

# **SandRidge Energy**

**North Park Basin**

**T7N-R80W-S9**

**Castle 0780 5-17H20**

**Wellbore #1**

**Plan: Design #1**

## **Standard Survey Report**

**29 August, 2016**

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Castle 0780 5-17H20
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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-S9			
Site Position:		Northing:	1,457,270.18 usft	Latitude:	40° 35' 6.782 N
From:	Map	Easting:	2,753,429.57 usft	Longitude:	106° 23' 15.932 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.57 °

Well	Castle 0780 5-17H20					
Well Position	+N/-S	0.0 usft	Northing:	1,457,426.45 usft	Latitude:	40° 35' 8.331 N
	+E/-W	0.0 usft	Easting:	2,753,480.04 usft	Longitude:	106° 23' 15.299 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,118.0 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	66.98	53,192

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	193.81		

<b>Survey Tool Program</b>	<b>Date</b>	8/10/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.0	18,718.3	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-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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
<b>Start Build 2.00</b>									
2,600.0	2.00	270.00	2,600.0	0.0	-1.7	0.4	2.00	2.00	0.00
2,700.0	4.00	270.00	2,699.8	0.0	-7.0	1.7	2.00	2.00	0.00
2,800.0	6.00	270.00	2,799.5	0.0	-15.7	3.7	2.00	2.00	0.00
2,900.0	8.00	270.00	2,898.7	0.0	-27.9	6.7	2.00	2.00	0.00
3,000.0	10.00	270.00	2,997.5	0.0	-43.5	10.4	2.00	2.00	0.00
3,100.0	12.00	270.00	3,095.6	0.0	-62.6	14.9	2.00	2.00	0.00
3,200.0	14.00	270.00	3,193.1	0.0	-85.1	20.3	2.00	2.00	0.00
3,300.0	16.00	270.00	3,289.6	0.0	-111.0	26.5	2.00	2.00	0.00
3,400.0	18.00	270.00	3,385.3	0.0	-140.2	33.5	2.00	2.00	0.00
3,500.0	20.00	270.00	3,479.8	0.0	-172.8	41.2	2.00	2.00	0.00
3,600.0	22.00	270.00	3,573.2	0.0	-208.6	49.8	2.00	2.00	0.00
3,700.0	24.00	270.00	3,665.2	0.0	-247.7	59.1	2.00	2.00	0.00
3,713.6	24.27	270.00	3,677.6	0.0	-253.2	60.5	2.00	2.00	0.00
<b>Start 3482.9 hold at 3713.6 MD</b>									
3,800.0	24.27	270.00	3,756.4	0.0	-288.8	68.9	0.00	0.00	0.00
3,900.0	24.27	270.00	3,847.5	0.0	-329.9	78.8	0.00	0.00	0.00
4,000.0	24.27	270.00	3,938.7	0.0	-371.0	88.6	0.00	0.00	0.00
4,100.0	24.27	270.00	4,029.9	0.0	-412.1	98.4	0.00	0.00	0.00
4,200.0	24.27	270.00	4,121.0	0.0	-453.2	108.2	0.00	0.00	0.00
4,300.0	24.27	270.00	4,212.2	0.0	-494.3	118.0	0.00	0.00	0.00
4,400.0	24.27	270.00	4,303.3	0.0	-535.4	127.8	0.00	0.00	0.00
4,500.0	24.27	270.00	4,394.5	0.0	-576.5	137.6	0.00	0.00	0.00
4,600.0	24.27	270.00	4,485.7	0.0	-617.6	147.5	0.00	0.00	0.00
4,700.0	24.27	270.00	4,576.8	0.0	-658.7	157.3	0.00	0.00	0.00
4,800.0	24.27	270.00	4,668.0	0.0	-699.8	167.1	0.00	0.00	0.00
4,900.0	24.27	270.00	4,759.1	0.0	-740.9	176.9	0.00	0.00	0.00
5,000.0	24.27	270.00	4,850.3	0.0	-782.0	186.7	0.00	0.00	0.00

