	8.00	7.32	-7.13
8,000.0	32.61	13.31	7,837.5	-611.7	693.3	-457.7	8.00	7.47	-5.63
8,024.6	34.46	12.13	7,858.0	-598.5	696.3	-444.1	8.00	7.55	-4.81
<b>Niobrara</b>									
8,050.0	36.39	11.02	7,878.7	-584.1	699.3	-429.3	8.00	7.59	-4.37
8,100.0	40.21	9.11	7,917.9	-553.6	704.7	-398.4	8.00	7.64	-3.83
8,150.0	44.06	7.48	7,955.0	-520.4	709.5	-364.9	8.00	7.70	-3.26
8,200.0	47.93	6.06	7,989.7	-484.7	713.7	-329.1	8.00	7.74	-2.84

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## Survey Report

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<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	KB @ 8152.0usft
<b>Site:</b>	T7N-R80W-S16	<b>MD Reference:</b>	KB @ 8152.0usft
<b>Well:</b>	Ray Ranch 0780 5-16H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	EDMProd

### Planned 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)
8,250.0	51.81	4.80	8,021.9	-446.6	717.3	-291.1	8.00	7.77	-2.51
8,300.0	55.71	3.68	8,051.5	-406.4	720.3	-251.1	8.00	7.79	-2.26
8,355.0	60.00	2.55	8,080.7	-359.9	722.8	-205.1	8.00	7.81	-2.05
<b>Start 150.0 hold at 8355.0 MD</b>									
8,400.0	60.00	2.55	8,103.3	-321.0	724.5	-166.6	0.00	0.00	0.00
8,505.0	60.00	2.55	8,155.7	-230.2	728.6	-76.9	0.00	0.00	0.00
<b>Start DLS 8.00 TFO -5.09</b>									
8,550.0	63.59	2.19	8,177.0	-190.5	730.2	-37.8	8.00	7.97	-0.79
8,600.0	67.57	1.82	8,197.7	-145.0	731.8	7.1	8.00	7.97	-0.74
8,650.0	71.56	1.47	8,215.1	-98.2	733.1	53.2	8.00	7.97	-0.70
8,700.0	75.55	1.14	8,229.3	-50.3	734.2	100.4	8.00	7.97	-0.67
8,750.0	79.54	0.82	8,240.1	-1.5	735.1	148.3	8.00	7.98	-0.64
8,800.0	83.52	0.50	8,247.4	48.0	735.6	196.8	8.00	7.98	-0.63
8,850.0	87.51	0.19	8,251.3	97.8	735.9	245.7	8.00	7.98	-0.62
8,881.2	90.00	0.00	8,252.0	129.0	736.0	276.2	8.00	7.98	-0.61
<b>Start 3407.9 hold at 8881.2 MD</b>									
8,900.0	90.00	0.00	8,252.0	147.8	736.0	294.6	0.00	0.00	0.00
9,000.0	90.00	0.00	8,252.0	247.8	736.0	392.5	0.00	0.00	0.00
9,100.0	90.00	0.00	8,252.0	347.8	736.0	490.5	0.00	0.00	0.00
9,200.0	90.00	0.00	8,252.0	447.8	736.0	588.4	0.00	0.00	0.00
9,300.0	90.00	0.00	8,252.0	547.8	736.0	686.3	0.00	0.00	0.00
9,400.0	90.00	0.00	8,252.0	647.8	736.0	784.2	0.00	0.00	0.00
9,500.0	90.00	0.00	8,252.0	747.8	736.0	882.1	0.00	0.00	0.00
9,600.0	90.00	0.00	8,252.0	847.8	736.0	980.0	0.00	0.00	0.00
9,700.0	90.00	0.00	8,252.0	947.8	736.0	1,077.9	0.00	0.00	0.00
9,800.0	90.00	0.00	8,252.0	1,047.8	736.0	1,175.8	0.00	0.00	0.00
9,900.0	90.00	0.00	8,252.0	1,147.8	736.0	1,273.7	0.00	0.00	0.00
10,000.0	90.00	0.00	8,252.0	1,247.8	736.0	1,371.6	0.00	0.00	0.00
10,100.0	90.00	0.00	8,252.0	1,347.8	736.0	1,469.5	0.00	0.00	0.00
10,200.0	90.00	0.00	8,252.0	1,447.8	736.0	1,567.4	0.00	0.00	0.00
10,300.0	90.00	0.00	8,252.0	1,547.8	736.0	1,665.3	0.00	0.00	0.00
10,400.0	90.00	0.00	8,252.0	1,647.8	736.0	1,763.2	0.00	0.00	0.00
10,500.0	90.00	0.00	8,252.0	1,747.8	736.0	1,861.1	0.00	0.00	0.00
10,600.0	90.00	0.00	8,252.0	1,847.8	736.0	1,959.0	0.00	0.00	0.00
10,700.0	90.00	0.00	8,252.0	1,947.8	736.0	2,056.9	0.00	0.00	0.00
10,800.0	90.00	0.00	8,252.0	2,047.8	736.0	2,154.8	0.00	0.00	0.00
10,900.0	90.00	0.00	8,252.0	2,147.8	736.0	2,252.7	0.00	0.00	0.00
11,000.0	90.00	0.00	8,252.0	2,247.8	736.0	2,350.6	0.00	0.00	0.00
11,100.0	90.00	0.00	8,252.0	2,347.8	736.0	2,448.5	0.00	0.00	0.00
11,200.0	90.00	0.00	8,252.0	2,447.8	736.0	2,546.4	0.00	0.00	0.00
11,300.0	90.00	0.00	8,252.0	2,547.8	736.0	2,644.3	0.00	0.00	0.00
11,400.0	90.00	0.00	8,252.0	2,647.8	736.0	2,742.2	0.00	0.00	0.00
11,500.0	90.00	0.00	8,252.0	2,747.8	736.0	2,840.1	0.00	0.00	0.00
11,600.0	90.00	0.00	8,252.0	2,847.8	736.0	2,938.0	0.00	0.00	0.00

