

# **SandRidge Energy**

**North Park Basin  
T7N-R80W-S18  
Hebron 0780 7-18H**

**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 7-18H
<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 7-18H	<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		

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

Well		Hebron 0780 7-18H				
Well Position	+N/-S	0.0 usft	Northing:	1,452,261.48 usft	Latitude:	40° 34' 16.261 N
	+E/-W	0.0 usft	Easting:	2,743,233.78 usft	Longitude:	106° 25' 27.399 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,207.8 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	9.90	66.96	53,179

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		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	11,388.9	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 7-18H	<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
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
Start Build 2.00									
3,000.0	2.00	119.74	3,000.0	-0.9	1.5	-0.9	2.00	2.00	0.00
3,100.0	4.00	119.74	3,099.8	-3.5	6.1	-3.5	2.00	2.00	0.00
3,200.0	6.00	119.74	3,199.5	-7.8	13.6	-7.8	2.00	2.00	0.00
3,300.0	8.00	119.74	3,298.7	-13.8	24.2	-13.8	2.00	2.00	0.00
3,316.9	8.34	119.74	3,315.4	-15.0	26.3	-15.0	2.00	2.00	0.00
Start 2571.0 hold at 3316.9 MD									
3,400.0	8.34	119.74	3,397.7	-21.0	36.8	-21.0	0.00	0.00	0.00
3,500.0	8.34	119.74	3,496.6	-28.2	49.3	-28.2	0.00	0.00	0.00
3,600.0	8.34	119.74	3,595.5	-35.4	61.9	-35.4	0.00	0.00	0.00
3,700.0	8.34	119.74	3,694.5	-42.6	74.5	-42.6	0.00	0.00	0.00
3,800.0	8.34	119.74	3,793.4	-49.8	87.1	-49.8	0.00	0.00	0.00
3,900.0	8.34	119.74	3,892.4	-57.0	99.7	-57.0	0.00	0.00	0.00
4,000.0	8.34	119.74	3,991.3	-64.2	112.3	-64.2	0.00	0.00	0.00
4,100.0	8.34	119.74	4,090.3	-71.4	124.9	-71.4	0.00	0.00	0.00
4,200.0	8.34	119.74	4,189.2	-78.6	137.5	-78.6	0.00	0.00	0.00
4,300.0	8.34	119.74	4,288.1	-85.8	150.1	-85.8	0.00	0.00	0.00
4,400.0	8.34	119.74	4,387.1	-92.9	162.7	-92.9	0.00	0.00	0.00
4,500.0	8.34	119.74	4,486.0	-100.1	175.3	-100.1	0.00	0.00	0.00
4,600.0	8.34	119.74	4,585.0	-107.3	187.8	-107.3	0.00	0.00	0.00
4,700.0	8.34	119.74	4,683.9	-114.5	200.4	-114.5	0.00	0.00	0.00
4,800.0	8.34	119.74	4,782.9	-121.7	213.0	-121.7	0.00	0.00	0.00
4,900.0	8.34	119.74	4,881.8	-128.9	225.6	-128.9	0.00	0.00	0.00
5,000.0	8.34	119.74	4,980.7	-136.1	238.2	-136.1	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	8.34	119.74	5,079.7	-143.3	250.8	-143.3	0.00	0.00	0.00
5,200.0	8.34	119.74	5,178.6	-150.5	263.4	-150.5	0.00	0.00	0.00