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<b>Well:</b>	Castle 0780 5-17H20	<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)
5,100.0	24.27	270.00	4,941.5	0.0	-823.2	196.5	0.00	0.00	0.00
5,200.0	24.27	270.00	5,032.6	0.0	-864.3	206.3	0.00	0.00	0.00
5,300.0	24.27	270.00	5,123.8	0.0	-905.4	216.2	0.00	0.00	0.00
5,400.0	24.27	270.00	5,214.9	0.0	-946.5	226.0	0.00	0.00	0.00
5,500.0	24.27	270.00	5,306.1	0.0	-987.6	235.8	0.00	0.00	0.00
5,600.0	24.27	270.00	5,397.3	0.0	-1,028.7	245.6	0.00	0.00	0.00
5,700.0	24.27	270.00	5,488.4	0.0	-1,069.8	255.4	0.00	0.00	0.00
5,800.0	24.27	270.00	5,579.6	0.0	-1,110.9	265.2	0.00	0.00	0.00
5,900.0	24.27	270.00	5,670.7	0.0	-1,152.0	275.0	0.00	0.00	0.00
6,000.0	24.27	270.00	5,761.9	0.0	-1,193.1	284.9	0.00	0.00	0.00
6,100.0	24.27	270.00	5,853.1	0.0	-1,234.2	294.7	0.00	0.00	0.00
6,200.0	24.27	270.00	5,944.2	0.0	-1,275.3	304.5	0.00	0.00	0.00
6,300.0	24.27	270.00	6,035.4	0.0	-1,316.4	314.3	0.00	0.00	0.00
6,400.0	24.27	270.00	6,126.6	0.0	-1,357.6	324.1	0.00	0.00	0.00
6,500.0	24.27	270.00	6,217.7	0.0	-1,398.7	333.9	0.00	0.00	0.00
6,600.0	24.27	270.00	6,308.9	0.0	-1,439.8	343.7	0.00	0.00	0.00
6,700.0	24.27	270.00	6,400.0	0.0	-1,480.9	353.6	0.00	0.00	0.00
6,800.0	24.27	270.00	6,491.2	0.0	-1,522.0	363.4	0.00	0.00	0.00
6,900.0	24.27	270.00	6,582.4	0.0	-1,563.1	373.2	0.00	0.00	0.00
7,000.0	24.27	270.00	6,673.5	0.0	-1,604.2	383.0	0.00	0.00	0.00
7,100.0	24.27	270.00	6,764.7	0.0	-1,645.3	392.8	0.00	0.00	0.00
7,196.6	24.27	270.00	6,852.7	0.0	-1,685.0	402.3	0.00	0.00	0.00
<b>Start DLS 8.00 TFO 0.00</b>									
7,200.0	24.55	270.00	6,855.8	0.0	-1,686.4	402.6	8.00	8.00	0.00
7,250.0	28.55	270.00	6,900.5	0.0	-1,708.8	408.0	8.00	8.00	0.00
7,300.0	32.55	270.00	6,943.6	0.0	-1,734.2	414.0	8.00	8.00	0.00
7,350.0	36.55	270.00	6,984.8	0.0	-1,762.5	420.8	8.00	8.00	0.00
7,400.0	40.55	270.00	7,023.9	0.0	-1,793.7	428.2	8.00	8.00	0.00
7,450.0	44.55	270.00	7,060.7	0.0	-1,827.5	436.3	8.00	8.00	0.00
7,500.0	48.55	270.00	7,095.1	0.0	-1,863.8	445.0	8.00	8.00	0.00
7,550.0	52.55	270.00	7,126.8	0.0	-1,902.4	454.2	8.00	8.00	0.00
7,600.0	56.55	270.00	7,155.8	0.0	-1,943.1	463.9	8.00	8.00	0.00
7,643.2	60.00	270.00	7,178.5	0.0	-1,979.8	472.7	8.00	8.00	0.00
<b>Start 150.0 hold at 7643.2 MD</b>									
7,694.1	60.00	270.00	7,204.0	0.0	-2,023.9	483.2	0.00	0.00	0.00
<b>Niobrara</b>									
7,700.0	60.00	270.00	7,207.0	0.0	-2,029.0	484.4	0.00	0.00	0.00
7,793.2	60.00	270.00	7,253.5	0.0	-2,109.7	503.7	0.00	0.00	0.00
<b>Start DLS 10.00 TFO -90.00</b>									
7,800.0	60.00	269.21	7,257.0	0.0	-2,115.6	505.2	10.00	0.03	-11.55
7,850.0	60.16	263.44	7,281.9	-2.8	-2,158.8	518.2	10.00	0.32	-11.53
7,900.0	60.57	257.71	7,306.6	-9.9	-2,201.7	535.3	10.00	0.82	-11.47
7,950.0	61.22	252.04	7,331.0	-21.3	-2,243.8	556.4	10.00	1.30	-11.35
8,000.0	62.11	246.44	7,354.7	-36.9	-2,285.0	581.4	10.00	1.77	-11.18

