

# **SandRidge Energy**

**North Park Basin  
T7N-R80W-S18  
Hebron 0780 8-18H**

**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 8-18H
<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 8-18H	<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 8-18H					
Well Position	+N/-S	0.0 usft	Northing:	1,452,261.26 usft	Latitude:	40° 34' 16.260 N
	+E/-W	0.0 usft	Easting:	2,743,248.66 usft	Longitude:	106° 25' 27.207 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	11,543.5	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 8-18H	<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
<b>Start Build 2.00</b>									
2,900.0	2.00	100.62	2,900.0	-0.3	1.7	-0.3	2.00	2.00	0.00
3,000.0	4.00	100.62	2,999.8	-1.3	6.9	-1.3	2.00	2.00	0.00
3,100.0	6.00	100.62	3,099.5	-2.9	15.4	-2.9	2.00	2.00	0.00
3,200.0	8.00	100.62	3,198.7	-5.1	27.4	-5.1	2.00	2.00	0.00
3,300.0	10.00	100.62	3,297.5	-8.0	42.8	-8.0	2.00	2.00	0.00
3,400.0	12.00	100.62	3,395.6	-11.5	61.5	-11.5	2.00	2.00	0.00
3,500.0	14.00	100.62	3,493.1	-15.7	83.6	-15.7	2.00	2.00	0.00
3,600.0	16.00	100.62	3,589.6	-20.5	109.1	-20.5	2.00	2.00	0.00
3,631.7	16.63	100.62	3,620.1	-22.1	117.8	-22.1	2.00	2.00	0.00
<b>Start 2424.5 hold at 3631.7 MD</b>									
3,700.0	16.63	100.62	3,685.5	-25.7	137.0	-25.7	0.00	0.00	0.00
3,800.0	16.63	100.62	3,781.3	-31.0	165.2	-31.0	0.00	0.00	0.00
3,900.0	16.63	100.62	3,877.1	-36.2	193.3	-36.2	0.00	0.00	0.00
4,000.0	16.63	100.62	3,973.0	-41.5	221.5	-41.5	0.00	0.00	0.00
4,100.0	16.63	100.62	4,068.8	-46.8	249.6	-46.8	0.00	0.00	0.00
4,200.0	16.63	100.62	4,164.6	-52.1	277.7	-52.1	0.00	0.00	0.00
4,300.0	16.63	100.62	4,260.4	-57.3	305.9	-57.3	0.00	0.00	0.00
4,400.0	16.63	100.62	4,356.2	-62.6	334.0	-62.6	0.00	0.00	0.00
4,500.0	16.63	100.62	4,452.0	-67.9	362.1	-67.9	0.00	0.00	0.00
4,600.0	16.63	100.62	4,547.8	-73.2	390.3	-73.2	0.00	0.00	0.00
4,700.0	16.63	100.62	4,643.7	-78.5	418.4	-78.5	0.00	0.00	0.00
4,800.0	16.63	100.62	4,739.5	-83.7	446.5	-83.7	0.00	0.00	0.00
4,900.0	16.63	100.62	4,835.3	-89.0	474.7	-89.0	0.00	0.00	0.00
5,000.0	16.63	100.62	4,931.1	-94.3	502.8	-94.3	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	16.63	100.62	5,026.9	-99.6	531.0	-99.6	0.00	0.00	0.00
5,200.0	16.63	100.62	5,122.7	-104.8	559.1	-104.8	0.00	0.00	0.00
5,300.0	16.63	100.62	5,218.5	-110.1	587.2	-110.1	0.00	0.00	0.00
5,400.0	16.63	100.62	5,314.4	-115.4	615.4	-115.4	0.00	0.00	0.00
5,500.0	16.63	100.62	5,410.2	-120.7	643.5	-120.7	0.00	0.00	0.00
