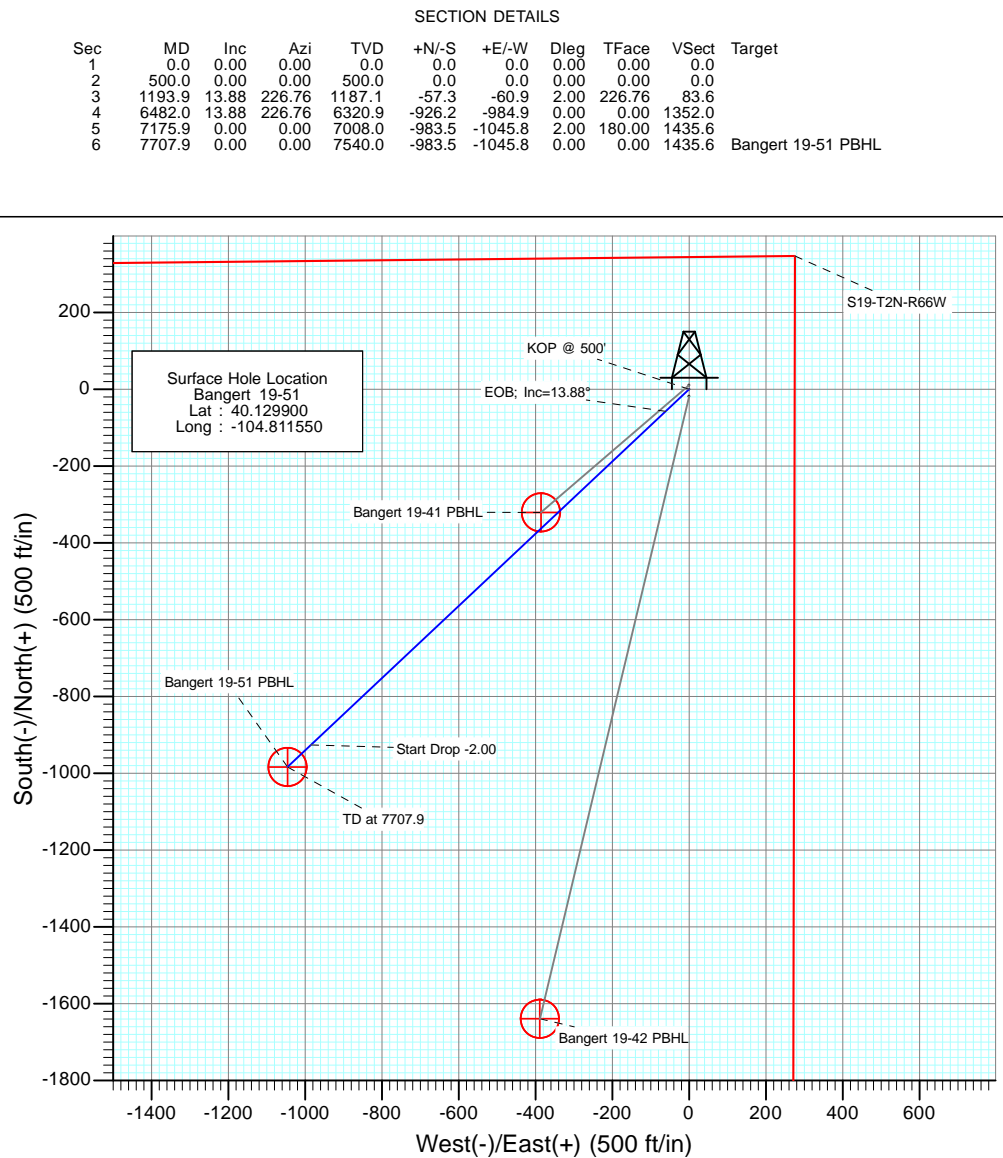
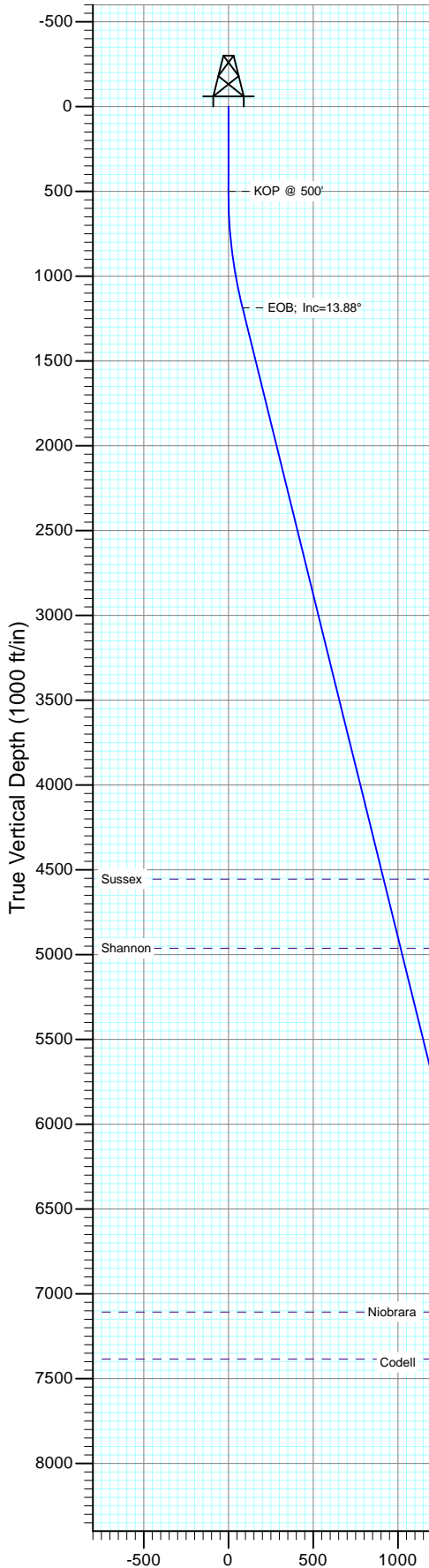
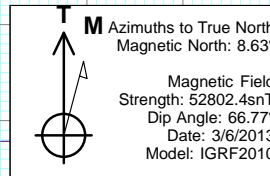