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## Survey Report

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<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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)
8,050.0	63.22	240.96	7,377.7	-56.6	-2,324.7	610.0	10.00	2.22	-10.98
8,100.0	64.53	235.58	7,399.7	-80.2	-2,362.9	642.0	10.00	2.63	-10.75
8,150.0	66.04	230.33	7,420.6	-107.6	-2,399.1	677.3	10.00	3.01	-10.50
8,200.0	67.72	225.21	7,440.3	-138.5	-2,433.2	715.4	10.00	3.36	-10.24
8,250.0	69.56	220.22	7,458.5	-172.7	-2,464.7	756.1	10.00	3.67	-9.99
8,300.0	71.53	215.35	7,475.2	-209.9	-2,493.6	799.2	10.00	3.95	-9.74
8,350.0	73.63	210.59	7,490.1	-249.9	-2,519.5	844.3	10.00	4.19	-9.52
8,400.0	75.83	205.93	7,503.3	-292.4	-2,542.3	891.0	10.00	4.40	-9.31
8,450.0	78.12	201.37	7,514.6	-337.0	-2,561.9	938.9	10.00	4.58	-9.13
8,500.0	80.48	196.89	7,523.9	-383.4	-2,578.0	987.8	10.00	4.72	-8.97
8,550.0	82.90	192.46	7,531.1	-431.3	-2,590.5	1,037.3	10.00	4.84	-8.85
8,600.0	85.36	188.09	7,536.2	-480.2	-2,599.3	1,086.9	10.00	4.92	-8.75
8,650.0	87.84	183.74	7,539.2	-529.8	-2,604.5	1,136.3	10.00	4.97	-8.69
8,693.1	90.00	180.00	7,540.0	-572.9	-2,605.9	1,178.5	10.01	5.00	-8.67
<b>Start 10026.1 hold at 8693.1 MD</b>									
8,700.0	90.00	180.00	7,540.0	-579.8	-2,605.9	1,185.2	0.00	0.00	0.00
8,800.0	90.00	180.00	7,540.0	-679.8	-2,605.9	1,282.3	0.00	0.00	0.00
8,900.0	90.00	180.00	7,540.0	-779.8	-2,605.9	1,379.4	0.00	0.00	0.00
9,000.0	90.00	180.00	7,540.0	-879.8	-2,605.9	1,476.5	0.00	0.00	0.00
9,100.0	90.00	180.00	7,540.0	-979.8	-2,605.9	1,573.6	0.00	0.00	0.00
9,200.0	90.00	180.00	7,540.0	-1,079.8	-2,605.9	1,670.7	0.00	0.00	0.00
9,300.0	90.00	180.00	7,540.0	-1,179.8	-2,605.9	1,767.8	0.00	0.00	0.00
9,400.0	90.00	180.00	7,540.0	-1,279.8	-2,605.9	1,864.9	0.00	0.00	0.00
9,500.0	90.00	180.00	7,540.0	-1,379.8	-2,605.9	1,962.1	0.00	0.00	0.00
9,600.0	90.00	180.00	7,540.0	-1,479.8	-2,605.9	2,059.2	0.00	0.00	0.00
9,700.0	90.00	180.00	7,540.0	-1,579.8	-2,605.9	2,156.3	0.00	0.00	0.00
9,800.0	90.00	180.00	7,540.0	-1,679.8	-2,605.9	2,253.4	0.00	0.00	0.00
9,900.0	90.00	180.00	7,540.0	-1,779.8	-2,605.9	2,350.5	0.00	0.00	0.00
10,000.0	90.00	180.00	7,540.0	-1,879.8	-2,605.9	2,447.6	0.00	0.00	0.00
10,100.0	90.00	180.00	7,540.0	-1,979.8	-2,605.9	2,544.7	0.00	0.00	0.00
10,200.0	90.00	180.00	7,540.0	-2,079.8	-2,605.9	2,641.8	0.00	0.00	0.00
10,300.0	90.00	180.00	7,540.0	-2,179.8	-2,605.9	2,738.9	0.00	0.00	0.00
10,400.0	90.00	180.00	7,540.0	-2,279.8	-2,605.9	2,836.0	0.00	0.00	0.00
10,500.0	90.00	180.00	7,540.0	-2,379.8	-2,605.9	2,933.1	0.00	0.00	0.00
10,600.0	90.00	180.00	7,540.0	-2,479.8	-2,605.9	3,030.2	0.00	0.00	0.00
10,700.0	90.00	180.00	7,540.0	-2,579.8	-2,605.9	3,127.4	0.00	0.00	0.00
10,800.0	90.00	180.00	7,540.0	-2,679.8	-2,605.9	3,224.5	0.00	0.00	0.00
10,900.0	90.00	180.00	7,540.0	-2,779.8	-2,605.9	3,321.6	0.00	0.00	0.00
11,000.0	90.00	180.00	7,540.0	-2,879.8	-2,605.9	3,418.7	0.00	0.00	0.00
11,100.0	90.00	180.00	7,540.0	-2,979.8	-2,605.9	3,515.8	0.00	0.00	0.00
11,200.0	90.00	180.00	7,540.0	-3,079.8	-2,605.9	3,612.9	0.00	0.00	0.00
11,300.0	90.00	180.00	7,540.0	-3,179.8	-2,605.9	3,710.0	0.00	0.00	0.00
11,400.0	90.00	180.00	7,540.0	-3,279.8	-2,605.9	3,807.1	0.00	0.00	0.00
11,500.0	90.00	180.00	7,540.0	-3,379.8	-2,605.9	3,904.2	0.00	0.00	0.00

