

# **SandRidge Energy**

**North Park Basin  
T7N-R80W-S18  
Hebron 0780 9-18H**

**Wellbore #1**

**Plan: Design #1**

## **Standard Survey Report**

**07 July, 2016**

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Hebron 0780 9-18H
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8223.8usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S18	<b>MD Reference:</b>	WELL @ 8223.8usft (Original Well Elev)
<b>Well:</b>	Hebron 0780 9-18H	<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		

<b>Site</b>	T7N-R80W-S18		
<b>Site Position:</b>		<b>Northing:</b>	1,456,963.79 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,745,723.26 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40° 35' 2.980 N
		<b>Longitude:</b>	106° 24' 55.770 W
		<b>Grid Convergence:</b>	-0.59 °

<b>Well</b>	Hebron 0780 9-18H		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 1,452,261.12 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 2,743,263.69 usft
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	0.0 usft
		<b>Latitude:</b>	40° 34' 16.260 N
		<b>Longitude:</b>	106° 25' 27.012 W
		<b>Ground Level:</b>	8,207.8 usft

<b>Wellbore</b>	Wellbore #1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF200510	12/31/2009	9.90
			<b>Dip Angle (°)</b>
			66.96
			<b>Field Strength (nT)</b>
			53,179

<b>Design</b>	Design #1		
<b>Audit Notes:</b>			
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>
	0.0	0.0	0.0
			<b>Direction (°)</b>
			0.00

<b>Survey Tool Program</b>	<b>Date</b>	7/7/2016		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,925.0	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>Site:</b>	T7N-R80W-S18	<b>MD Reference:</b>	WELL @ 8223.8usft (Original Well Elev)
<b>Well:</b>	Hebron 0780 9-18H	<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
<b>Start Build 2.00</b>									
2,800.0	2.00	94.95	2,800.0	-0.2	1.7	-0.2	2.00	2.00	0.00
2,900.0	4.00	94.95	2,899.8	-0.6	7.0	-0.6	2.00	2.00	0.00
3,000.0	6.00	94.95	2,999.5	-1.4	15.6	-1.4	2.00	2.00	0.00
3,100.0	8.00	94.95	3,098.7	-2.4	27.8	-2.4	2.00	2.00	0.00
3,200.0	10.00	94.95	3,197.5	-3.8	43.4	-3.8	2.00	2.00	0.00
3,300.0	12.00	94.95	3,295.6	-5.4	62.4	-5.4	2.00	2.00	0.00
3,400.0	14.00	94.95	3,393.1	-7.3	84.8	-7.3	2.00	2.00	0.00
3,500.0	16.00	94.95	3,489.6	-9.6	110.6	-9.6	2.00	2.00	0.00
3,600.0	18.00	94.95	3,585.3	-12.1	139.7	-12.1	2.00	2.00	0.00
3,700.0	20.00	94.95	3,679.8	-14.9	172.1	-14.9	2.00	2.00	0.00
3,800.0	22.00	94.95	3,773.2	-18.0	207.8	-18.0	2.00	2.00	0.00
3,873.8	23.48	94.95	3,841.3	-20.4	236.3	-20.4	2.00	2.00	0.00
<b>Start 2315.8 hold at 3873.8 MD</b>									
3,900.0	23.48	94.95	3,865.3	-21.3	246.6	-21.3	0.00	0.00	0.00
4,000.0	23.48	94.95	3,957.0	-24.8	286.3	-24.8	0.00	0.00	0.00
4,100.0	23.48	94.95	4,048.7	-28.2	326.0	-28.2	0.00	0.00	0.00
4,200.0	23.48	94.95	4,140.4	-31.7	365.7	-31.7	0.00	0.00	0.00
4,300.0	23.48	94.95	4,232.2	-35.1	405.4	-35.1	0.00	0.00	0.00
4,400.0	23.48	94.95	4,323.9	-38.5	445.1	-38.5	0.00	0.00	0.00
4,500.0	23.48	94.95	4,415.6	-42.0	484.8	-42.0	0.00	0.00	0.00
4,600.0	23.48	94.95	4,507.3	-45.4	524.5	-45.4	0.00	0.00	0.00
4,700.0	23.48	94.95	4,599.0	-48.8	564.2	-48.8	0.00	0.00	0.00
4,800.0	23.48	94.95	4,690.8	-52.3	603.8	-52.3	0.00	0.00	0.00
4,900.0	23.48	94.95	4,782.5	-55.7	643.5	-55.7	0.00	0.00	0.00
5,000.0	23.48	94.95	4,874.2	-59.1	683.2	-59.1	0.00	0.00	0.00