Project: Colorado  
Site: SEC 19-T2N-R66W  
Well: Bangert 19-51  
Wellbore: DD  
Design: Plan #1



DESIGN TARGET DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Bangert 19-51 PBHL	-983.5	-1045.8	1289924.58	3191470.66	40.127200	-104.815290



Plan #1  
Bangert 19-51  
13xxx; LR  
WELL @ 4887.0ft (Cade)  
Ground Elevation @ 4872.0  
North American Datum 1983  
Well Bangert 19-51, True North

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4555.0	4663.0	Sussex
4963.0	5083.3	Shannon
7108.0	7275.9	Niobrara
7384.0	7551.9	Codell

Vertical Section at 226.76° (1000 ft/in)

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Company:</b>	Sundance Energy	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Project:</b>	Colorado	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site:</b>	SEC 19-T2N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	Colorado		
<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		SEC 19-T2N-R66W			
Site Position:		Northing:	1,290,927.13 ft	Latitude:	40.129930
From:	Lat/Long	Easting:	3,192,508.73 ft	Longitude:	-104.811550
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.44 °

Well	Bangert 19-51					
Well Position	+N/-S	0.0 ft	Northing:	1,290,916.20 ft	Latitude:	40.129900
	+E/-W	0.0 ft	Easting:	3,192,508.81 ft	Longitude:	-104.811550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,872.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/6/2013	8.63	66.77	52,802

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	226.76

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,193.9	13.88	226.76	1,187.1	-57.3	-60.9	2.00	2.00	0.00	226.76	
6,482.0	13.88	226.76	6,320.9	-926.2	-984.9	0.00	0.00	0.00	0.00	
7,175.9	0.00	0.00	7,008.0	-983.5	-1,045.8	2.00	-2.00	0.00	180.00	
7,707.9	0.00	0.00	7,540.0	-983.5	-1,045.8	0.00	0.00	0.00	0.00	Bangert 19-51 PBHL

# Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Company:</b>	Sundance Energy	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Project:</b>	Colorado	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site:</b>	SEC 19-T2N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	KOP @ 500'
600.0	2.00	226.76	600.0	-1.2	-1.3	1.7	2.00	2.00	
700.0	4.00	226.76	699.8	-4.8	-5.1	7.0	2.00	2.00	
800.0	6.00	226.76	799.5	-10.8	-11.4	15.7	2.00	2.00	
900.0	8.00	226.76	898.7	-19.1	-20.3	27.9	2.00	2.00	
1,000.0	10.00	226.76	997.5	-29.8	-31.7	43.5	2.00	2.00	
1,100.0	12.00	226.76	1,095.6	-42.9	-45.6	62.6	2.00	2.00	
1,193.9	13.88	226.76	1,187.1	-57.3	-60.9	83.6	2.00	2.00	EOB; Inc=13.88°
1,200.0	13.88	226.76	1,193.1	-58.3	-62.0	85.1	0.00	0.00	
1,300.0	13.88	226.76	1,290.1	-74.7	-79.5	109.1	0.00	0.00	
1,400.0	13.88	226.76	1,387.2	-91.2	-96.9	133.1	0.00	0.00	
1,500.0	13.88	226.76	1,484.3	-107.6	-114.4	157.0	0.00	0.00	
1,600.0	13.88	226.76	1,581.4	-124.0	-131.9	181.0	0.00	0.00	
1,700.0	13.88	226.76	1,678.5	-140.5	-149.3	205.0	0.00	0.00	
1,800.0	13.88	226.76	1,775.5	-156.9	-166.8	229.0	0.00	0.00	
1,900.0	13.88	226.76	1,872.6	-173.3	-184.3	253.0	0.00	0.00	
2,000.0	13.88	226.76	1,969.7	-189.8	-201.8	277.0	0.00	0.00	
2,100.0	13.88	226.76	2,066.8	-206.2	-219.2	301.0	0.00	0.00	
2,200.0	13.88	226.76	2,163.9	-222.6	-236.7	324.9	0.00	0.00	
2,300.0	13.88	226.76	2,260.9	-239.0	-254.2	348.9	0.00	0.00	
2,400.0	13.88	226.76	2,358.0	-255.5	-271.7	372.9	0.00	0.00	
2,500.0	13.88	226.76	2,455.1	-271.9	-289.1	396.9	0.00	0.00	
2,600.0	13.88	226.76	2,552.2	-288.3	-306.6	420.9	0.00	0.00	
2,700.0	13.88	226.76	2,649.3	-304.8	-324.1	444.9	0.00	0.00	
2,800.0	13.88	226.76	2,746.3	-321.2	-341.6	468.9	0.00	0.00	
2,900.0	13.88	226.76	2,843.4	-337.6	-359.0	492.8	0.00	0.00	
3,000.0	13.88	226.76	2,940.5	-354.1	-376.5	516.8	0.00	0.00	
3,100.0	13.88	226.76	3,037.6	-370.5	-394.0	540.8	0.00	0.00	
3,200.0	13.88	226.76	3,134.7	-386.9	-411.4	564.8	0.00	0.00	
3,300.0	13.88	226.76	3,231.8	-403.4	-428.9	588.8	0.00	0.00	
3,400.0	13.88	226.76	3,328.8	-419.8	-446.4	612.8	0.00	0.00	
3,500.0	13.88	226.76	3,425.9	-436.2	-463.9	636.8	0.00	0.00	
3,600.0	13.88	226.76	3,523.0	-452.7	-481.3	660.7	0.00	0.00	
3,700.0	13.88	226.76	3,620.1	-469.1	-498.8	684.7	0.00	0.00	
3,800.0	13.88	226.76	3,717.2	-485.5	-516.3	708.7	0.00	0.00	
3,900.0	13.88	226.76	3,814.2	-502.0	-533.8	732.7	0.00	0.00	
4,000.0	13.88	226.76	3,911.3	-518.4	-551.2	756.7	0.00	0.00	
4,100.0	13.88	226.76	4,008.4	-534.8	-568.7	780.7	0.00	0.00	
4,200.0	13.88	226.76	4,105.5	-551.3	-586.2	804.7	0.00	0.00	
4,300.0	13.88	226.76	4,202.6	-567.7	-603.6	828.6	0.00	0.00	
4,400.0	13.88	226.76	4,299.6	-584.1	-621.1	852.6	0.00	0.00	
4,500.0	13.88	226.76	4,396.7	-600.6	-638.6	876.6	0.00	0.00	
4,600.0	13.88	226.76	4,493.8	-617.0	-656.1	900.6	0.00	0.00	
4,663.0	13.88	226.76	4,555.0	-627.3	-667.1	915.7	0.00	0.00	Sussex
4,700.0	13.88	226.76	4,590.9	-633.4	-673.5	924.6	0.00	0.00	
4,800.0	13.88	226.76	4,688.0	-649.9	-691.0	948.6	0.00	0.00	
4,900.0	13.88	226.76	4,785.0	-666.3	-708.5	972.6	0.00	0.00	