5,600.0	16.63	100.62	5,506.0	-125.9	671.6	-125.9	0.00	0.00	0.00
5,700.0	16.63	100.62	5,601.8	-131.2	699.8	-131.2	0.00	0.00	0.00
5,800.0	16.63	100.62	5,697.6	-136.5	727.9	-136.5	0.00	0.00	0.00
5,900.0	16.63	100.62	5,793.4	-141.8	756.1	-141.8	0.00	0.00	0.00
6,000.0	16.63	100.62	5,889.3	-147.0	784.2	-147.0	0.00	0.00	0.00
6,056.2	16.63	100.62	5,943.1	-150.0	800.0	-150.0	0.00	0.00	0.00
<b>Start DLS 8.00 TFO -58.48</b>									
6,100.0	18.70	91.27	5,984.8	-151.3	813.2	-151.3	8.00	4.72	-21.35
6,150.0	21.50	82.94	6,031.8	-150.4	830.3	-150.4	8.00	5.61	-16.66
6,200.0	24.63	76.54	6,077.8	-146.8	849.5	-146.8	8.00	6.24	-12.80
6,250.0	27.96	71.54	6,122.6	-140.7	870.8	-140.7	8.00	6.67	-10.00
6,300.0	31.44	67.55	6,166.1	-132.0	894.0	-132.0	8.00	6.96	-7.98
6,350.0	35.02	64.29	6,207.9	-120.8	919.0	-120.8	8.00	7.16	-6.52
6,400.0	38.67	61.57	6,247.9	-107.1	945.6	-107.1	8.00	7.31	-5.44
6,450.0	42.38	59.25	6,285.9	-91.0	973.9	-91.0	8.00	7.41	-4.63
6,500.0	46.13	57.25	6,321.7	-72.7	1,003.5	-72.7	8.00	7.49	-4.02
6,539.0	49.07	55.85	6,348.0	-56.8	1,027.5	-56.8	8.00	7.55	-3.58
<b>Niobrara</b>									
6,550.0	49.90	55.48	6,355.1	-52.1	1,034.4	-52.1	8.00	7.58	-3.38
6,600.0	53.71	53.90	6,386.1	-29.4	1,066.5	-29.4	8.00	7.60	-3.16
6,650.0	57.53	52.46	6,414.3	-4.6	1,099.5	-4.6	8.00	7.64	-2.87
6,682.3	60.00	51.60	6,431.0	12.3	1,121.2	12.3	8.00	7.67	-2.67
<b>Start 150.0 hold at 6682.3 MD</b>									
6,700.0	60.00	51.60	6,439.9	21.9	1,133.3	21.9	0.00	0.00	0.00
6,800.0	60.00	51.60	6,489.9	75.7	1,201.2	75.7	0.00	0.00	0.00
6,832.3	60.00	51.60	6,506.0	93.0	1,223.1	93.0	0.00	0.00	0.00
<b>Start DLS 10.00 TFO -68.41</b>									
6,850.0	60.67	49.71	6,514.8	102.8	1,235.0	102.8	10.00	3.76	-10.67
6,900.0	62.68	44.51	6,538.5	132.8	1,267.2	132.8	10.00	4.03	-10.40
6,950.0	64.88	39.50	6,560.6	166.1	1,297.2	166.1	10.00	4.40	-10.01
7,000.0	67.25	34.68	6,580.9	202.5	1,324.7	202.5	10.00	4.73	-9.64
7,050.0	69.75	30.03	6,599.3	241.8	1,349.6	241.8	10.00	5.01	-9.31
7,100.0	72.37	25.53	6,615.5	283.7	1,371.6	283.7	10.00	5.24	-9.00
7,150.0	75.09	21.16	6,629.5	327.7	1,390.6	327.7	10.00	5.44	-8.74
7,200.0	77.90	16.90	6,641.2	373.7	1,406.4	373.7	10.00	5.60	-8.52
7,250.0	80.76	12.73	6,650.4	421.2	1,419.0	421.2	10.00	5.73	-8.34
7,300.0	83.67	8.63	6,657.2	469.8	1,428.2	469.8	10.00	5.83	-8.20
7,350.0	86.62	4.57	6,661.4	519.3	1,433.9	519.3	10.00	5.89	-8.11
7,400.0	89.58	0.54	6,663.1	569.2	1,436.1	569.2	10.00	5.92	-8.06