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<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)
5,100.0	23.48	94.95	4,965.9	-62.6	722.9	-62.6	0.00	0.00	0.00
5,200.0	23.48	94.95	5,057.7	-66.0	762.6	-66.0	0.00	0.00	0.00
5,300.0	23.48	94.95	5,149.4	-69.4	802.3	-69.4	0.00	0.00	0.00
5,400.0	23.48	94.95	5,241.1	-72.9	842.0	-72.9	0.00	0.00	0.00
5,500.0	23.48	94.95	5,332.8	-76.3	881.7	-76.3	0.00	0.00	0.00
5,600.0	23.48	94.95	5,424.5	-79.7	921.4	-79.7	0.00	0.00	0.00
5,700.0	23.48	94.95	5,516.3	-83.2	961.1	-83.2	0.00	0.00	0.00
5,800.0	23.48	94.95	5,608.0	-86.6	1,000.7	-86.6	0.00	0.00	0.00
5,900.0	23.48	94.95	5,699.7	-90.0	1,040.4	-90.0	0.00	0.00	0.00
6,000.0	23.48	94.95	5,791.4	-93.5	1,080.1	-93.5	0.00	0.00	0.00
6,100.0	23.48	94.95	5,883.1	-96.9	1,119.8	-96.9	0.00	0.00	0.00
6,189.7	23.48	94.95	5,965.4	-100.0	1,155.4	-100.0	0.00	0.00	0.00
<b>Start DLS 8.00 TFO -7.19</b>									
6,200.0	24.30	94.70	5,974.8	-100.4	1,159.6	-100.4	8.00	7.94	-2.43
6,250.0	28.27	93.67	6,019.7	-102.0	1,181.6	-102.0	8.00	7.95	-2.04
6,300.0	32.25	92.89	6,062.8	-103.4	1,206.8	-103.4	8.00	7.96	-1.58
6,350.0	36.24	92.25	6,104.2	-104.6	1,234.9	-104.6	8.00	7.97	-1.26
6,400.0	40.22	91.73	6,143.4	-105.7	1,265.8	-105.7	8.00	7.97	-1.04
6,450.0	44.21	91.29	6,180.5	-106.6	1,299.4	-106.6	8.00	7.98	-0.88
6,500.0	48.20	90.91	6,215.1	-107.3	1,335.5	-107.3	8.00	7.98	-0.77
6,550.0	52.19	90.57	6,247.1	-107.8	1,373.9	-107.8	8.00	7.98	-0.68
6,600.0	56.19	90.26	6,276.3	-108.1	1,414.4	-108.1	8.00	7.98	-0.61
6,647.8	60.00	90.00	6,301.5	-108.1	1,454.9	-108.1	8.00	7.99	-0.55
<b>Start 150.0 hold at 6647.8 MD</b>									
6,700.0	60.00	90.00	6,327.7	-108.1	1,500.2	-108.1	0.00	0.00	0.00
6,740.7	60.00	90.00	6,348.0	-108.1	1,535.4	-108.1	0.00	0.00	0.00
<b>Niobrara</b>									
6,797.8	60.00	90.00	6,376.5	-108.1	1,584.8	-108.1	0.00	0.00	0.00
<b>Start DLS 10.00 TFO -90.02</b>									
6,800.0	60.00	89.74	6,377.7	-108.1	1,586.8	-108.1	10.00	0.01	-11.55
6,850.0	60.14	83.97	6,402.6	-105.8	1,630.0	-105.8	10.00	0.27	-11.54
6,900.0	60.52	78.23	6,427.4	-99.0	1,672.9	-99.0	10.00	0.77	-11.48
6,950.0	61.15	72.55	6,451.8	-88.0	1,715.1	-88.0	10.00	1.26	-11.36
7,000.0	62.01	66.95	6,475.6	-72.8	1,756.4	-72.8	10.00	1.73	-11.20
7,050.0	63.10	61.45	6,498.6	-53.5	1,796.3	-53.5	10.00	2.17	-11.00
7,100.0	64.39	56.07	6,520.8	-30.3	1,834.6	-30.3	10.00	2.59	-10.77
7,150.0	65.88	50.81	6,541.8	-3.2	1,871.0	-3.2	10.00	2.98	-10.52
7,200.0	67.55	45.67	6,561.6	27.3	1,905.3	27.3	10.00	3.33	-10.27
7,250.0	69.37	40.67	6,580.0	61.3	1,937.1	61.3	10.00	3.64	-10.01
7,300.0	71.33	35.78	6,596.8	98.2	1,966.2	98.2	10.00	3.93	-9.77
7,350.0	73.42	31.01	6,611.9	138.0	1,992.4	138.0	10.00	4.17	-9.54
7,400.0	75.61	26.35	6,625.3	180.3	2,015.5	180.3	10.00	4.38	-9.33
7,450.0	77.89	21.78	6,636.7	224.7	2,035.3	224.7	10.00	4.56	-9.14
7,500.0	80.24	17.29	6,646.2	271.0	2,051.7	271.0	10.00	4.71	-8.99