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Castle 0780 5-17H20
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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	180.00	7,540.0	-3,479.8	-2,605.9	4,001.3	0.00	0.00	0.00
11,700.0	90.00	180.00	7,540.0	-3,579.8	-2,605.9	4,098.4	0.00	0.00	0.00
11,800.0	90.00	180.00	7,540.0	-3,679.8	-2,605.9	4,195.5	0.00	0.00	0.00
11,900.0	90.00	180.00	7,540.0	-3,779.8	-2,605.9	4,292.7	0.00	0.00	0.00
12,000.0	90.00	180.00	7,540.0	-3,879.8	-2,605.9	4,389.8	0.00	0.00	0.00
12,100.0	90.00	180.00	7,540.0	-3,979.8	-2,605.9	4,486.9	0.00	0.00	0.00
12,200.0	90.00	180.00	7,540.0	-4,079.8	-2,605.9	4,584.0	0.00	0.00	0.00
12,300.0	90.00	180.00	7,540.0	-4,179.8	-2,605.9	4,681.1	0.00	0.00	0.00
12,400.0	90.00	180.00	7,540.0	-4,279.8	-2,605.9	4,778.2	0.00	0.00	0.00
12,500.0	90.00	180.00	7,540.0	-4,379.8	-2,605.9	4,875.3	0.00	0.00	0.00
12,600.0	90.00	180.00	7,540.0	-4,479.8	-2,605.9	4,972.4	0.00	0.00	0.00
12,700.0	90.00	180.00	7,540.0	-4,579.8	-2,605.9	5,069.5	0.00	0.00	0.00
12,800.0	90.00	180.00	7,540.0	-4,679.8	-2,605.9	5,166.6	0.00	0.00	0.00
12,900.0	90.00	180.00	7,540.0	-4,779.8	-2,605.9	5,263.7	0.00	0.00	0.00
13,000.0	90.00	180.00	7,540.0	-4,879.8	-2,605.9	5,360.8	0.00	0.00	0.00
13,100.0	90.00	180.00	7,540.0	-4,979.8	-2,605.9	5,457.9	0.00	0.00	0.00
13,200.0	90.00	180.00	7,540.0	-5,079.8	-2,605.9	5,555.1	0.00	0.00	0.00
13,300.0	90.00	180.00	7,540.0	-5,179.8	-2,605.9	5,652.2	0.00	0.00	0.00
13,400.0	90.00	180.00	7,540.0	-5,279.8	-2,605.9	5,749.3	0.00	0.00	0.00
13,500.0	90.00	180.00	7,540.0	-5,379.8	-2,605.9	5,846.4	0.00	0.00	0.00