5,300.0	8.34	119.74	5,277.6	-157.7	276.0	-157.7	0.00	0.00	0.00
5,400.0	8.34	119.74	5,376.5	-164.9	288.6	-164.9	0.00	0.00	0.00
5,500.0	8.34	119.74	5,475.5	-172.1	301.2	-172.1	0.00	0.00	0.00
5,600.0	8.34	119.74	5,574.4	-179.3	313.7	-179.3	0.00	0.00	0.00
5,700.0	8.34	119.74	5,673.3	-186.5	326.3	-186.5	0.00	0.00	0.00
5,800.0	8.34	119.74	5,772.3	-193.7	338.9	-193.7	0.00	0.00	0.00
5,887.9	8.34	119.74	5,859.3	-200.0	350.0	-200.0	0.00	0.00	0.00
<b>Start DLS 8.00 TFO -90.25</b>									
5,900.0	8.39	113.12	5,871.2	-200.8	351.6	-200.8	8.00	0.42	-54.95
5,950.0	9.68	88.76	5,920.6	-202.1	359.1	-202.1	8.00	2.58	-48.72
6,000.0	12.19	72.20	5,969.7	-200.4	368.4	-200.4	8.00	5.03	-33.11
6,050.0	15.35	61.78	6,018.3	-195.7	379.2	-195.7	8.00	6.30	-20.85
6,100.0	18.82	54.97	6,066.1	-187.9	391.7	-187.9	8.00	6.94	-13.61
6,150.0	22.46	50.26	6,112.9	-177.2	405.6	-177.2	8.00	7.28	-9.42
6,200.0	26.20	46.82	6,158.4	-163.5	421.0	-163.5	8.00	7.48	-6.88
6,250.0	30.01	44.20	6,202.5	-147.0	437.8	-147.0	8.00	7.61	-5.25
6,300.0	33.85	42.12	6,244.9	-127.7	455.8	-127.7	8.00	7.69	-4.16
6,350.0	37.73	40.42	6,285.5	-105.7	475.1	-105.7	8.00	7.75	-3.40
6,400.0	41.62	38.99	6,324.0	-81.1	495.5	-81.1	8.00	7.79	-2.85
6,432.8	44.19	38.17	6,348.0	-63.7	509.4	-63.7	8.00	7.82	-2.51
<b>Niobrara</b>									
6,450.0	45.53	37.77	6,360.2	-54.1	516.9	-54.1	8.00	7.83	-2.33
6,500.0	49.45	36.70	6,394.0	-24.8	539.2	-24.8	8.00	7.84	-2.14
6,550.0	53.38	35.75	6,425.1	6.8	562.2	6.8	8.00	7.86	-1.90
6,600.0	57.32	34.89	6,453.6	40.3	586.0	40.3	8.00	7.87	-1.72
6,634.0	60.00	34.35	6,471.2	64.2	602.5	64.2	8.00	7.88	-1.59
<b>Start 150.0 hold at 6634.0 MD</b>									
6,700.0	60.00	34.35	6,504.2	111.4	634.8	111.4	0.00	0.00	0.00
6,784.0	60.00	34.35	6,546.2	171.4	675.8	171.4	0.00	0.00	0.00
<b>Start DLS 10.00 TFO -53.82</b>									
6,800.0	60.95	32.87	6,554.1	183.1	683.5	183.1	10.00	5.95	-9.23
6,850.0	64.03	28.42	6,577.2	221.2	706.1	221.2	10.00	6.15	-8.89
6,900.0	67.23	24.21	6,597.9	262.0	726.2	262.0	10.00	6.41	-8.43
6,950.0	70.54	20.19	6,615.9	305.2	743.8	305.2	10.00	6.62	-8.04
7,000.0	73.94	16.34	6,631.1	350.4	758.8	350.4	10.00	6.79	-7.71
7,050.0	77.40	12.61	6,643.5	397.3	770.8	397.3	10.00	6.92	-7.45
7,100.0	80.91	8.99	6,652.9	445.5	780.0	445.5	10.00	7.02	-7.25
7,150.0	84.46	5.43	6,659.3	494.7	786.2	494.7	10.00	7.09	-7.11
7,200.0	88.03	1.92	6,662.6	544.5	789.4	544.5	10.00	7.13	-7.02
7,227.6	90.00	359.99	6,663.0	572.1	789.9	572.1	10.00	7.15	-6.99
<b>Start 4161.2 hold at 7227.6 MD</b>									
7,300.0	90.00	359.99	6,663.0	644.5	789.9	644.5	0.00	0.00	0.00

