



Bill Barrett Corporation

COMPANY DETAILS: BILL BARRETT CORP

Calculation Method: Minimum Curvature
Error System: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Warning Method: Error Ratio

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Dutch Lake 25-01H, True North
Vertical (TVD) Reference: WELL @ 4766.0ft (Original Well Elev)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: WELL @ 4766.0ft (Original Well Elev)
Calculation Method: Minimum Curvature

WELL DETAILS: Dutch Lake 25-01H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1435606.71	3339543.79	40° 31' 21.799 N	104° 16' 42.989 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.0	
3	1020.2	4.40	247.54	1020.0	-3.2	-7.8	2.00	247.54	-7.8	
4	5568.2	4.40	247.54	5554.5	-136.7	-330.6	0.00	0.00	-328.5	
5	5788.4	0.00	89.13	5774.5	-139.9	-338.4	2.00	180.00	-336.2	
6	5938.4	0.00	89.13	5924.5	-139.9	-338.4	0.00	89.13	-336.2	
7	6690.6	90.27	89.13	6402.0	-132.6	141.2	12.00	89.13	143.2	Dutch Lake 25-01H_LP
8	10977.2	90.27	89.13	6382.0	-67.4	4427.3	0.00	0.00	4427.8	Dutch Lake 25-01H_PBHL

PROJECT DETAILS: WELD COUNTY, COLORADO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

