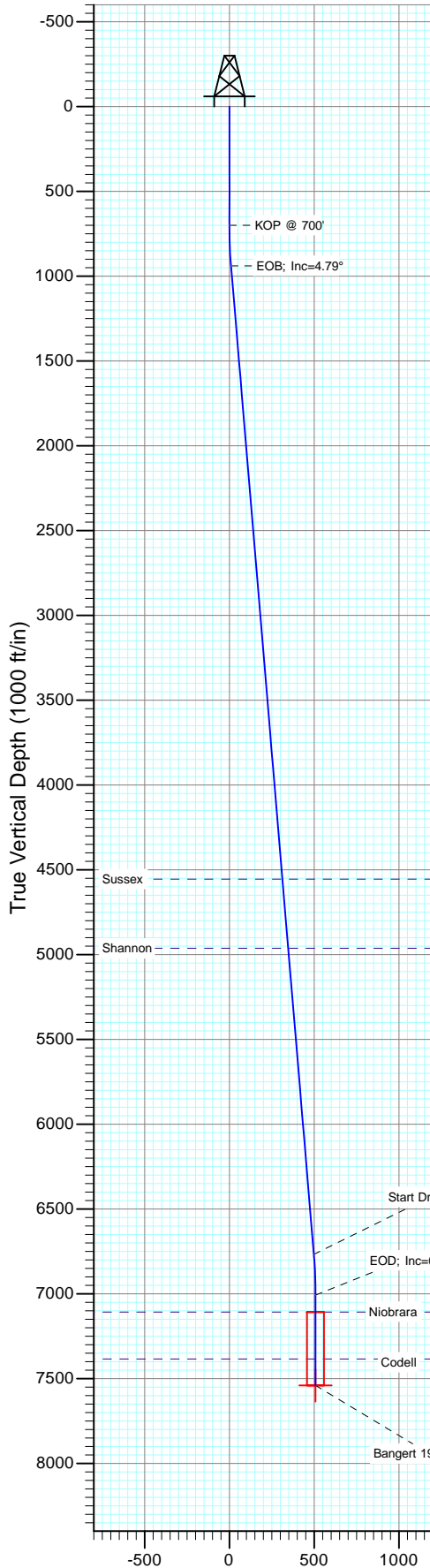
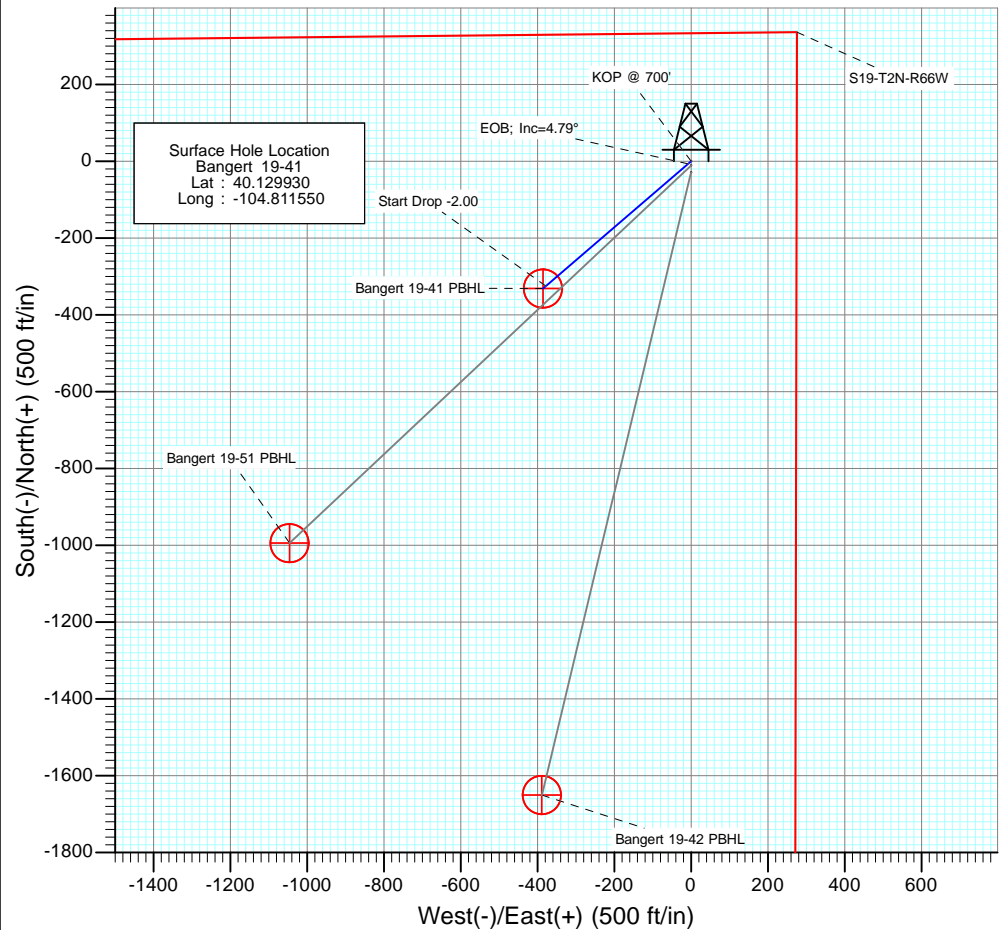