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### Planned Survey

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7,550.0	82.66	12.86	6,653.7	318.7	2,064.6	318.7	10.00	4.83	-8.86
7,600.0	85.11	8.48	6,659.0	367.5	2,073.8	367.5	10.00	4.91	-8.76
7,650.0	87.60	4.13	6,662.2	417.1	2,079.2	417.1	10.00	4.97	-8.70
7,698.1	90.00	359.96	6,663.2	465.1	2,080.9	465.1	10.00	5.00	-8.67
Start 4226.9 hold at 7698.1 MD									
7,700.0	90.00	359.96	6,663.2	467.1	2,080.9	467.1	0.00	0.00	0.00
7,800.0	90.00	359.96	6,663.2	567.1	2,080.9	567.1	0.00	0.00	0.00
7,900.0	90.00	359.96	6,663.2	667.1	2,080.8	667.1	0.00	0.00	0.00
8,000.0	90.00	359.96	6,663.2	767.1	2,080.7	767.1	0.00	0.00	0.00
8,100.0	90.00	359.96	6,663.2	867.1	2,080.7	867.1	0.00	0.00	0.00
8,200.0	90.00	359.96	6,663.2	967.1	2,080.6	967.1	0.00	0.00	0.00
8,300.0	90.00	359.96	6,663.2	1,067.1	2,080.5	1,067.1	0.00	0.00	0.00
8,400.0	90.00	359.96	6,663.2	1,167.1	2,080.5	1,167.1	0.00	0.00	0.00
8,500.0	90.00	359.96	6,663.2	1,267.1	2,080.4	1,267.1	0.00	0.00	0.00
8,600.0	90.00	359.96	6,663.2	1,367.1	2,080.3	1,367.1	0.00	0.00	0.00
8,700.0	90.00	359.96	6,663.2	1,467.1	2,080.3	1,467.1	0.00	0.00	0.00
8,800.0	90.00	359.96	6,663.2	1,567.1	2,080.2	1,567.1	0.00	0.00	0.00
8,900.0	90.00	359.96	6,663.2	1,667.1	2,080.1	1,667.1	0.00	0.00	0.00
9,000.0	90.00	359.96	6,663.2	1,767.1	2,080.1	1,767.1	0.00	0.00	0.00
9,100.0	90.00	359.96	6,663.2	1,867.1	2,080.0	1,867.1	0.00	0.00	0.00
9,200.0	90.00	359.96	6,663.2	1,967.1	2,079.9	1,967.1	0.00	0.00	0.00
9,300.0	90.00	359.96	6,663.2	2,067.1	2,079.9	2,067.1	0.00	0.00	0.00
9,400.0	90.00	359.96	6,663.2	2,167.1	2,079.8	2,167.1	0.00	0.00	0.00
9,500.0	90.00	359.96	6,663.2	2,267.1	2,079.7	2,267.1	0.00	0.00	0.00
9,600.0	90.00	359.96	6,663.2	2,367.1	2,079.7	2,367.1	0.00	0.00	0.00
9,700.0	90.00	359.96	6,663.2	2,467.1	2,079.6	2,467.1	0.00	0.00	0.00
9,800.0	90.00	359.96	6,663.2	2,567.1	2,079.6	2,567.1	0.00	0.00	0.00
9,900.0	90.00	359.96	6,663.2	2,667.1	2,079.5	2,667.1	0.00	0.00	0.00
10,000.0	90.00	359.96	6,663.2	2,767.1	2,079.4	2,767.1	0.00	0.00	0.00
10,100.0	90.00	359.96	6,663.2	2,867.1	2,079.4	2,867.1	0.00	0.00	0.00
10,200.0	90.00	359.96	6,663.2	2,967.1	2,079.3	2,967.1	0.00	0.00	0.00
10,300.0	90.00	359.96	6,663.2	3,067.1	2,079.2	3,067.1	0.00	0.00	0.00
10,400.0	90.00	359.96	6,663.2	3,167.1	2,079.2	3,167.1	0.00	0.00	0.00
10,500.0	90.00	359.96	6,663.2	3,267.1	2,079.1	3,267.1	0.00	0.00	0.00
10,600.0	90.00	359.96	6,663.2	3,367.1	2,079.0	3,367.1	0.00	0.00	0.00
10,700.0	90.00	359.96	6,663.2	3,467.1	2,079.0	3,467.1	0.00	0.00	0.00
10,800.0	90.00	359.96	6,663.2	3,567.1	2,078.9	3,567.1	0.00	0.00	0.00
10,900.0	90.00	359.96	6,663.2	3,667.1	2,078.8	3,667.1	0.00	0.00	0.00
11,000.0	90.00	359.96	6,663.2	3,767.1	2,078.8	3,767.1	0.00	0.00	0.00
11,100.0	90.00	359.96	6,663.2	3,867.1	2,078.7	3,867.1	0.00	0.00	0.00
11,200.0	90.00	359.96	6,663.2	3,967.1	2,078.6	3,967.1	0.00	0.00	0.00
11,300.0	90.00	359.96	6,663.2	4,067.1	2,078.6	4,067.1	0.00	0.00	0.00
11,400.0	90.00	359.96	6,663.2	4,167.1	2,078.5	4,167.1	0.00	0.00	0.00
11,500.0	90.00	359.96	6,663.2	4,267.1	2,078.4	4,267.1	0.00	0.00	0.00