FORMATION TOP DETAILS

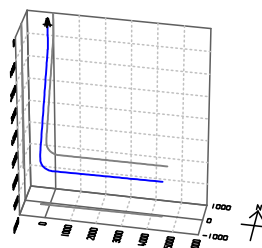
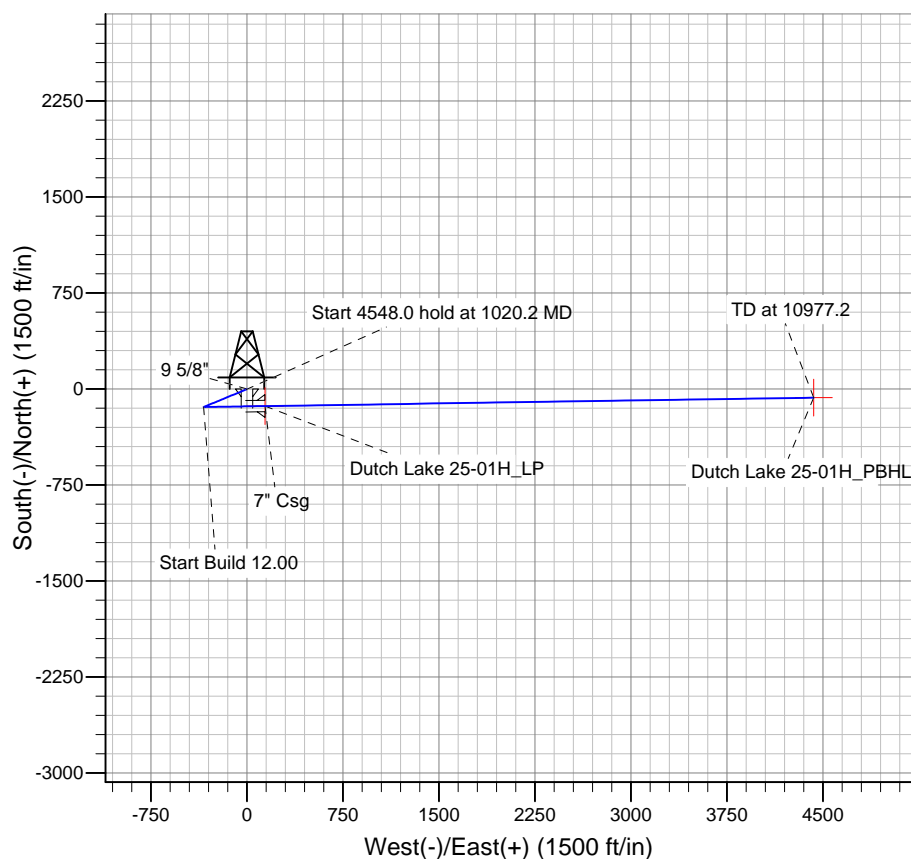
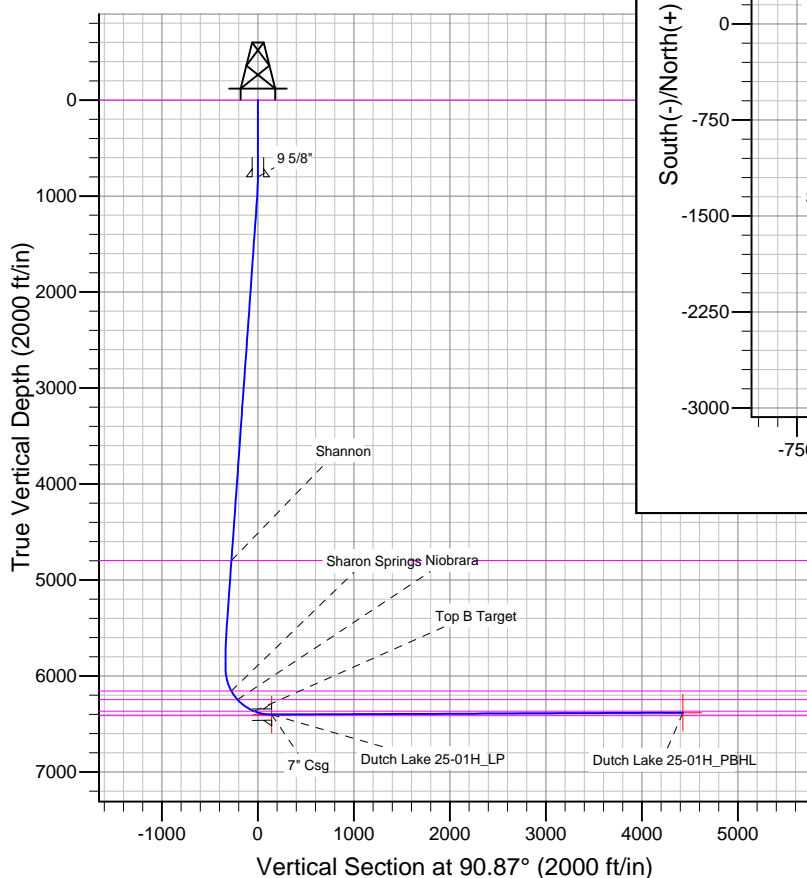
TVDPath	MDPath	Formation
0.0	0.0	Base B Target
4797.0	4808.4	Base of Fox Hills (Outcrop)
6157.0	6181.2	Shannon
6246.0	6291.1	Sharon Springs
6367.0	6504.4	Niobrara
		Top B Target

WELBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Dutch Lake 25-01H_PBHL	6382.0	-67.4	4427.3	Point
Dutch Lake 25-01H_LP	6402.0	-132.6	141.2	Point

CASING DETAILS

TVD	MD	Name	Size
800.0	800.0	9 5/8"	9-5/8
6402.0	6690.6	7" Csg	7



Azimuths to True North
Magnetic North: 8.13°
Magnetic Field
Strength: 52872.0snT
Dip Angle: 67.10°
Date: 12/31/2014
Model: IGRF2010

Bill Barrett Corp
Planning Report

Database:	Compass	Local Co-ordinate Reference:	Well Dutch Lake 25-01H
Company:	BILL BARRETT CORP	TVD Reference:	WELL @ 4766.0ft (Original Well Elev)
Project:	WELD COUNTY, COLORADO	MD Reference:	WELL @ 4766.0ft (Original Well Elev)
Site:	Dutch Lake 25-01H	North Reference:	True
Well:	Dutch Lake 25-01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	WELD COUNTY, COLORADO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Dutch Lake 25-01H				
Site Position:		Northing:	1,435,606.71 ft	Latitude:	40° 31' 21.799 N
From:	Lat/Long	Easting:	3,339,543.79 ft	Longitude:	104° 16' 42.989 W
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.79 °