Project: Colorado
Site: SEC 19-T2N-R66W
Well: Bangert 19-41
Wellbore: DD
Design: Plan #1

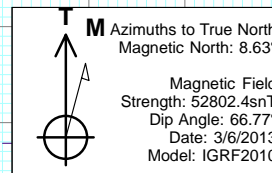


SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.0	
3	939.6	4.79	229.34	939.3	-6.5	-7.6	2.00	229.34	10.0	
4	6789.4	4.79	229.34	6768.7	-325.0	-378.3	0.00	0.00	498.7	
5	7029.0	0.00	0.00	7008.0	-331.5	-385.9	2.00	180.00	508.7	
6	7561.0	0.00	0.00	7540.0	-331.5	-385.9	0.00	0.00	508.7	Bangert 19-41 PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Bangert 19-41 PBHL	-331.5	-385.9	1290592.65	3192125.43	40.129020	-104.812930



Plan #1
Bangert 19-41
13xxx; LR
WELL @ 4887.0ft (Cade)
Ground Elevation @ 4872.0
North American Datum 1983
Well Bangert 19-41, True North

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4555.0	4568.0	Sussex
4963.0	4977.4	Shannon
7108.0	7129.0	Niobrara
7384.0	7405.0	Codell

Vertical Section at 229.34° (1000 ft/in)

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bangert 19-41
Company:	Sundance Energy	TVD Reference:	WELL @ 4887.0ft (Cade)
Project:	Colorado	MD Reference:	WELL @ 4887.0ft (Cade)
Site:	SEC 19-T2N-R66W	North Reference:	True
Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project	Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 19-41					
Well Position	+N/-S	0.0 ft	Northing:	1,290,927.12 ft	Latitude:	40.129930
	+E/-W	0.0 ft	Easting:	3,192,508.73 ft	Longitude:	-104.811550
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,872.0 ft

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

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	229.34

Plan Sections										
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	
731.7	4.63	229.34	731.4	-6.1	-7.1	2.00	2.00	0.00	229.34	
6,796.6	4.63	229.34	6,776.6	-325.4	-378.8	0.00	0.00	0.00	0.00	
7,028.3	0.00	0.00	7,008.0	-331.5	-385.9	2.00	-2.00	0.00	180.00	
7,560.3	0.00	0.00	7,540.0	-331.5	-385.9	0.00	0.00	0.00	0.00	Bangert 19-41 PBHL