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Hebron 0780 9-18H
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8223.8usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S18	<b>MD Reference:</b>	WELL @ 8223.8usft (Original Well Elev)
<b>Well:</b>	Hebron 0780 9-18H	<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)
11,600.0	90.00	359.96	6,663.2	4,367.1	2,078.4	4,367.1	0.00	0.00	0.00
11,700.0	90.00	359.96	6,663.2	4,467.1	2,078.3	4,467.1	0.00	0.00	0.00
11,800.0	90.00	359.96	6,663.2	4,567.1	2,078.2	4,567.1	0.00	0.00	0.00
11,900.0	90.00	359.96	6,663.2	4,667.1	2,078.2	4,667.1	0.00	0.00	0.00
11,925.0	90.00	359.96	6,663.2	4,692.1	2,078.1	4,692.1	0.00	0.00	0.00
TD at 11925.0									

### 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
Hebron 9-18H - plan misses target center by 0.2usft at 11925.0usft MD (6663.2 TVD, 4692.1 N, 2078.1 E) - Point	0.00	360.00	6,663.0	4,692.1	2,078.1	1,456,953.20	2,745,341.83	40° 35' 2.836 N	106° 25' 0.712 W

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,740.7	6,348.0	Niobrara		0.00	

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2700	2700	0	0	Start Build 2.00
3874	3841	-20	236	Start 2315.8 hold at 3873.8 MD
6190	5965	-100	1155	Start DLS 8.00 TFO -7.19
6648	6302	-108	1455	Start 150.0 hold at 6647.8 MD
6798	6377	-108	1585	Start DLS 10.00 TFO -90.02
7698	6663	465	2081	Start 4226.9 hold at 7698.1 MD
11,925	6663	4692	2078	TD at 11925.0

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