Well	Dutch Lake 25-01H					
Well Position	+N-S	0.0 ft	Northing:	1,435,606.71 ft	Latitude:	40° 31' 21.799 N
	+E-W	0.0 ft	Easting:	3,339,543.79 ft	Longitude:	104° 16' 42.989 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,750.0ft

Wellbore	Wellbore #1				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/31/2014	8.13	67.10	52,872

Design	Design #1				
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Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	90.87	

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	
800.0	0.00	0.00	800.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,020.2	4.40	247.54	1,020.0	-3.2	-7.8	2.00	2.00	0.00	247.54	
5,568.2	4.40	247.54	5,554.5	-136.7	-330.6	0.00	0.00	0.00	0.00	
5,788.4	0.00	89.13	5,774.5	-139.9	-338.4	2.00	-2.00	0.00	180.00	
5,938.4	0.00	89.13	5,924.5	-139.9	-338.4	0.00	0.00	0.00	89.13	
6,690.6	90.27	89.13	6,402.0	-132.6	141.2	12.00	12.00	0.00	89.13	Dutch Lake 25-01H
10,977.2	90.27	89.13	6,382.0	-67.4	4,427.3	0.00	0.00	0.00	0.00	Dutch Lake 25-01H

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Project:	WELD COUNTY, COLORADO	MD Reference:	WELL @ 4766.0ft (Original Well Elev)
Site:	Dutch Lake 25-01H	North Reference:	True
Well:	Dutch Lake 25-01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Base of Fox Hills (Outcrop)									
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
9 5/8"									
900.0	2.00	247.54	900.0	-0.7	-1.6	-1.6	2.00	2.00	0.00
1,000.0	4.00	247.54	999.8	-2.7	-6.4	-6.4	2.00	2.00	0.00
1,020.2	4.40	247.54	1,020.0	-3.2	-7.8	-7.8	2.00	2.00	0.00
1,100.0	4.40	247.54	1,099.5	-5.6	-13.5	-13.4	0.00	0.00	0.00
1,200.0	4.40	247.54	1,199.3	-8.5	-20.6	-20.4	0.00	0.00	0.00
1,300.0	4.40	247.54	1,299.0	-11.4	-27.7	-27.5	0.00	0.00	0.00
1,400.0	4.40	247.54	1,398.7	-14.4	-34.8	-34.5	0.00	0.00	0.00
1,500.0	4.40	247.54	1,498.4	-17.3	-41.9	-41.6	0.00	0.00	0.00
1,600.0	4.40	247.54	1,598.1	-20.2	-49.0	-48.7	0.00	0.00	0.00
1,700.0	4.40	247.54	1,697.8	-23.2	-56.1	-55.7	0.00	0.00	0.00
1,800.0	4.40	247.54	1,797.5	-26.1	-63.2	-62.8	0.00	0.00	0.00
1,900.0	4.40	247.54	1,897.2	-29.0	-70.3	-69.8	0.00	0.00	0.00
2,000.0	4.40	247.54	1,996.9	-32.0	-77.4	-76.9	0.00	0.00	0.00
2,100.0	4.40	247.54	2,096.6	-34.9	-84.5	-83.9	0.00	0.00	0.00
2,200.0	4.40	247.54	2,196.3	-37.8	-91.5	-91.0	0.00	0.00	0.00
2,300.0	4.40	247.54	2,296.0	-40.8	-98.6	-98.0	0.00	0.00	0.00
2,400.0	4.40	247.54	2,395.7	-43.7	-105.7	-105.1	0.00	0.00	0.00
2,500.0	4.40	247.54	2,495.4	-46.6	-112.8	-112.1	0.00	0.00	0.00
2,600.0	4.40	247.54	2,595.1	-49.6	-119.9	-119.2	0.00	0.00	0.00
2,700.0	4.40	247.54	2,694.8	-52.5	-127.0	-126.2	0.00	0.00	0.00
2,800.0	4.40	247.54	2,794.5	-55.5	-134.1	-133.3	0.00	0.00	0.00
2,900.0	4.40	247.54	2,894.2	-58.4	-141.2	-140.3	0.00	0.00	0.00
3,000.0	4.40	247.54	2,993.9	-61.3	-148.3	-147.4	0.00	0.00	0.00
3,100.0	4.40	247.54	3,093.6	-64.3	-155.4	-154.4	0.00	0.00	0.00
3,200.0	4.40	247.54	3,193.3	-67.2	-162.5	-161.5	0.00	0.00	0.00
3,300.0	4.40	247.54	3,293.1	-70.1	-169.6	-168.5	0.00	0.00	0.00
3,400.0	4.40	247.54	3,392.8	-73.1	-176.7	-175.6	0.00	0.00	0.00
3,500.0	4.40	247.54	3,492.5	-76.0	-183.8	-182.6	0.00	0.00	0.00
3,600.0	4.40	247.54	3,592.2	-78.9	-190.9	-189.7	0.00	0.00	0.00
3,700.0	4.40	247.54	3,691.9	-81.9	-198.0	-196.7	0.00	0.00	0.00
3,800.0	4.40	247.54	3,791.6	-84.8	-205.1	-203.8	0.00	0.00	0.00
3,900.0	4.40	247.54	3,891.3	-87.7	-212.2	-210.8	0.00	0.00	0.00
4,000.0	4.40	247.54	3,991.0	-90.7	-219.3	-217.9	0.00	0.00	0.00
4,100.0	4.40	247.54	4,090.7	-93.6	-226.4	-224.9	0.00	0.00	0.00
4,200.0	4.40	247.54	4,190.4	-96.5	-233.5	-232.0	0.00	0.00	0.00
4,300.0	4.40	247.54	4,290.1	-99.5	-240.6	-239.0	0.00	0.00	0.00
4,400.0	4.40	247.54	4,389.8	-102.4	-247.7	-246.1	0.00	0.00	0.00
4,500.0	4.40	247.54	4,489.5	-105.3	-254.8	-253.1	0.00	0.00	0.00
4,600.0	4.40	247.54	4,589.2	-108.3	-261.9	-260.2	0.00	0.00	0.00
4,700.0	4.40	247.54	4,688.9	-111.2	-269.0	-267.3	0.00	0.00	0.00
4,800.0	4.40	247.54	4,788.6	-114.1	-276.1	-274.3	0.00	0.00	0.00
4,808.4	4.40	247.54	4,797.0	-114.4	-276.7	-274.9	0.00	0.00	0.00