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bangert 19-41
Company:	Sundance Energy	TVD Reference:	WELL @ 4887.0ft (Cade)
Project:	Colorado	MD Reference:	WELL @ 4887.0ft (Cade)
Site:	SEC 19-T2N-R66W	North Reference:	True
Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	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	229.34	600.0	-1.1	-1.3	1.7	2.00	2.00	
700.0	4.00	229.34	699.8	-4.5	-5.3	7.0	2.00	2.00	
731.7	4.63	229.34	731.4	-6.1	-7.1	9.4	2.00	2.00	EOB; Inc=4.63°
800.0	4.63	229.34	799.5	-9.7	-11.3	14.9	0.00	0.00	
900.0	4.63	229.34	899.2	-15.0	-17.4	23.0	0.00	0.00	
1,000.0	4.63	229.34	998.9	-20.2	-23.5	31.0	0.00	0.00	
1,100.0	4.63	229.34	1,098.5	-25.5	-29.7	39.1	0.00	0.00	
1,200.0	4.63	229.34	1,198.2	-30.8	-35.8	47.2	0.00	0.00	
1,300.0	4.63	229.34	1,297.9	-36.0	-41.9	55.3	0.00	0.00	
1,400.0	4.63	229.34	1,397.6	-41.3	-48.1	63.4	0.00	0.00	
1,500.0	4.63	229.34	1,497.2	-46.5	-54.2	71.4	0.00	0.00	
1,600.0	4.63	229.34	1,596.9	-51.8	-60.3	79.5	0.00	0.00	
1,700.0	4.63	229.34	1,696.6	-57.1	-66.4	87.6	0.00	0.00	
1,800.0	4.63	229.34	1,796.3	-62.3	-72.6	95.7	0.00	0.00	
1,900.0	4.63	229.34	1,895.9	-67.6	-78.7	103.8	0.00	0.00	
2,000.0	4.63	229.34	1,995.6	-72.9	-84.8	111.8	0.00	0.00	
2,100.0	4.63	229.34	2,095.3	-78.1	-91.0	119.9	0.00	0.00	
2,200.0	4.63	229.34	2,194.9	-83.4	-97.1	128.0	0.00	0.00	
2,300.0	4.63	229.34	2,294.6	-88.7	-103.2	136.1	0.00	0.00	
2,400.0	4.63	229.34	2,394.3	-93.9	-109.3	144.1	0.00	0.00	
2,500.0	4.63	229.34	2,494.0	-99.2	-115.5	152.2	0.00	0.00	
2,600.0	4.63	229.34	2,593.6	-104.5	-121.6	160.3	0.00	0.00	
2,700.0	4.63	229.34	2,693.3	-109.7	-127.7	168.4	0.00	0.00	
2,800.0	4.63	229.34	2,793.0	-115.0	-133.9	176.5	0.00	0.00	
2,900.0	4.63	229.34	2,892.7	-120.2	-140.0	184.5	0.00	0.00	
3,000.0	4.63	229.34	2,992.3	-125.5	-146.1	192.6	0.00	0.00	
3,100.0	4.63	229.34	3,092.0	-130.8	-152.2	200.7	0.00	0.00	
3,200.0	4.63	229.34	3,191.7	-136.0	-158.4	208.8	0.00	0.00	
3,300.0	4.63	229.34	3,291.4	-141.3	-164.5	216.9	0.00	0.00	
3,400.0	4.63	229.34	3,391.0	-146.6	-170.6	224.9	0.00	0.00	
3,500.0	4.63	229.34	3,490.7	-151.8	-176.8	233.0	0.00	0.00	
3,600.0	4.63	229.34	3,590.4	-157.1	-182.9	241.1	0.00	0.00	
3,700.0	4.63	229.34	3,690.0	-162.4	-189.0	249.2	0.00	0.00	
3,800.0	4.63	229.34	3,789.7	-167.6	-195.1	257.2	0.00	0.00	
3,900.0	4.63	229.34	3,889.4	-172.9	-201.3	265.3	0.00	0.00	
4,000.0	4.63	229.34	3,989.1	-178.2	-207.4	273.4	0.00	0.00	
4,100.0	4.63	229.34	4,088.7	-183.4	-213.5	281.5	0.00	0.00	
4,200.0	4.63	229.34	4,188.4	-188.7	-219.6	289.6	0.00	0.00	
4,300.0	4.63	229.34	4,288.1	-193.9	-225.8	297.6	0.00	0.00	
4,400.0	4.63	229.34	4,387.8	-199.2	-231.9	305.7	0.00	0.00	