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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)
7,407.1	90.00	359.97	6,663.1	576.3	1,436.1	576.3	10.00	5.93	-8.05
<b>Start 4136.4 hold at 7407.1 MD</b>									
7,500.0	90.00	359.97	6,663.1	669.2	1,436.1	669.2	0.00	0.00	0.00
7,600.0	90.00	359.97	6,663.1	769.2	1,436.0	769.2	0.00	0.00	0.00
7,700.0	90.00	359.97	6,663.1	869.2	1,436.0	869.2	0.00	0.00	0.00
7,800.0	90.00	359.97	6,663.1	969.2	1,435.9	969.2	0.00	0.00	0.00
7,900.0	90.00	359.97	6,663.1	1,069.2	1,435.8	1,069.2	0.00	0.00	0.00
8,000.0	90.00	359.97	6,663.1	1,169.2	1,435.8	1,169.2	0.00	0.00	0.00
8,100.0	90.00	359.97	6,663.1	1,269.2	1,435.7	1,269.2	0.00	0.00	0.00
8,200.0	90.00	359.97	6,663.1	1,369.2	1,435.7	1,369.2	0.00	0.00	0.00
8,300.0	90.00	359.97	6,663.1	1,469.2	1,435.6	1,469.2	0.00	0.00	0.00
8,400.0	90.00	359.97	6,663.1	1,569.2	1,435.5	1,569.2	0.00	0.00	0.00
8,500.0	90.00	359.97	6,663.1	1,669.2	1,435.5	1,669.2	0.00	0.00	0.00
8,600.0	90.00	359.97	6,663.1	1,769.2	1,435.4	1,769.2	0.00	0.00	0.00
8,700.0	90.00	359.97	6,663.1	1,869.2	1,435.4	1,869.2	0.00	0.00	0.00
8,800.0	90.00	359.97	6,663.1	1,969.2	1,435.3	1,969.2	0.00	0.00	0.00
8,900.0	90.00	359.97	6,663.1	2,069.2	1,435.3	2,069.2	0.00	0.00	0.00
9,000.0	90.00	359.97	6,663.1	2,169.2	1,435.2	2,169.2	0.00	0.00	0.00
9,100.0	90.00	359.97	6,663.1	2,269.2	1,435.1	2,269.2	0.00	0.00	0.00
9,200.0	90.00	359.97	6,663.1	2,369.2	1,435.1	2,369.2	0.00	0.00	0.00
9,300.0	90.00	359.97	6,663.1	2,469.2	1,435.0	2,469.2	0.00	0.00	0.00
9,400.0	90.00	359.97	6,663.1	2,569.2	1,435.0	2,569.2	0.00	0.00	0.00
9,500.0	90.00	359.97	6,663.1	2,669.2	1,434.9	2,669.2	0.00	0.00	0.00
9,600.0	90.00	359.97	6,663.1	2,769.2	1,434.8	2,769.2	0.00	0.00	0.00
9,700.0	90.00	359.97	6,663.1	2,869.2	1,434.8	2,869.2	0.00	0.00	0.00
9,800.0	90.00	359.97	6,663.1	2,969.2	1,434.7	2,969.2	0.00	0.00	0.00
9,900.0	90.00	359.97	6,663.1	3,069.2	1,434.7	3,069.2	0.00	0.00	0.00
10,000.0	90.00	359.97	6,663.1	3,169.2	1,434.6	3,169.2	0.00	0.00	0.00
10,100.0	90.00	359.97	6,663.1	3,269.2	1,434.5	3,269.2	0.00	0.00	0.00
10,200.0	90.00	359.97	6,663.1	3,369.2	1,434.5	3,369.2	0.00	0.00	0.00
10,300.0	90.00	359.97	6,663.1	3,469.2	1,434.4	3,469.2	0.00	0.00	0.00
10,400.0	90.00	359.97	6,663.1	3,569.2	1,434.4	3,569.2	0.00	0.00	0.00
10,500.0	90.00	359.97	6,663.1	3,669.2	1,434.3	3,669.2	0.00	0.00	0.00
10,600.0	90.00	359.97	6,663.1	3,769.2	1,434.2	3,769.2	0.00	0.00	0.00
10,700.0	90.00	359.97	6,663.1	3,869.2	1,434.2	3,869.2	0.00	0.00	0.00
10,800.0	90.00	359.97	6,663.1	3,969.2	1,434.1	3,969.2	0.00	0.00	0.00
10,900.0	90.00	359.97	6,663.1	4,069.2	1,434.1	4,069.2	0.00	0.00	0.00
11,000.0	90.00	359.97	6,663.1	4,169.2	1,434.0	4,169.2	0.00	0.00	0.00
11,100.0	90.00	359.97	6,663.1	4,269.2	1,433.9	4,269.2	0.00	0.00	0.00
11,200.0	90.00	359.97	6,663.1	4,369.2	1,433.9	4,369.2	0.00	0.00	0.00
11,300.0	90.00	359.97	6,663.1	4,469.2	1,433.8	4,469.2	0.00	0.00	0.00
11,400.0	90.00	359.97	6,663.1	4,569.2	1,433.8	4,569.2	0.00	0.00	0.00
11,500.0	90.00	359.97	6,663.1	4,669.2	1,433.7	4,669.2	0.00	0.00	0.00
11,543.5	90.00	359.97	6,663.1	4,712.7	1,433.7	4,712.7	0.00	0.00	0.00

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Hebron 0780 8-18H
<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 8-18H	<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)
TD at 11543.5									

### 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 8-18H	0.00	0.00	6,663.0	4,712.7	1,433.7	1,456,974.01	2,744,682.34	40° 35' 2.975 N	106° 25' 9.262 W
- plan misses target center by 0.1usft at 11543.5usft MD (6663.1 TVD, 4712.7 N, 1433.7 E)									
- Point									

### Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,539.0	6,348.0	Niobrara		0.00	

### Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2800	2800	0	0	Start Build 2.00
3632	3620	-22	118	Start 2424.5 hold at 3631.7 MD
6056	5943	-150	800	Start DLS 8.00 TFO -58.48
6682	6431	12	1121	Start 150.0 hold at 6682.3 MD
6832	6506	93	1223	Start DLS 10.00 TFO -68.41
7407	6663	576	1436	Start 4136.4 hold at 7407.1 MD
11,544	6663	4713	1434	TD at 11543.5

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