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Ray Ranch 0780 5-16H
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	KB @ 8152.0usft
<b>Site:</b>	T7N-R80W-S16	<b>MD Reference:</b>	KB @ 8152.0usft
<b>Well:</b>	Ray Ranch 0780 5-16H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Design #1	<b>Database:</b>	EDMProd

### Planned 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)
11,700.0	90.00	0.00	8,252.0	2,947.8	736.0	3,035.9	0.00	0.00	0.00
11,800.0	90.00	0.00	8,252.0	3,047.8	736.1	3,133.8	0.00	0.00	0.00
11,900.0	90.00	0.00	8,252.0	3,147.8	736.1	3,231.7	0.00	0.00	0.00
12,000.0	90.00	0.00	8,252.0	3,247.8	736.1	3,329.6	0.00	0.00	0.00
12,100.0	90.00	0.00	8,252.0	3,347.8	736.1	3,427.5	0.00	0.00	0.00
12,200.0	90.00	0.00	8,252.0	3,447.8	736.1	3,525.4	0.00	0.00	0.00
12,289.1	90.00	0.00	8,252.0	3,536.9	736.1	3,612.7	0.00	0.00	0.00
TD at 12289.1									

### Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Ray Ranch 5-16H - plan hits target center - Point	0.00	360.00	8,252.0	3,536.9	736.1	1,456,821.05	2,755,664.91	40° 35' 2.564 N	106° 22' 46.903 W

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
8,024.6	7,858.0	Niobrara		0.00	

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3900	3900	0	0	Start Build 2.00
4761	4748	-98	84	Start 2679.9 hold at 4761.1 MD
7441	7308	-700	600	Start DLS 8.00 TFO -141.76
8355	8081	-360	723	Start 150.0 hold at 8355.0 MD
8505	8156	-230	729	Start DLS 8.00 TFO -5.09
8881	8252	129	736	Start 3407.9 hold at 8881.2 MD
12,289	8252	3537	736	TD at 12289.1

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

