

# **Bison Oil & Gas II, LLC**

**WELD COUNTY, COLORADO (NAD 83)**

**WADE 8-59 20A**

**WADE 8-59 20A-29-32-1**

**Wellbore #1**

**Plan: Design #1**

## **Standard Survey Report**

**06 May, 2020**





Project: WELD COUNTY, COLORADO (NAD 83)  
Site: WADE 8-59 20A  
Well: WADE 8-59 20A-29-32-1  
Wellbore: Wellbore #1  
Design: Design #1



M Azimuths to Grid North  
True North: -0.96°  
Magnetic North: 7.66°  
Magnetic Field  
Strength: 53508.4nT  
Dip Angle: 67.43°  
Date: 12/31/2009  
Model: IGRF200510

#### ANNOTATIONS

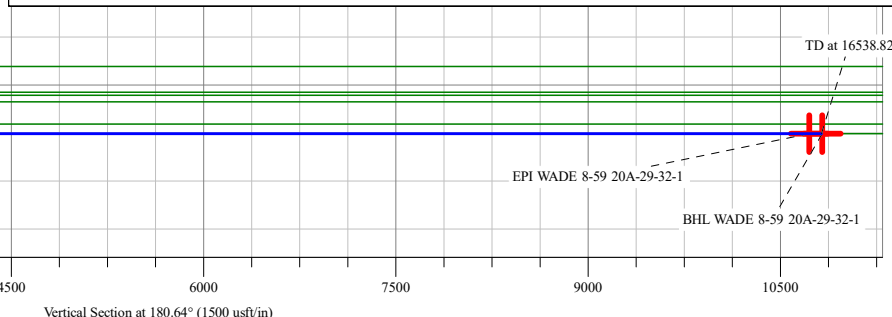
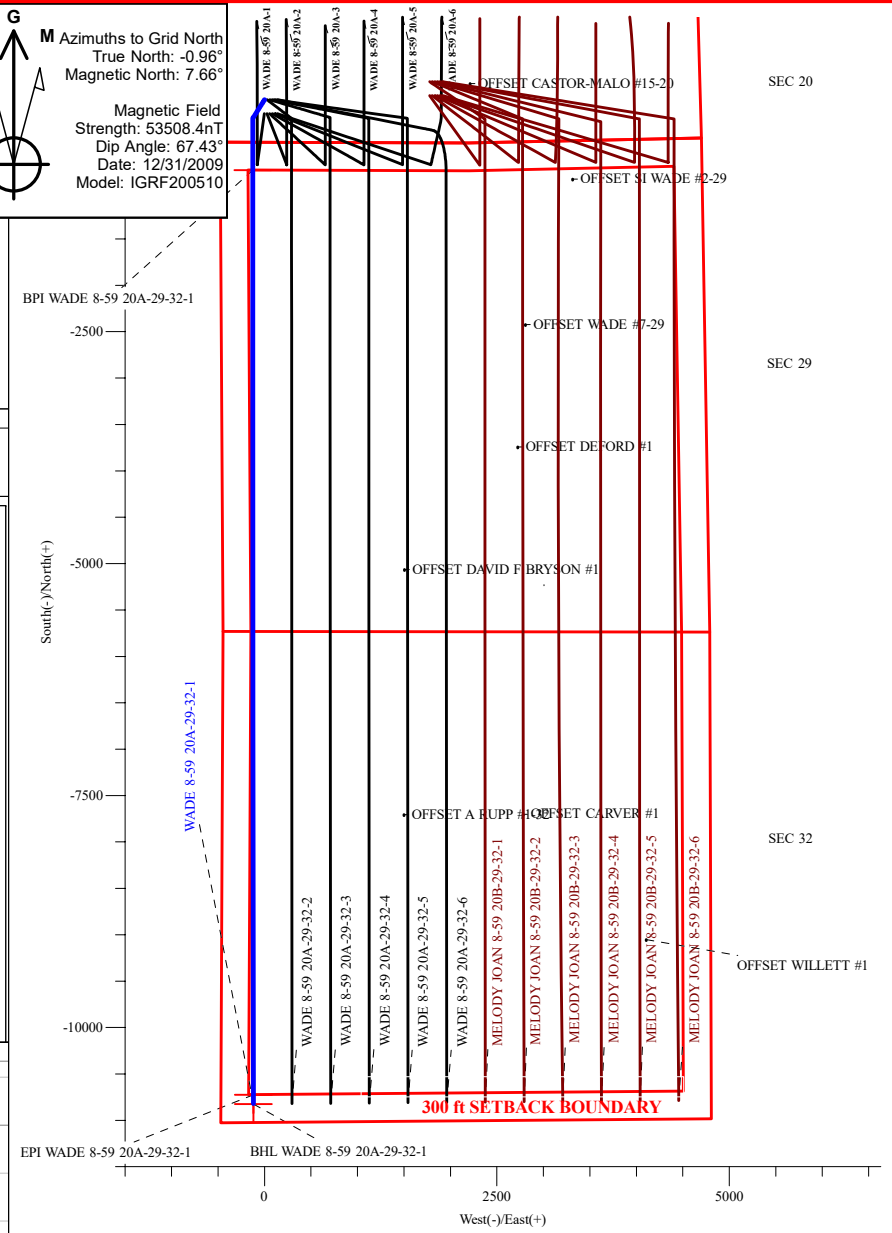
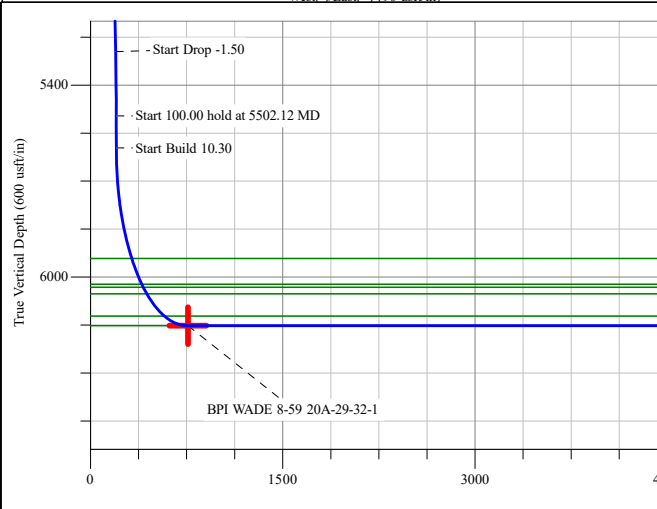
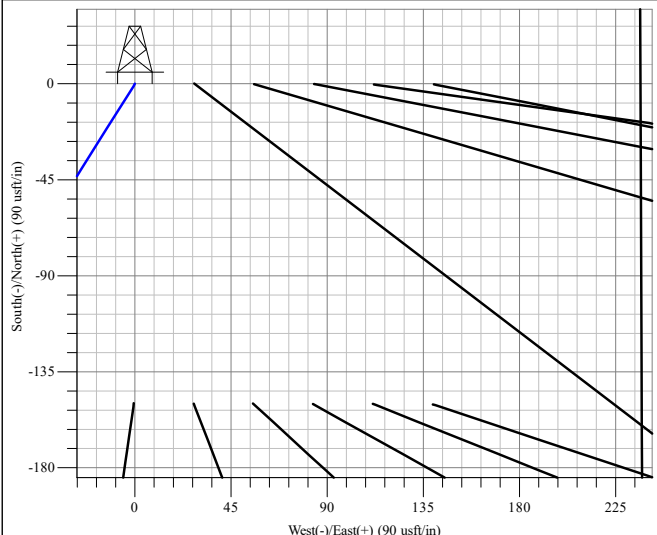
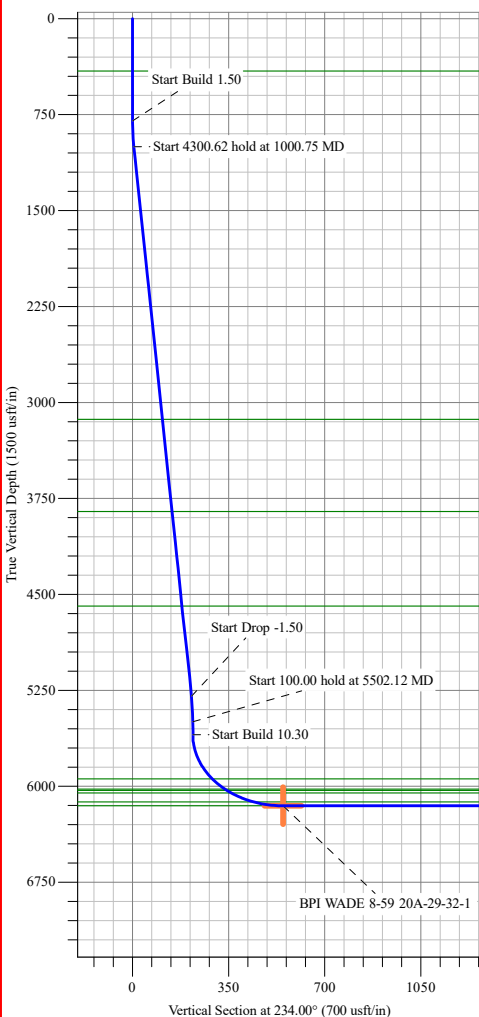
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Dep	Annotation
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	Start Build 1.50
1000.75	3.01	212.12	1000.66	-4.47	-2.80	4.50	5.27	Start 4300.62 hold at 1000.75 MD
5301.37	3.01	212.12	5295.34	-195.80	-122.93	197.15	231.19	Start Drop -1.50
5502.12	0.00	0.00	5496.00	-200.27	-125.74	201.65	236.47	Start 100.00 hold at 5502.12 MD
5602.12	0.00	0.00	5596.00	-200.27	-125.74	201.65	236.47	Start Build 10.30
6475.65	90.00	180.00	6152.11	-756.38	-125.74	757.73	792.58	Start DLS 0.00 TFO -89.01
16444.31	90.00	179.93	6152.00	-10725.03	-119.52	10725.69	10761.23	Start DLS 0.76 TFO 90.10
16538.82	90.00	180.65	6152.00	-10819.54	-120.00	10820.20	10855.74	TD at 16538.82