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Company:</b>	Sundance Energy	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Project:</b>	Colorado	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site:</b>	SEC 19-T2N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,000.0	13.88	226.76	4,882.1	-682.7	-726.0	996.5	0.00	0.00	
5,083.3	13.88	226.76	4,963.0	-696.4	-740.5	1,016.5	0.00	0.00	Shannon
5,100.0	13.88	226.76	4,979.2	-699.1	-743.4	1,020.5	0.00	0.00	
5,200.0	13.88	226.76	5,076.3	-715.6	-760.9	1,044.5	0.00	0.00	
5,300.0	13.88	226.76	5,173.4	-732.0	-778.4	1,068.5	0.00	0.00	
5,400.0	13.88	226.76	5,270.5	-748.4	-795.8	1,092.5	0.00	0.00	
5,500.0	13.88	226.76	5,367.5	-764.9	-813.3	1,116.5	0.00	0.00	
5,600.0	13.88	226.76	5,464.6	-781.3	-830.8	1,140.5	0.00	0.00	
5,700.0	13.88	226.76	5,561.7	-797.7	-848.3	1,164.4	0.00	0.00	
5,800.0	13.88	226.76	5,658.8	-814.2	-865.7	1,188.4	0.00	0.00	
5,900.0	13.88	226.76	5,755.9	-830.6	-883.2	1,212.4	0.00	0.00	
6,000.0	13.88	226.76	5,852.9	-847.0	-900.7	1,236.4	0.00	0.00	
6,100.0	13.88	226.76	5,950.0	-863.5	-918.2	1,260.4	0.00	0.00	
6,200.0	13.88	226.76	6,047.1	-879.9	-935.6	1,284.4	0.00	0.00	
6,300.0	13.88	226.76	6,144.2	-896.3	-953.1	1,308.4	0.00	0.00	
6,400.0	13.88	226.76	6,241.3	-912.8	-970.6	1,332.3	0.00	0.00	
6,482.0	13.88	226.76	6,320.9	-926.2	-984.9	1,352.0	0.00	0.00	Start Drop -2.00
6,500.0	13.52	226.76	6,338.4	-929.2	-988.0	1,356.3	2.00	-2.00	
6,600.0	11.52	226.76	6,436.0	-944.0	-1,003.8	1,378.0	2.00	-2.00	
6,700.0	9.52	226.76	6,534.3	-956.5	-1,017.1	1,396.2	2.00	-2.00	
6,800.0	7.52	226.76	6,633.2	-966.7	-1,027.9	1,411.0	2.00	-2.00	
6,900.0	5.52	226.76	6,732.5	-974.4	-1,036.2	1,422.4	2.00	-2.00	
7,000.0	3.52	226.76	6,832.2	-979.8	-1,041.9	1,430.2	2.00	-2.00	
7,100.0	1.52	226.76	6,932.1	-982.8	-1,045.1	1,434.6	2.00	-2.00	
7,175.9	0.00	0.00	7,008.0	-983.5	-1,045.8	1,435.6	2.00	-2.00	EOD; Inc=0°
7,200.0	0.00	0.00	7,032.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,275.9	0.00	0.00	7,108.0	-983.5	-1,045.8	1,435.6	0.00	0.00	Niobrara
7,300.0	0.00	0.00	7,132.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,400.0	0.00	0.00	7,232.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,500.0	0.00	0.00	7,332.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,551.9	0.00	0.00	7,384.0	-983.5	-1,045.8	1,435.6	0.00	0.00	Codell
7,600.0	0.00	0.00	7,432.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,700.0	0.00	0.00	7,532.1	-983.5	-1,045.8	1,435.6	0.00	0.00	
7,707.9	0.00	0.00	7,540.0	-983.5	-1,045.8	1,435.6	0.00	0.00	TD at 7707.9

### Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Bangert 19-51 PBHL - plan hits target center - Circle (radius 50.0)	0.00	0.00	7,540.0	-983.5	-1,045.8	1,289,924.58	3,191,470.66	40.127200	-104.815290
Bangert 19-42 PBHL - plan misses target center by 928.3ft at 7707.9ft MD (7540.0 TVD, -983.5 N, -1045.8 E) - Circle (radius 50.0)	0.00	0.00	7,540.0	-1,639.3	-388.7	1,289,273.98	3,192,132.85	40.125400	-104.812940

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Company:</b>	Sundance Energy	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Project:</b>	Colorado	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site:</b>	SEC 19-T2N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,663.0	4,555.0	Sussex		0.00		
5,083.3	4,963.0	Shannon		0.00		
7,275.9	7,108.0	Niobrara		0.00		
7,551.9	7,384.0	Codell		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
500.0	500.0	0.0	0.0	KOP @ 500'	
1,193.9	1,187.1	-57.3	-60.9	EOB; Inc=13.88°	
6,482.0	6,320.9	-926.2	-984.9	Start Drop -2.00	
7,175.9	7,008.0	-983.5	-1,045.8	EOD; Inc=0°	
7,707.9	7,540.0	-983.5	-1,045.8	TD at 7707.9	

# **Sundance Energy**

**Colorado**

**SEC 19-T2N-R66W**

**Bangert 19-51**

**DD**

**Plan #1**

## **Anticollision Report**

**06 March, 2013**

## Anticollision Report

<b>Company:</b>	Sundance Energy	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Project:</b>	Colorado	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Reference Site:</b>	SEC 19-T2N-R66W	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 500.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	3/6/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	7,707.9	Plan #1 (DD)	MWD	Geolink MWD

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
SEC 19-T2N-R66W						
Bangert 19-41 - DD - Plan #1	500.0	500.0	10.9	9.2	6.450	CC, ES
Bangert 19-41 - DD - Plan #1	600.0	600.0	12.2	10.1	5.965	SF
Bangert 19-42 - DD - Plan #1	400.0	400.0	18.2	16.9	13.556	CC, ES
Bangert 19-42 - DD - Plan #1	600.0	598.5	23.8	21.7	11.645	SF