4,500.0	4.63	229.34	4,487.4	-204.5	-238.0	313.8	0.00	0.00	
4,567.8	4.63	229.34	4,555.0	-208.0	-242.2	319.3	0.00	0.00	Sussex
4,600.0	4.63	229.34	4,587.1	-209.7	-244.2	321.9	0.00	0.00	
4,700.0	4.63	229.34	4,686.8	-215.0	-250.3	330.0	0.00	0.00	
4,800.0	4.63	229.34	4,786.4	-220.3	-256.4	338.0	0.00	0.00	
4,900.0	4.63	229.34	4,886.1	-225.5	-262.5	346.1	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bangert 19-41
Company:	Sundance Energy	TVD Reference:	WELL @ 4887.0ft (Cade)
Project:	Colorado	MD Reference:	WELL @ 4887.0ft (Cade)
Site:	SEC 19-T2N-R66W	North Reference:	True
Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	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
4,977.1	4.63	229.34	4,963.0	-229.6	-267.3	352.3	0.00	0.00	Shannon
5,000.0	4.63	229.34	4,985.8	-230.8	-268.7	354.2	0.00	0.00	
5,100.0	4.63	229.34	5,085.5	-236.1	-274.8	362.3	0.00	0.00	
5,200.0	4.63	229.34	5,185.1	-241.3	-280.9	370.4	0.00	0.00	
5,300.0	4.63	229.34	5,284.8	-246.6	-287.1	378.4	0.00	0.00	
5,400.0	4.63	229.34	5,384.5	-251.9	-293.2	386.5	0.00	0.00	
5,500.0	4.63	229.34	5,484.2	-257.1	-299.3	394.6	0.00	0.00	
5,600.0	4.63	229.34	5,583.8	-262.4	-305.4	402.7	0.00	0.00	
5,700.0	4.63	229.34	5,683.5	-267.6	-311.6	410.7	0.00	0.00	
5,800.0	4.63	229.34	5,783.2	-272.9	-317.7	418.8	0.00	0.00	
5,900.0	4.63	229.34	5,882.9	-278.2	-323.8	426.9	0.00	0.00	
6,000.0	4.63	229.34	5,982.5	-283.4	-330.0	435.0	0.00	0.00	
6,100.0	4.63	229.34	6,082.2	-288.7	-336.1	443.1	0.00	0.00	
6,200.0	4.63	229.34	6,181.9	-294.0	-342.2	451.1	0.00	0.00	
6,300.0	4.63	229.34	6,281.5	-299.2	-348.3	459.2	0.00	0.00	
6,400.0	4.63	229.34	6,381.2	-304.5	-354.5	467.3	0.00	0.00	
6,500.0	4.63	229.34	6,480.9	-309.8	-360.6	475.4	0.00	0.00	
6,600.0	4.63	229.34	6,580.6	-315.0	-366.7	483.5	0.00	0.00	
6,700.0	4.63	229.34	6,680.2	-320.3	-372.9	491.5	0.00	0.00	
6,796.6	4.63	229.34	6,776.6	-325.4	-378.8	499.3	0.00	0.00	Start Drop -2.00
6,800.0	4.57	229.34	6,779.9	-325.6	-379.0	499.6	2.00	-2.00	
6,900.0	2.57	229.34	6,879.7	-329.6	-383.7	505.8	2.00	-2.00	
7,000.0	0.57	229.34	6,979.7	-331.4	-385.8	508.6	2.00	-2.00	
7,028.3	0.00	0.00	7,008.0	-331.5	-385.9	508.7	2.00	-2.00	EOD; Inc=0°
7,100.0	0.00	0.00	7,079.7	-331.5	-385.9	508.7	0.00	0.00	
7,128.3	0.00	0.00	7,108.0	-331.5	-385.9	508.7	0.00	0.00	Niobrara
7,200.0	0.00	0.00	7,179.7	-331.5	-385.9	508.7	0.00	0.00	
7,300.0	0.00	0.00	7,279.7	-331.5	-385.9	508.7	0.00	0.00	
7,400.0	0.00	0.00	7,379.7	-331.5	-385.9	508.7	0.00	0.00	
7,404.3	0.00	0.00	7,384.0	-331.5	-385.9	508.7	0.00	0.00	Codell
7,500.0	0.00	0.00	7,479.7	-331.5	-385.9	508.7	0.00	0.00	
7,560.3	0.00	0.00	7,540.0	-331.5	-385.9	508.7	0.00	0.00	TD at 7560.3

Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
Bangert 19-41 PBHL	0.00	0.00	7,540.0	-331.5	-385.9	1,290,592.65	3,192,125.43	40.129020	-104.812930
- plan hits target center									
- Circle (radius 50.0)									
Bangert 19-42 PBHL	0.00	0.00	7,540.0	-1,650.2	-388.7	1,289,273.98	3,192,132.85	40.125400	-104.812940
- plan misses target center by 1318.7ft at 7560.3ft MD (7540.0 TVD, -331.5 N, -385.9 E)									
- Circle (radius 50.0)									

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Bangert 19-41
Company:	Sundance Energy	TVD Reference:	WELL @ 4887.0ft (Cade)
Project:	Colorado	MD Reference:	WELL @ 4887.0ft (Cade)
Site:	SEC 19-T2N-R66W	North Reference:	True
Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,567.8	4,555.0	Sussex		0.00		
4,977.1	4,963.0	Shannon		0.00		
7,128.3	7,108.0	Niobrara		0.00		
7,404.3	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'	
731.7	731.4	-6.1	-7.1	EOB; Inc=4.63°	
6,796.6	6,776.6	-325.4	-378.8	Start Drop -2.00	
7,028.3	7,008.0	-331.5	-385.9	EOD; Inc=0°	
7,560.3	7,540.0	-331.5	-385.9	TD at 7560.3	

Sundance Energy

Colorado

SEC 19-T2N-R66W

Bangert 19-41

DD

Plan #1

Anticollision Report

06 March, 2013

Anticollision Report

Company:	Sundance Energy	Local Co-ordinate Reference:	Well Bangert 19-41
Project:	Colorado	TVD Reference:	WELL @ 4887.0ft (Cade)
Reference Site:	SEC 19-T2N-R66W	MD Reference:	WELL @ 4887.0ft (Cade)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date	3/6/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,560.3	Plan #1 (DD)	MWD	Geolink MWD

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
SEC 19-T2N-R66W						
Bangert 19-42 - DD - Plan #1	400.0	400.0	29.1	27.8	21.682	CC, ES
Bangert 19-42 - DD - Plan #1	600.0	597.7	35.9	33.8	17.506	SF
Bangert 19-51 - DD - Plan #1	500.0	500.0	10.9	9.2	6.450	CC, ES
Bangert 19-51 - DD - Plan #1	600.0	599.7	12.2	10.1	5.960	SF

Anticollision Report

Company:	Sundance Energy	Local Co-ordinate Reference:	Well Bangert 19-41
Project:	Colorado	TVD Reference:	WELL @ 4887.0ft (Cade)
Reference Site:	SEC 19-T2N-R66W	MD Reference:	WELL @ 4887.0ft (Cade)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	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			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	180.00	-29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-29.1	0.0	29.1	28.8	0.30	98.206		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.65	45.122		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-29.1	0.0	29.1	28.1	0.99	29.289		