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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)
7,400.0	90.00	359.99	6,663.0	744.5	789.9	744.5	0.00	0.00	0.00
7,500.0	90.00	359.99	6,663.0	844.5	789.8	844.5	0.00	0.00	0.00
7,600.0	90.00	359.99	6,663.0	944.5	789.8	944.5	0.00	0.00	0.00
7,700.0	90.00	359.99	6,663.0	1,044.5	789.8	1,044.5	0.00	0.00	0.00
7,800.0	90.00	359.99	6,663.0	1,144.5	789.8	1,144.5	0.00	0.00	0.00
7,900.0	90.00	359.99	6,663.0	1,244.5	789.8	1,244.5	0.00	0.00	0.00
8,000.0	90.00	359.99	6,663.0	1,344.5	789.7	1,344.5	0.00	0.00	0.00
8,100.0	90.00	359.99	6,663.0	1,444.5	789.7	1,444.5	0.00	0.00	0.00
8,200.0	90.00	359.99	6,663.0	1,544.5	789.7	1,544.5	0.00	0.00	0.00
8,300.0	90.00	359.99	6,663.0	1,644.5	789.7	1,644.5	0.00	0.00	0.00
8,400.0	90.00	359.99	6,663.0	1,744.5	789.7	1,744.5	0.00	0.00	0.00
8,500.0	90.00	359.99	6,663.0	1,844.5	789.6	1,844.5	0.00	0.00	0.00
8,600.0	90.00	359.99	6,663.0	1,944.5	789.6	1,944.5	0.00	0.00	0.00
8,700.0	90.00	359.99	6,663.0	2,044.5	789.6	2,044.5	0.00	0.00	0.00
8,800.0	90.00	359.99	6,663.0	2,144.5	789.6	2,144.5	0.00	0.00	0.00
8,900.0	90.00	359.99	6,663.0	2,244.5	789.6	2,244.5	0.00	0.00	0.00
9,000.0	90.00	359.99	6,663.0	2,344.5	789.5	2,344.5	0.00	0.00	0.00
9,100.0	90.00	359.99	6,663.0	2,444.5	789.5	2,444.5	0.00	0.00	0.00
9,200.0	90.00	359.99	6,663.0	2,544.5	789.5	2,544.5	0.00	0.00	0.00
9,300.0	90.00	359.99	6,663.0	2,644.5	789.5	2,644.5	0.00	0.00	0.00
9,400.0	90.00	359.99	6,663.0	2,744.5	789.5	2,744.5	0.00	0.00	0.00
9,500.0	90.00	359.99	6,663.0	2,844.5	789.4	2,844.5	0.00	0.00	0.00
9,600.0	90.00	359.99	6,663.0	2,944.5	789.4	2,944.5	0.00	0.00	0.00
9,700.0	90.00	359.99	6,663.0	3,044.5	789.4	3,044.5	0.00	0.00	0.00
9,800.0	90.00	359.99	6,663.0	3,144.5	789.4	3,144.5	0.00	0.00	0.00
9,900.0	90.00	359.99	6,663.0	3,244.5	789.4	3,244.5	0.00	0.00	0.00
10,000.0	90.00	359.99	6,663.0	3,344.5	789.3	3,344.5	0.00	0.00	0.00
10,100.0	90.00	359.99	6,663.0	3,444.5	789.3	3,444.5	0.00	0.00	0.00
10,200.0	90.00	359.99	6,663.0	3,544.5	789.3	3,544.5	0.00	0.00	0.00
10,300.0	90.00	359.99	6,663.0	3,644.5	789.3	3,644.5	0.00	0.00	0.00
10,400.0	90.00	359.99	6,663.0	3,744.5	789.3	3,744.5	0.00	0.00	0.00
10,500.0	90.00	359.99	6,663.0	3,844.5	789.2	3,844.5	0.00	0.00	0.00
10,600.0	90.00	359.99	6,663.0	3,944.5	789.2	3,944.5	0.00	0.00	0.00
10,700.0	90.00	359.99	6,663.0	4,044.5	789.2	4,044.5	0.00	0.00	0.00
10,800.0	90.00	359.99	6,663.0	4,144.5	789.2	4,144.5	0.00	0.00	0.00
10,900.0	90.00	359.99	6,663.0	4,244.5	789.2	4,244.5	0.00	0.00	0.00
11,000.0	90.00	359.99	6,663.0	4,344.5	789.1	4,344.5	0.00	0.00	0.00
11,100.0	90.00	359.99	6,663.0	4,444.5	789.1	4,444.5	0.00	0.00	0.00
11,200.0	90.00	359.99	6,663.0	4,544.5	789.1	4,544.5	0.00	0.00	0.00
11,300.0	90.00	359.99	6,663.0	4,644.5	789.1	4,644.5	0.00	0.00	0.00
11,388.9	90.00	359.99	6,663.0	4,733.3	789.1	4,733.3	0.00	0.00	0.00
TD at 11388.9									

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Hebron 0780 7-18H
<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 7-18H	<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

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Hebron 0780 7-18H PBH	0.00	360.00	6,663.0	4,733.3	789.1	1,456,994.81	2,744,022.85	40° 35' 3.112 N	106° 25' 17.812 W
- plan hits target center									
- Point									

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,432.8	6,348.0	Niobrara		0.00	

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2900	2900	0	0	Start Build 2.00
3317	3315	-15	26	Start 2571.0 hold at 3316.9 MD
5888	5859	-200	350	Start DLS 8.00 TFO -90.25
6634	6471	64	602	Start 150.0 hold at 6634.0 MD
6784	6546	171	676	Start DLS 10.00 TFO -53.82
7228	6663	572	790	Start 4161.2 hold at 7227.6 MD
11,389	6663	4733	789	TD at 11388.9

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