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Planning Report

Database:	Compass	Local Co-ordinate Reference:	Well Dutch Lake 25-01H
Company:	BILL BARRETT CORP	TVD Reference:	WELL @ 4766.0ft (Original Well Elev)
Project:	WELD COUNTY, COLORADO	MD Reference:	WELL @ 4766.0ft (Original Well Elev)
Site:	Dutch Lake 25-01H	North Reference:	True
Well:	Dutch Lake 25-01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)	Turn Rate (°/100ft)
Shannon									
4,900.0	4.40	247.54	4,888.3	-117.1	-283.2	-281.4	0.00	0.00	0.00
5,000.0	4.40	247.54	4,988.0	-120.0	-290.3	-288.4	0.00	0.00	0.00
5,100.0	4.40	247.54	5,087.7	-122.9	-297.4	-295.5	0.00	0.00	0.00
5,200.0	4.40	247.54	5,187.4	-125.9	-304.5	-302.5	0.00	0.00	0.00
5,300.0	4.40	247.54	5,287.1	-128.8	-311.6	-309.6	0.00	0.00	0.00
5,400.0	4.40	247.54	5,386.8	-131.7	-318.7	-316.6	0.00	0.00	0.00
5,500.0	4.40	247.54	5,486.6	-134.7	-325.8	-323.7	0.00	0.00	0.00
5,568.2	4.40	247.54	5,554.5	-136.7	-330.6	-328.5	0.00	0.00	0.00
5,600.0	3.77	247.54	5,586.3	-137.5	-332.7	-330.6	2.00	-2.00	0.00
5,700.0	1.77	247.54	5,686.1	-139.4	-337.1	-335.0	2.00	-2.00	0.00
5,788.4	0.00	89.13	5,774.5	-139.9	-338.4	-336.2	2.00	-2.00	0.00
5,800.0	0.00	89.13	5,786.1	-139.9	-338.4	-336.2	0.00	0.00	0.00
5,900.0	0.00	89.13	5,886.1	-139.9	-338.4	-336.2	0.00	0.00	0.00
5,938.4	0.00	89.13	5,924.5	-139.9	-338.4	-336.2	0.00	0.00	0.00
6,000.0	7.39	89.13	5,986.0	-139.8	-334.4	-332.3	12.00	12.00	0.00
6,100.0	19.39	89.13	6,083.1	-139.5	-311.3	-309.2	12.00	12.00	0.00
6,181.2	29.13	89.13	6,157.0	-139.0	-278.0	-275.9	12.00	12.00	0.00
Sharon Springs									
6,200.0	31.39	89.13	6,173.2	-138.8	-268.5	-266.4	12.00	12.00	0.00
6,291.1	42.32	89.13	6,246.0	-138.0	-214.0	-211.9	12.00	12.00	0.00
Niobrara									
6,300.0	43.39	89.13	6,252.5	-137.9	-207.9	-205.8	12.00	12.00	0.00
6,400.0	55.39	89.13	6,317.5	-136.8	-132.2	-130.1	12.00	12.00	0.00
6,500.0	67.39	89.13	6,365.3	-135.4	-44.5	-42.5	12.00	12.00	0.00
6,504.4	67.92	89.13	6,367.0	-135.4	-40.4	-38.4	12.00	12.00	0.00
Top B Target									
6,600.0	79.39	89.13	6,393.8	-134.0	51.1	53.1	12.00	12.00	0.00
6,690.6	90.26	89.13	6,402.0	-132.6	141.2	143.2	12.00	12.00	0.00
7" Csg									
6,700.0	90.27	89.13	6,402.0	-132.5	150.6	152.6	0.04	0.04	0.00
6,800.0	90.27	89.13	6,401.5	-130.9	250.6	252.5	0.00	0.00	0.00
6,900.0	90.27	89.13	6,401.0	-129.4	350.6	352.5	0.00	0.00	0.00
7,000.0	90.27	89.13	6,400.6	-127.9	450.6	452.4	0.00	0.00	0.00
7,100.0	90.27	89.13	6,400.1	-126.4	550.5	552.4	0.00	0.00	0.00
7,200.0	90.27	89.13	6,399.6	-124.8	650.5	652.4	0.00	0.00	0.00
7,300.0	90.27	89.13	6,399.2	-123.3	750.5	752.3	0.00	0.00	0.00
7,400.0	90.27	89.13	6,398.7	-121.8	850.5	852.3	0.00	0.00	0.00
7,500.0	90.27	89.13	6,398.2	-120.3	950.5	952.2	0.00	0.00	0.00
7,600.0	90.27	89.13	6,397.8	-118.8	1,050.5	1,052.2	0.00	0.00	0.00
7,700.0	90.27	89.13	6,397.3	-117.2	1,150.5	1,152.1	0.00	0.00	0.00
7,800.0	90.27	89.13	6,396.8	-115.7	1,250.5	1,252.1	0.00	0.00	0.00
7,900.0	90.27	89.13	6,396.4	-114.2	1,350.4	1,352.0	0.00	0.00	0.00
8,000.0	90.27	89.13	6,395.9	-112.7	1,450.4	1,452.0	0.00	0.00	0.00
8,100.0	90.27	89.13	6,395.4	-111.1	1,550.4	1,551.9	0.00	0.00	0.00
8,200.0	90.27	89.13	6,395.0	-109.6	1,650.4	1,651.9	0.00	0.00	0.00
8,300.0	90.27	89.13	6,394.5	-108.1	1,750.4	1,751.8	0.00	0.00	0.00
8,400.0	90.27	89.13	6,394.0	-106.6	1,850.4	1,851.8	0.00	0.00	0.00
8,500.0	90.27	89.13	6,393.6	-105.1	1,950.4	1,951.7	0.00	0.00	0.00
8,600.0	90.27	89.13	6,393.1	-103.5	2,050.4	2,051.7	0.00	0.00	0.00
8,700.0	90.27	89.13	6,392.6	-102.0	2,150.3	2,151.6	0.00	0.00	0.00
8,800.0	90.27	89.13	6,392.2	-100.5	2,250.3	2,251.6	0.00	0.00	0.00
8,900.0	90.27	89.13	6,391.7	-99.0	2,350.3	2,351.5	0.00	0.00	0.00
9,000.0	90.27	89.13	6,391.2	-97.4	2,450.3	2,451.5	0.00	0.00	0.00