13,600.0	90.00	180.00	7,540.0	-5,479.8	-2,605.9	5,943.5	0.00	0.00	0.00
13,700.0	90.00	180.00	7,540.0	-5,579.8	-2,605.9	6,040.6	0.00	0.00	0.00
13,800.0	90.00	180.00	7,540.0	-5,679.8	-2,605.9	6,137.7	0.00	0.00	0.00
13,900.0	90.00	180.00	7,540.0	-5,779.8	-2,605.9	6,234.8	0.00	0.00	0.00
14,000.0	90.00	180.00	7,540.0	-5,879.8	-2,605.9	6,331.9	0.00	0.00	0.00
14,100.0	90.00	180.00	7,540.0	-5,979.8	-2,605.9	6,429.0	0.00	0.00	0.00
14,200.0	90.00	180.00	7,540.0	-6,079.8	-2,605.9	6,526.1	0.00	0.00	0.00
14,300.0	90.00	180.00	7,540.0	-6,179.8	-2,605.9	6,623.2	0.00	0.00	0.00
14,400.0	90.00	180.00	7,540.0	-6,279.8	-2,605.9	6,720.4	0.00	0.00	0.00
14,500.0	90.00	180.00	7,540.0	-6,379.8	-2,605.9	6,817.5	0.00	0.00	0.00
14,600.0	90.00	180.00	7,540.0	-6,479.8	-2,605.9	6,914.6	0.00	0.00	0.00
14,700.0	90.00	180.00	7,540.0	-6,579.8	-2,605.9	7,011.7	0.00	0.00	0.00
14,800.0	90.00	180.00	7,540.0	-6,679.8	-2,605.9	7,108.8	0.00	0.00	0.00
14,900.0	90.00	180.00	7,540.0	-6,779.8	-2,605.9	7,205.9	0.00	0.00	0.00
15,000.0	90.00	180.00	7,540.0	-6,879.8	-2,605.9	7,303.0	0.00	0.00	0.00
15,100.0	90.00	180.00	7,540.0	-6,979.8	-2,605.9	7,400.1	0.00	0.00	0.00
15,200.0	90.00	180.00	7,540.0	-7,079.8	-2,605.9	7,497.2	0.00	0.00	0.00
15,300.0	90.00	180.00	7,540.0	-7,179.8	-2,605.9	7,594.3	0.00	0.00	0.00
15,400.0	90.00	180.00	7,540.0	-7,279.8	-2,605.9	7,691.4	0.00	0.00	0.00
15,500.0	90.00	180.00	7,540.0	-7,379.8	-2,605.9	7,788.5	0.00	0.00	0.00
15,600.0	90.00	180.00	7,540.0	-7,479.8	-2,605.9	7,885.7	0.00	0.00	0.00
15,700.0	90.00	180.00	7,540.0	-7,579.8	-2,605.9	7,982.8	0.00	0.00	0.00
15,800.0	90.00	180.00	7,540.0	-7,679.8	-2,605.9	8,079.9	0.00	0.00	0.00