# Anticollision Report

<b>Company:</b>	Sundance Energy	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Project:</b>	Colorado	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Reference Site:</b>	SEC 19-T2N-R66W	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design SEC 19-T2N-R66W - Bangert 19-41 - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	10.9	0.0	10.9					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	10.9	0.0	10.9	10.6	0.30	36.804		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	10.9	0.0	10.9	10.3	0.65	16.910		
300.0	300.0	300.0	300.0	0.5	0.5	0.00	10.9	0.0	10.9	9.9	0.99	10.977		
400.0	400.0	400.0	400.0	0.7	0.7	0.00	10.9	0.0	10.9	9.6	1.34	8.126		
500.0	500.0	500.0	500.0	0.8	0.8	0.00	10.9	0.0	10.9	9.2	1.69	6.450 CC, ES		
600.0	600.0	600.0	600.0	1.0	1.0	139.21	10.9	0.0	12.2	10.1	2.04	5.965 SF		
700.0	699.8	699.8	699.8	1.2	1.2	151.12	10.9	0.0	16.5	14.1	2.39	6.901		
800.0	799.5	800.2	800.2	1.4	1.4	159.41	9.8	-1.3	22.9	20.2	2.74	8.357		
900.0	898.7	900.8	900.7	1.7	1.6	163.72	6.3	-5.3	29.6	26.5	3.09	9.582		
1,000.0	997.5	1,000.9	1,000.4	1.9	1.8	166.46	1.1	-11.5	37.0	33.6	3.43	10.787		
1,100.0	1,095.6	1,100.3	1,099.5	2.3	2.0	169.02	-4.4	-17.8	47.7	43.9	3.77	12.644		
1,200.0	1,193.1	1,199.3	1,198.1	2.7	2.2	171.16	-9.7	-24.1	61.8	57.7	4.11	15.059		
1,300.0	1,290.1	1,298.1	1,296.5	3.1	2.4	172.68	-15.1	-30.3	77.5	73.1	4.45	17.409		
1,400.0	1,387.2	1,396.8	1,394.9	3.5	2.6	173.69	-20.5	-36.6	93.3	88.5	4.80	19.425		
1,500.0	1,484.3	1,495.5	1,493.3	3.9	2.8	174.41	-25.9	-42.8	109.0	103.9	5.15	21.173		
1,600.0	1,581.4	1,594.3	1,591.7	4.4	3.0	174.94	-31.2	-49.1	124.8	119.3	5.50	22.702		
1,700.0	1,678.5	1,693.0	1,690.1	4.8	3.2	175.36	-36.6	-55.3	140.6	134.7	5.84	24.051		
1,800.0	1,775.5	1,791.8	1,788.5	5.3	3.4	175.69	-42.0	-61.6	156.3	150.1	6.19	25.249		
1,900.0	1,872.6	1,890.5	1,886.9	5.7	3.7	175.96	-47.4	-67.9	172.1	165.6	6.54	26.320		
2,000.0	1,969.7	1,989.3	1,985.3	6.2	3.9	176.18	-52.7	-74.1	187.9	181.0	6.89	27.284		
2,100.0	2,066.8	2,088.0	2,083.7	6.6	4.1	176.37	-58.1	-80.4	203.7	196.5	7.23	28.156		
2,200.0	2,163.9	2,186.7	2,182.1	7.1	4.3	176.54	-63.5	-86.6	219.5	211.9	7.58	28.948		
2,300.0	2,260.9	2,285.5	2,280.5	7.5	4.5	176.68	-68.9	-92.9	235.3	227.4	7.93	29.670		
2,400.0	2,358.0	2,384.2	2,378.9	8.0	4.8	176.80	-74.2	-99.1	251.1	242.8	8.28	30.333		
2,500.0	2,455.1	2,483.0	2,477.3	8.4	5.0	176.91	-79.6	-105.4	266.9	258.3	8.63	30.942		
2,600.0	2,552.2	2,581.7	2,575.7	8.9	5.2	177.01	-85.0	-111.7	282.7	273.7	8.97	31.504		
2,700.0	2,649.3	2,680.5	2,674.1	9.3	5.4	177.09	-90.4	-117.9	298.5	289.2	9.32	32.024		
2,800.0	2,746.3	2,779.2	2,772.5	9.8	5.6	177.17	-95.7	-124.2	314.3	304.6	9.67	32.507		
2,900.0	2,843.4	2,877.9	2,870.9	10.3	5.9	177.24	-101.1	-130.4	330.1	320.1	10.02	32.957		
3,000.0	2,940.5	2,976.7	2,969.3	10.7	6.1	177.30	-106.5	-136.7	345.9	335.5	10.36	33.376		
3,100.0	3,037.6	3,075.4	3,067.7	11.2	6.3	177.36	-111.9	-142.9	361.7	351.0	10.71	33.769		
3,200.0	3,134.7	3,174.2	3,166.1	11.6	6.5	177.42	-117.2	-149.2	377.5	366.4	11.06	34.136		
3,300.0	3,231.8	3,272.9	3,264.5	12.1	6.8	177.47	-122.6	-155.5	393.3	381.9	11.41	34.482		
3,400.0	3,328.8	3,371.7	3,362.9	12.5	7.0	177.51	-128.0	-161.7	409.1	397.3	11.75	34.807		
3,500.0	3,425.9	3,470.4	3,461.3	13.0	7.2	177.55	-133.4	-168.0	424.9	412.8	12.10	35.113		
3,600.0	3,523.0	3,569.1	3,559.7	13.4	7.4	177.59	-138.7	-174.2	440.7	428.2	12.45	35.402		
3,700.0	3,620.1	3,667.9	3,658.1	13.9	7.6	177.63	-144.1	-180.5	456.5	443.7	12.80	35.676		
3,800.0	3,717.2	3,766.6	3,756.5	14.4	7.9	177.66	-149.5	-186.7	472.3	459.2	13.14	35.935		
3,900.0	3,814.2	3,865.4	3,854.9	14.8	8.1	177.69	-154.9	-193.0	488.1	474.6	13.49	36.181		