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Planning Report

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Well:	Dutch Lake 25-01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)	Turn Rate (°/100ft)
9,100.0	90.27	89.13	6,390.8	-95.9	2,550.3	2,551.5	0.00	0.00	0.00
9,200.0	90.27	89.13	6,390.3	-94.4	2,650.3	2,651.4	0.00	0.00	0.00
9,300.0	90.27	89.13	6,389.8	-92.9	2,750.3	2,751.4	0.00	0.00	0.00
9,400.0	90.27	89.13	6,389.4	-91.4	2,850.3	2,851.3	0.00	0.00	0.00
9,500.0	90.27	89.13	6,388.9	-89.8	2,950.2	2,951.3	0.00	0.00	0.00
9,600.0	90.27	89.13	6,388.4	-88.3	3,050.2	3,051.2	0.00	0.00	0.00
9,700.0	90.27	89.13	6,388.0	-86.8	3,150.2	3,151.2	0.00	0.00	0.00
9,800.0	90.27	89.13	6,387.5	-85.3	3,250.2	3,251.1	0.00	0.00	0.00
9,900.0	90.27	89.13	6,387.0	-83.8	3,350.2	3,351.1	0.00	0.00	0.00
10,000.0	90.27	89.13	6,386.6	-82.2	3,450.2	3,451.0	0.00	0.00	0.00
10,100.0	90.27	89.13	6,386.1	-80.7	3,550.2	3,551.0	0.00	0.00	0.00
10,200.0	90.27	89.13	6,385.6	-79.2	3,650.2	3,650.9	0.00	0.00	0.00
10,300.0	90.27	89.13	6,385.2	-77.7	3,750.1	3,750.9	0.00	0.00	0.00
10,400.0	90.27	89.13	6,384.7	-76.1	3,850.1	3,850.8	0.00	0.00	0.00
10,500.0	90.27	89.13	6,384.2	-74.6	3,950.1	3,950.8	0.00	0.00	0.00
10,600.0	90.27	89.13	6,383.8	-73.1	4,050.1	4,050.7	0.00	0.00	0.00
10,700.0	90.27	89.13	6,383.3	-71.6	4,150.1	4,150.7	0.00	0.00	0.00
10,800.0	90.27	89.13	6,382.8	-70.1	4,250.1	4,250.6	0.00	0.00	0.00
10,900.0	90.27	89.13	6,382.4	-68.5	4,350.1	4,350.6	0.00	0.00	0.00
10,977.2	90.27	89.13	6,382.0	-67.4	4,427.3	4,427.8	0.00	0.00	0.00

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
800.0	800.0	9 5/8"	9-5/8	13-1/2	
6,690.6	6,402.0	7" Csg	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
0.0	0.0	Base of Fox Hills (Outcrop)		0.00	
4,808.4	4,797.0	Shannon		0.00	
6,181.2	6,157.0	Sharon Springs		0.00	
6,291.1	6,246.0	Niobrara		0.00	
6,504.4	6,367.0	Top B Target		0.00	
	6,412.0	Base B Target		0.00	