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-29.1	0.0	29.1	27.8	1.34	21.682 CC, ES		
500.0	500.0	499.0	499.0	0.8	0.8	-179.26	-30.8	-0.4	30.8	29.1	1.69	18.206		
600.0	600.0	597.7	597.6	1.0	1.0	-177.45	-35.8	-1.6	35.9	33.8	2.05	17.506 SF		
700.0	700.0	696.0	695.5	1.2	1.2	-175.37	-44.0	-3.6	44.4	41.9	2.42	18.316		
800.0	800.0	793.8	792.5	1.4	1.5	-43.93	-55.4	-6.3	55.0	52.3	2.73	20.131		
900.0	899.8	891.0	888.6	1.6	1.8	-44.99	-70.0	-9.8	66.5	63.4	3.09	21.561		
1,000.0	999.5	987.8	983.6	1.8	2.1	-46.82	-87.6	-14.0	79.4	75.9	3.45	23.015		
1,100.0	1,099.2	1,083.6	1,077.1	2.0	2.5	-47.87	-108.1	-18.9	95.4	91.6	3.82	24.956		
1,200.0	1,198.8	1,178.4	1,168.8	2.2	2.9	-48.26	-131.3	-24.5	114.6	110.4	4.20	27.291		
1,300.0	1,298.5	1,275.1	1,261.8	2.4	3.4	-48.31	-157.2	-30.7	136.1	131.5	4.58	29.693		
1,400.0	1,398.1	1,372.7	1,355.7	2.6	3.8	-48.35	-183.4	-37.0	157.7	152.7	4.97	31.713		
1,500.0	1,497.8	1,470.4	1,449.5	2.8	4.3	-48.37	-209.7	-43.3	179.3	173.9	5.36	33.425		
1,600.0	1,597.4	1,568.0	1,543.4	3.0	4.8	-48.39	-235.9	-49.6	200.8	195.1	5.76	34.892		
1,700.0	1,697.1	1,665.7	1,637.2	3.2	5.3	-48.41	-262.1	-55.9	222.4	216.3	6.15	36.163		
1,800.0	1,796.7	1,763.3	1,731.0	3.5	5.8	-48.43	-288.3	-62.2	244.0	237.4	6.55	37.273		
1,900.0	1,896.4	1,861.0	1,824.9	3.7	6.3	-48.44	-314.6	-68.4	265.6	258.6	6.94	38.251		
2,000.0	1,996.0	1,958.6	1,918.7	3.9	6.8	-48.45	-340.8	-74.7	287.1	279.8	7.34	39.118		
2,100.0	2,095.7	2,056.2	2,012.6	4.1	7.3	-48.45	-367.0	-81.0	308.7	301.0	7.74	39.892		
2,200.0	2,195.3	2,153.9	2,106.4	4.3	7.7	-48.46	-393.2	-87.3	330.3	322.2	8.14	40.587		
2,300.0	2,295.0	2,251.5	2,200.3	4.6	8.2	-48.47	-419.5	-93.6	351.9	343.3	8.54	41.215		
2,400.0	2,394.6	2,349.2	2,294.1	4.8	8.7	-48.47	-445.7	-99.9	373.4	364.5	8.94	41.784		
2,500.0	2,494.3	2,446.8	2,388.0	5.0	9.2	-48.48	-471.9	-106.2	395.0	385.7	9.34	42.302		
2,600.0	2,593.9	2,544.5	2,481.8	5.2	9.7	-48.48	-498.1	-112.5	416.6	406.9	9.74	42.777		
2,700.0	2,693.6	2,642.1	2,575.7	5.5	10.2	-48.49	-524.4	-118.7	438.2	428.0	10.14	43.212		
2,800.0	2,793.2	2,739.8	2,669.5	5.7	10.7	-48.49	-550.6	-125.0	459.7	449.2	10.54	43.613		
2,900.0	2,892.9	2,837.4	2,763.4	5.9	11.2	-48.49	-576.8	-131.3	481.3	470.4	10.94	43.983		

