

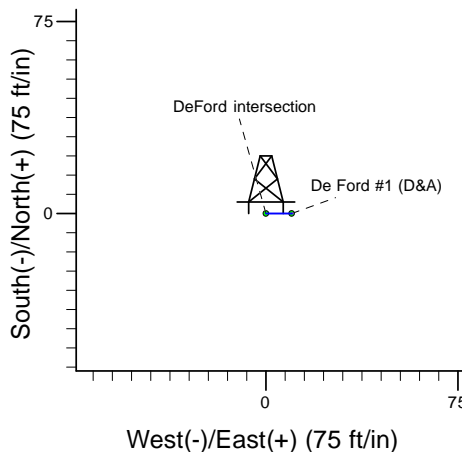
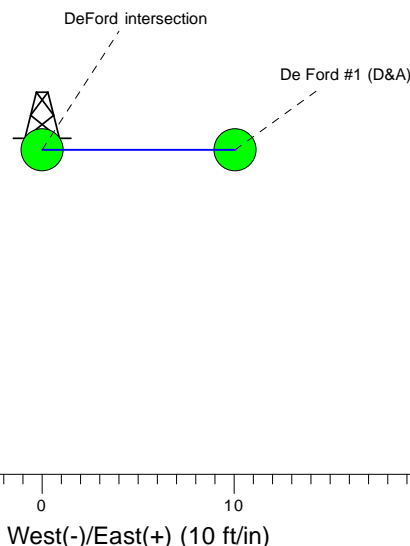
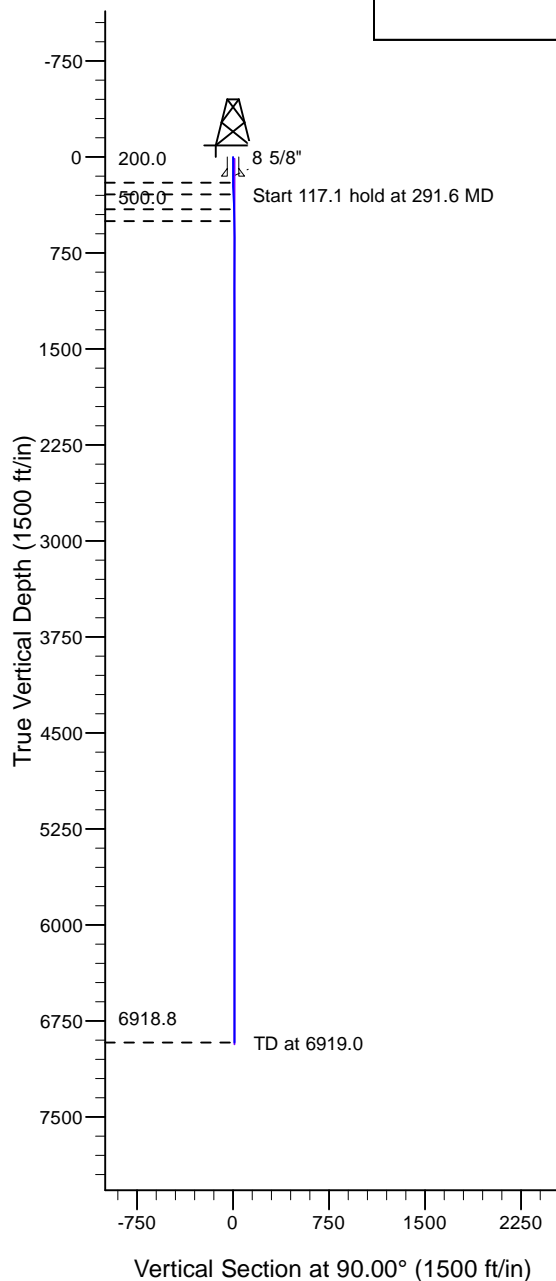
Well Name: DeFord intersection

Surface Location: Existing Wells Sec.19-T8N-R59W
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 4843.0

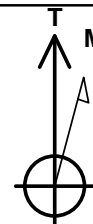
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1481950.08	3412327.16	40.646865	-104.014046	

Original Well Elev WELL @ 4856.0ft (Original Well Elev)

Bison Oil & Gas II LLC



Existing Wells Sec.19-T8N-R59W
 DeFord intersection
 Design #1
 14:31, November 22 2017



Azimuths to True North
 Magnetic North: 8.02°

Magnetic Field
 Strength: 52468.7nT
 Dip Angle: 67.07°
 Date: 11/22/2017
 Model: HDGM

WELLBORE TARGET DETAILS (LAT/LONG)

No target data is available.

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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	291.6	2.75	90.00	291.5	0.0	2.2	3.00	90.00	2.2	
4	408.6	2.75	90.00	408.5	0.0	7.8	0.00	0.00	7.8	
5	500.2	0.00	0.00	500.0	0.0	10.0	3.00	180.00	10.0	
6	6919.0	0.00	0.00	6918.8	0.0	10.0	0.00	0.00	10.0	



Directional

Bison Oil & Gas II LLC

Sec.19-T8N-R59W

Existing Wells Sec.19-T8N-R59W

DeFord intersection

Wellbore #1

Plan: Design #1

Standard Planning Report

22 November, 2017



Directional

Database:	US_EDM	Local Co-ordinate Reference:	Well DeFord intersection
Company:	Bison Oil & Gas II LLC	TVD Reference:	WELL @ 4856.0ft (Original Well Elev)
Project:	Sec.19-T8N-R59W	MD Reference:	WELL @ 4856.0ft (Original Well Elev)
Site:	Existing Wells Sec.19-T8N-R59W	North Reference:	True
Well:	DeFord intersection	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Sec.19-T8N-R59W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Existing Wells Sec.19-T8N-R59W			
Site Position:		Northing:	1,482,983.20 usft	Latitude: 40.649810
From:	Lat/Long	Easting:	3,409,935.96 usft	Longitude: -104.022600
Position Uncertainty:	0.0 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.95 °