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Castle 0780 5-17H20
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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)
15,900.0	90.00	180.00	7,540.0	-7,779.8	-2,605.9	8,177.0	0.00	0.00	0.00
16,000.0	90.00	180.00	7,540.0	-7,879.8	-2,605.9	8,274.1	0.00	0.00	0.00
16,100.0	90.00	180.00	7,540.0	-7,979.8	-2,605.9	8,371.2	0.00	0.00	0.00
16,200.0	90.00	180.00	7,540.0	-8,079.8	-2,605.9	8,468.3	0.00	0.00	0.00
16,300.0	90.00	180.00	7,540.0	-8,179.8	-2,605.9	8,565.4	0.00	0.00	0.00
16,400.0	90.00	180.00	7,540.0	-8,279.8	-2,605.9	8,662.5	0.00	0.00	0.00
16,500.0	90.00	180.00	7,540.0	-8,379.8	-2,605.9	8,759.6	0.00	0.00	0.00
16,600.0	90.00	180.00	7,540.0	-8,479.8	-2,605.9	8,856.7	0.00	0.00	0.00
16,700.0	90.00	180.00	7,540.0	-8,579.8	-2,605.9	8,953.8	0.00	0.00	0.00
16,800.0	90.00	180.00	7,540.0	-8,679.8	-2,605.9	9,051.0	0.00	0.00	0.00
16,900.0	90.00	180.00	7,540.0	-8,779.8	-2,605.9	9,148.1	0.00	0.00	0.00
17,000.0	90.00	180.00	7,540.0	-8,879.8	-2,605.9	9,245.2	0.00	0.00	0.00
17,100.0	90.00	180.00	7,540.0	-8,979.8	-2,605.9	9,342.3	0.00	0.00	0.00
17,200.0	90.00	180.00	7,540.0	-9,079.8	-2,605.9	9,439.4	0.00	0.00	0.00
17,300.0	90.00	180.00	7,540.0	-9,179.8	-2,605.9	9,536.5	0.00	0.00	0.00
17,400.0	90.00	180.00	7,540.0	-9,279.8	-2,605.9	9,633.6	0.00	0.00	0.00
17,500.0	90.00	180.00	7,540.0	-9,379.8	-2,605.9	9,730.7	0.00	0.00	0.00
17,600.0	90.00	180.00	7,540.0	-9,479.8	-2,605.9	9,827.8	0.00	0.00	0.00
17,700.0	90.00	180.00	7,540.0	-9,579.8	-2,605.9	9,924.9	0.00	0.00	0.00
17,800.0	90.00	180.00	7,540.0	-9,679.8	-2,605.9	10,022.0	0.00	0.00	0.00
17,900.0	90.00	180.00	7,540.0	-9,779.8	-2,605.9	10,119.1	0.00	0.00	0.00
18,000.0	90.00	180.00	7,540.0	-9,879.8	-2,605.9	10,216.3	0.00	0.00	0.00
18,100.0	90.00	180.00	7,540.0	-9,979.8	-2,605.9	10,313.4	0.00	0.00	0.00
18,200.0	90.00	180.00	7,540.0	-10,079.8	-2,605.9	10,410.5	0.00	0.00	0.00
18,300.0	90.00	180.00	7,540.0	-10,179.8	-2,605.9	10,507.6	0.00	0.00	0.00
18,400.0	90.00	180.00	7,540.0	-10,279.8	-2,605.9	10,604.7	0.00	0.00	0.00
18,500.0	90.00	180.00	7,540.0	-10,379.8	-2,605.9	10,701.8	0.00	0.00	0.00
18,600.0	90.00	180.00	7,540.0	-10,479.8	-2,605.9	10,798.9	0.00	0.00	0.00
18,700.0	90.00	180.00	7,540.0	-10,579.8	-2,605.9	10,896.0	0.00	0.00	0.00
18,719.3	90.00	180.00	7,540.0	-10,599.1	-2,605.9	10,914.7	0.00	0.00	0.00
TD at 18719.3									

### Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Castle 5	0.00	360.00	7,540.0	-10,599.1	-2,605.9	1,446,827.39	2,750,874.11	40° 33' 23.341 N	106° 23' 47.684 W
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

# SandRidge Energy

## Survey Report

<b>Company:</b>	SandRidge Energy	<b>Local Co-ordinate Reference:</b>	Well Castle 0780 5-17H20
<b>Project:</b>	North Park Basin	<b>TVD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Site:</b>	T7N-R80W-S9	<b>MD Reference:</b>	WELL @ 8134.0usft (Original Well Elev)
<b>Well:</b>	Castle 0780 5-17H20	<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

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,694.1	7,204.0	Niobrara		0.00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
2500	2500	0	0	Start Build 2.00	
3714	3678	0	-253	Start 3482.9 hold at 3713.6 MD	
7197	6853	0	-1685	Start DLS 8.00 TFO 0.00	
7643	7179	0	-1980	Start 150.0 hold at 7643.2 MD	
7793	7254	0	-2110	Start DLS 10.00 TFO -90.00	
8693	7540	-573	-2606	Start 10026.1 hold at 8693.1 MD	
18,719	7540	-10,599	-2606	TD at 18719.3	

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