# Anticollision Report

<b>Company:</b>	Sundance Energy	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Project:</b>	Colorado	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Reference Site:</b>	SEC 19-T2N-R66W	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design SEC 19-T2N-R66W - Bangert 19-42 - DD - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-18.2	0.0	18.2					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-18.2	0.0	18.2	17.9	0.30	61.401		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-18.2	0.0	18.2	17.6	0.65	28.211		
300.0	300.0	300.0	300.0	0.5	0.5	-180.00	-18.2	0.0	18.2	17.2	0.99	18.313		
400.0	400.0	400.0	400.0	0.7	0.7	-180.00	-18.2	0.0	18.2	16.9	1.34	13.556 CC, ES		
500.0	500.0	499.3	499.3	0.8	0.8	-178.84	-19.9	-0.4	19.9	18.2	1.69	11.756		
600.0	600.0	598.5	598.4	1.0	1.0	-45.88	-24.9	-1.6	23.8	21.7	2.04	11.645 SF		
700.0	699.8	697.5	697.0	1.2	1.2	-49.51	-33.2	-3.6	28.6	26.2	2.40	11.937		
800.0	799.5	796.3	795.0	1.4	1.5	-54.71	-44.8	-6.4	34.7	32.0	2.78	12.484		
900.0	898.7	894.7	892.2	1.7	1.8	-60.28	-59.7	-9.9	42.4	39.1	3.22	13.151		
1,000.0	997.5	992.8	988.6	1.9	2.1	-65.54	-77.6	-14.2	51.7	47.9	3.74	13.809		
1,100.0	1,095.6	1,090.4	1,083.8	2.3	2.5	-70.19	-98.7	-19.3	62.9	58.5	4.37	14.375		
1,200.0	1,193.1	1,187.7	1,177.8	2.7	2.9	-74.16	-122.9	-25.1	75.9	70.8	5.12	14.829		
1,300.0	1,290.1	1,286.2	1,272.5	3.1	3.4	-77.18	-149.3	-31.4	90.4	84.5	5.92	15.272		
1,400.0	1,387.2	1,385.1	1,367.5	3.5	3.9	-79.35	-175.8	-37.8	105.1	98.4	6.75	15.574		
1,500.0	1,484.3	1,483.9	1,462.5	3.9	4.4	-80.98	-202.4	-44.2	120.0	112.4	7.60	15.788		
1,600.0	1,581.4	1,582.8	1,557.5	4.4	4.9	-82.26	-228.9	-50.5	134.9	126.4	8.46	15.944		
1,700.0	1,678.5	1,681.6	1,652.5	4.8	5.4	-83.28	-255.5	-56.9	149.8	140.5	9.33	16.063		
1,800.0	1,775.5	1,780.4	1,747.5	5.3	5.9	-84.12	-282.0	-63.3	164.8	154.6	10.20	16.155		
1,900.0	1,872.6	1,879.3	1,842.5	5.7	6.4	-84.81	-308.6	-69.6	179.9	168.8	11.08	16.228		
2,000.0	1,969.7	1,978.1	1,937.5	6.2	6.9	-85.40	-335.1	-76.0	194.9	182.9	11.97	16.288		
2,100.0	2,066.8	2,077.0	2,032.5	6.6	7.4	-85.91	-361.7	-82.4	210.0	197.1	12.85	16.337		
2,200.0	2,163.9	2,175.8	2,127.5	7.1	7.9	-86.34	-388.2	-88.7	225.0	211.3	13.74	16.377		