Well	DeFord intersection			
Well Position	+N/-S	-1,072.8 ft	Northing:	1,481,950.08 usft
	+E/-W	2,373.7 ft	Easting:	3,412,327.16 usft
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft
			Ground Level:	4,843.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/22/2017	8.02	67.07	52,469

Design	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	90.00

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
291.6	2.75	90.00	291.5	0.0	2.2	3.00	3.00	0.00	90.00	
408.6	2.75	90.00	408.5	0.0	7.8	0.00	0.00	0.00	0.00	
500.2	0.00	0.00	500.0	0.0	10.0	3.00	-3.00	0.00	180.00	
6,919.0	0.00	0.00	6,918.8	0.0	10.0	0.00	0.00	0.00	0.00	

Database:	US_EDM	Local Co-ordinate Reference:	Well DeFord intersection
Company:	Bison Oil & Gas II LLC	TVD Reference:	WELL @ 4856.0ft (Original Well Elev)
Project:	Sec.19-T8N-R59W	MD Reference:	WELL @ 4856.0ft (Original Well Elev)
Site:	Existing Wells Sec.19-T8N-R59W	North Reference:	True
Well:	DeFord intersection	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
150.0	0.00	0.00	150.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
291.6	2.75	90.00	291.5	0.0	2.2	2.2	3.00	3.00	0.00
300.0	2.75	90.00	300.0	0.0	2.6	2.6	0.00	0.00	0.00
400.0	2.75	90.00	399.8	0.0	7.4	7.4	0.00	0.00	0.00
408.6	2.75	90.00	408.5	0.0	7.8	7.8	0.00	0.00	0.00
500.0	0.01	90.00	499.8	0.0	10.0	10.0	3.00	-3.00	0.00
500.2	0.00	0.00	500.0	0.0	10.0	10.0	3.00	-3.00	0.00
600.0	0.00	0.00	599.8	0.0	10.0	10.0	0.00	0.00	0.00
700.0	0.00	0.00	699.8	0.0	10.0	10.0	0.00	0.00	0.00
800.0	0.00	0.00	799.8	0.0	10.0	10.0	0.00	0.00	0.00
900.0	0.00	0.00	899.8	0.0	10.0	10.0	0.00	0.00	0.00
1,000.0	0.00	0.00	999.8	0.0	10.0	10.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,099.8	0.0	10.0	10.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,199.8	0.0	10.0	10.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,299.8	0.0	10.0	10.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,399.8	0.0	10.0	10.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,499.8	0.0	10.0	10.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,599.8	0.0	10.0	10.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,699.8	0.0	10.0	10.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,799.8	0.0	10.0	10.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,899.8	0.0	10.0	10.0	0.00	0.00	0.00
2,000.0	0.00	0.00	1,999.8	0.0	10.0	10.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,099.8	0.0	10.0	10.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,199.8	0.0	10.0	10.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,299.8	0.0	10.0	10.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,399.8	0.0	10.0	10.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,499.8	0.0	10.0	10.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,599.8	0.0	10.0	10.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,699.8	0.0	10.0	10.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,799.8	0.0	10.0	10.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,899.8	0.0	10.0	10.0	0.00	0.00	0.00
3,000.0	0.00	0.00	2,999.8	0.0	10.0	10.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,099.8	0.0	10.0	10.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,199.8	0.0	10.0	10.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,299.8	0.0	10.0	10.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,399.8	0.0	10.0	10.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,499.8	0.0	10.0	10.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,599.8	0.0	10.0	10.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,699.8	0.0	10.0	10.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,799.8	0.0	10.0	10.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,899.8	0.0	10.0	10.0	0.00	0.00	0.00
4,000.0	0.00	0.00	3,999.8	0.0	10.0	10.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,099.8	0.0	10.0	10.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,199.8	0.0	10.0	10.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,299.8	0.0	10.0	10.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,399.8	0.0	10.0	10.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,499.8	0.0	10.0	10.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,599.8	0.0	10.0	10.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,699.8	0.0	10.0	10.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,799.8	0.0	10.0	10.0	0.00	0.00	0.00

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Site:	Existing Wells Sec.19-T8N-R59W	North Reference:	True
Well:	DeFord intersection	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,900.0	0.00	0.00	4,899.8	0.0	10.0	10.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,999.8	0.0	10.0	10.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,099.8	0.0	10.0	10.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,199.8	0.0	10.0	10.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,299.8	0.0	10.0	10.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,399.8	0.0	10.0	10.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,499.8	0.0	10.0	10.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,599.8	0.0	10.0	10.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,699.8	0.0	10.0	10.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,799.8	0.0	10.0	10.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,899.8	0.0	10.0	10.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,999.8	0.0	10.0	10.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,099.8	0.0	10.0	10.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,199.8	0.0	10.0	10.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,299.8	0.0	10.0	10.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,399.8	0.0	10.0	10.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,499.8	0.0	10.0	10.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,599.8	0.0	10.0	10.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,699.8	0.0	10.0	10.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,799.8	0.0	10.0	10.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,899.8	0.0	10.0	10.0	0.00	0.00	0.00
6,919.0	0.00	0.00	6,918.8	0.0	10.0	10.0	0.00	0.00	0.00

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
150.0	150.0	8 5/8"	9-5/8	12-1/4