Anticollision Report

Company:	Sundance Energy	Local Co-ordinate Reference:	Well Bangert 19-41
Project:	Colorado	TVD Reference:	WELL @ 4887.0ft (Cade)
Reference Site:	SEC 19-T2N-R66W	MD Reference:	WELL @ 4887.0ft (Cade)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design SEC 19-T2N-R66W - Bangert 19-51 - 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		Total		Separation		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)	Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-10.9	0.0	10.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-10.9	0.0	10.9	10.6	0.30	36.804		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-10.9	0.0	10.9	10.3	0.65	16.910		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-10.9	0.0	10.9	9.9	0.99	10.977		
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-10.9	0.0	10.9	9.6	1.34	8.126		
500.0	500.0	500.0	500.0	0.8	0.8	180.00	-10.9	0.0	10.9	9.2	1.69	6.450 CC, ES		
600.0	600.0	599.7	599.7	1.0	1.0	-174.04	-12.1	-1.3	12.2	10.1	2.04	5.960 SF		
700.0	700.0	699.2	699.0	1.2	1.2	-162.16	-15.7	-5.0	16.5	14.1	2.40	6.860		
800.0	800.0	798.3	797.8	1.4	1.4	-23.22	-21.5	-11.3	22.8	20.1	2.74	8.323		
900.0	899.8	897.2	895.9	1.6	1.7	-18.90	-29.8	-20.0	29.5	26.4	3.09	9.525		
1,000.0	999.5	995.8	993.3	1.8	1.9	-16.17	-40.2	-31.2	36.8	33.4	3.44	10.685		
1,100.0	1,099.2	1,093.9	1,089.6	2.0	2.3	-13.61	-52.9	-44.7	47.3	43.5	3.79	12.463		
1,200.0	1,198.8	1,191.1	1,184.4	2.2	2.6	-11.47	-67.7	-60.4	61.2	57.0	4.14	14.773		
1,300.0	1,298.5	1,289.7	1,280.2	2.4	3.1	-9.92	-84.0	-77.7	76.9	72.4	4.49	17.124		
1,400.0	1,398.1	1,388.5	1,376.0	2.6	3.5	-8.90	-100.2	-94.9	92.6	87.8	4.84	19.146		
1,500.0	1,497.8	1,487.2	1,471.9	2.8	3.9	-8.17	-116.4	-112.2	108.4	103.2	5.18	20.900		
1,600.0	1,597.4	1,586.0	1,567.8	3.0	4.3	-7.63	-132.6	-129.4	124.1	118.6	5.53	22.436		
1,700.0	1,697.1	1,684.7	1,663.6	3.2	4.8	-7.21	-148.9	-146.7	139.9	134.0	5.88	23.792		
1,800.0	1,796.7	1,783.5	1,759.5	3.5	5.2	-6.88	-165.1	-163.9	155.7	149.4	6.23	24.998		
1,900.0	1,896.4	1,882.2	1,855.3	3.7	5.6	-6.60	-181.3	-181.2	171.5	164.9	6.58	26.077		
2,000.0	1,996.0	1,980.9	1,951.2	3.9	6.1	-6.38	-197.5	-198.4	187.3	180.3	6.92	27.048		
2,100.0	2,095.7	2,079.7	2,047.1	4.1	6.5	-6.19	-213.8	-215.7	203.0	195.8	7.27	27.927		
2,200.0	2,195.3	2,178.4	2,142.9	4.3	7.0	-6.02	-230.0	-232.9	218.8	211.2	7.62	28.725		
2,300.0	2,295.0	2,277.2	2,238.8	4.6	7.4	-5.88	-246.2	-250.2	234.6	226.7	7.97	29.455		
2,400.0	2,394.6	2,375.9	2,334.6	4.8	7.9	-5.76	-262.4	-267.5	250.4	242.1	8.31	30.123		
2,500.0	2,494.3	2,474.7	2,430.5	5.0	8.3	-5.65	-278.7	-284.7	266.2	257.6	8.66	30.738		
2,600.0	2,593.9	2,573.4	2,526.4	5.2	8.8	-5.55	-294.9	-302.0	282.0	273.0	9.01	31.306		
2,700.0	2,693.6	2,672.1	2,622.2	5.5	9.2	-5.46	-311.1	-319.2	297.8	288.5	9.36	31.832		
2,800.0	2,793.2	2,770.9	2,718.1	5.7	9.7	-5.39	-327.3	-336.5	313.6	303.9	9.70	32.320		
2,900.0	2,892.9	2,869.6	2,813.9	5.9	10.1	-5.31	-343.6	-353.7	329.4	319.4	10.05	32.775		
3,000.0	2,992.5	2,968.4	2,909.8	6.1	10.6	-5.25	-359.8	-371.0	345.2	334.8	10.40	33.199		
3,100.0	3,092.2	3,067.1	3,005.7	6.4	11.0	-5.19	-376.0	-388.2	361.0	350.3	10.75	33.596		
3,200.0	3,191.8	3,165.9	3,101.5	6.6	11.5	-5.14	-392.2	-405.5	376.8	365.7	11.09	33.968		
3,300.0	3,291.5	3,264.6	3,197.4	6.8	11.9	-5.09	-408.5	-422.7	392.6	381.2	11.44	34.317		
3,400.0	3,391.1	3,363.3	3,293.2	7.0	12.4	-5.04	-424.7	-440.0	408.4	396.6	11.79	34.646		
3,500.0	3,490.8	3,462.1	3,389.1	7.3	12.8	-5.00	-440.9	-457.2	424.2	412.1	12.14	34.956		
3,600.0	3,590.4	3,560.8	3,485.0	7.5	13.3	-4.96	-457.1	-474.5	440.0	427.5	12.48	35.249		
3,700.0	3,690.1	3,659.6	3,580.8	7.7	13.7	-4.93	-473.4	-491.7	455.8	443.0	12.83	35.526		
3,800.0	3,789.7	3,758.3	3,676.7	7.9	14.2	-4.89	-489.6	-509.0	471.6	458.5	13.18	35.788		
3,900.0	3,889.4	3,857.1	3,772.6	8.2	14.6	-4.86	-505.8	-526.3	487.4	473.9	13.53	36.037		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

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Reference Site:	SEC 19-T2N-R66W	MD Reference:	WELL @ 4887.0ft (Cade)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Bangert 19-41	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	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 19-41

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.44°