2,300.0	2,260.9	2,274.7	2,222.5	7.5	8.4	-86.73	-414.8	-95.1	240.1	225.5	14.63	16.412		
2,400.0	2,358.0	2,373.5	2,317.5	8.0	8.9	-87.06	-441.3	-101.4	255.2	239.7	15.52	16.442		
2,500.0	2,455.1	2,472.3	2,412.5	8.4	9.4	-87.36	-467.8	-107.8	270.3	253.9	16.42	16.467		
2,600.0	2,552.2	2,571.2	2,507.5	8.9	9.9	-87.63	-494.4	-114.2	285.4	268.1	17.31	16.490		
2,700.0	2,649.3	2,670.0	2,602.5	9.3	10.4	-87.87	-520.9	-120.5	300.6	282.4	18.21	16.509		
2,800.0	2,746.3	2,768.9	2,697.5	9.8	10.9	-88.09	-547.5	-126.9	315.7	296.6	19.10	16.527		
2,900.0	2,843.4	2,867.7	2,792.5	10.3	11.4	-88.29	-574.0	-133.3	330.8	310.8	20.00	16.542		
3,000.0	2,940.5	2,966.6	2,887.5	10.7	11.9	-88.47	-600.6	-139.6	345.9	325.0	20.90	16.556		
3,100.0	3,037.6	3,065.4	2,982.5	11.2	12.4	-88.63	-627.1	-146.0	361.1	339.3	21.79	16.568		
3,200.0	3,134.7	3,164.3	3,077.5	11.6	12.9	-88.78	-653.7	-152.4	376.2	353.5	22.69	16.580		
3,300.0	3,231.8	3,263.1	3,172.5	12.1	13.4	-88.92	-680.2	-158.7	391.3	367.8	23.59	16.590		
3,400.0	3,328.8	3,361.9	3,267.5	12.5	13.9	-89.05	-706.8	-165.1	406.5	382.0	24.49	16.599		
3,500.0	3,425.9	3,460.8	3,362.5	13.0	14.4	-89.17	-733.3	-171.5	421.6	396.2	25.39	16.608		
3,600.0	3,523.0	3,559.6	3,457.5	13.4	14.9	-89.29	-759.9	-177.8	436.8	410.5	26.29	16.615		
3,700.0	3,620.1	3,658.5	3,552.5	13.9	15.4	-89.39	-786.4	-184.2	451.9	424.7	27.19	16.623		
3,800.0	3,717.2	3,757.3	3,647.5	14.4	15.9	-89.49	-812.9	-190.6	467.1	439.0	28.09	16.629		
3,900.0	3,814.2	3,856.2	3,742.5	14.8	16.4	-89.58	-839.5	-196.9	482.2	453.2	28.99	16.636		
4,000.0	3,911.3	3,955.0	3,837.5	15.3	16.9	-89.67	-866.0	-203.3	497.4	467.5	29.89	16.641		

## Anticollision Report

<b>Company:</b>	Sundance Energy	<b>Local Co-ordinate Reference:</b>	Well Bangert 19-51
<b>Project:</b>	Colorado	<b>TVD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Reference Site:</b>	SEC 19-T2N-R66W	<b>MD Reference:</b>	WELL @ 4887.0ft (Cade)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Bangert 19-51	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4887.0ft (Cade)

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Bangert 19-51

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.44°