#### PROPOSED LOCAL COORDINATES:

SHL: 460 ft FSL & 479 ft FWL Sec 20  
BPI :300 ft FNL & 350 ft FWL Sec 29  
EPI: 300 ft FSL & 350 ft FWL Sec 32  
BHL: 200 ft FSL & 350 ft FWL Sec 32

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BPI WADE 8-59 20A-29-32-1	6152.00	-759.27	-125.74	1479341.27	3413677.98	40° 38' 22.715 N 104° 0' 33.613 W	
EPI WADE 8-59 20A-29-32-1	6152.00	-10725.03	-119.52	1469375.51	3413684.20	40° 36' 44.251 N 104° 0' 35.705 W	
BHL WADE 8-59 20A-29-32-1	6152.00	-10825.24	-120.06	1469275.30	3413683.66	40° 36' 43.261 N 104° 0' 35.734 W	Point



## Survey Report



<b>Company:</b>	Bison Oil & Gas II, LLC	<b>Local Co-ordinate Reference:</b>	Well WADE 8-59 20A-29-32-1
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB 25 @ 4895.90usft
<b>Site:</b>	WADE 8-59 20A	<b>MD Reference:</b>	KB 25 @ 4895.90usft
<b>Well:</b>	WADE 8-59 20A-29-32-1	<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>	EDM

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83),		
<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		

<b>Site</b>	WADE 8-59 20A		
<b>Site Position:</b>		<b>Northing:</b>	1,480,100.55 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,413,803.72 usft
<b>Position Uncertainty:</b>	1.10 usft	<b>Slot Radius:</b>	13-3/16 "
		<b>Latitude:</b>	40° 38' 30.196 N
		<b>Longitude:</b>	104° 0' 31.817 W
		<b>Grid Convergence:</b>	0.96 °

Well	WADE 8-59 20A-29-32-1					
Well Position	+N/-S	0.00 usft	Northing:	1,480,100.54 usfl	Latitude:	40° 38' 30.195 N
	+E/-W	0.00 usft	Easting:	3,413,803.72 usfl	Longitude:	104° 0' 31.817 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usfl	Ground Level:	4,870.90 usfl

<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	8.63	67.43	53,508.39552699

<b>Design</b>	Design #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	180.64	

<b>Survey Tool Program</b>	<b>Date</b>	5/5/2020			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	16,538.82	Design #1 (Wellbore #1)	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>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
410.00	0.00	0.00	410.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Pierre Shale (Base of Fox Hills)</b>										
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	

## Survey Report



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<b>Site:</b>	WADE 8-59 20A	<b>MD Reference:</b>	KB 25 @ 4895.90usft
<b>Well:</b>	WADE 8-59 20A-29-32-1	<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>	EDM

## 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)
<b>Start Build 1.50</b>									
900.00	1.50	212.12	899.99	-1.11	-0.70	1.12	1.50	1.50	0.00
1,000.75	3.01	212.12	1,000.66	-4.47	-2.80	4.50	1.50	1.50	0.00
<b>Start 4300.62 hold at 1000.75 MD</b>									
1,100.00	3.01	212.12	1,099.77	-8.88	-5.58	8.94	0.00	0.00	0.00
1,200.00	3.01	212.12	1,199.63	-13.33	-8.37	13.42	0.00	0.00	0.00
1,300.00	3.01	212.12	1,299.49	-17.78	-11.16	17.90	0.00	0.00	0.00
1,400.00	3.01	212.12	1,399.36	-22.23	-13.96	22.38	0.00	0.00	0.00
1,500.00	3.01	212.12	1,499.22	-26.68	-16.75	26.86	0.00	0.00	0.00
1,600.00	3.01	212.12	1,599.08	-31.13	-19.54	31.34	0.00	0.00	0.00
1,700.00	3.01	212.12	1,698.94	-35.58	-22.34	35.82	0.00	0.00	0.00
1,800.00	3.01	212.12	1,798.80	-40.03	-25.13	40.30	0.00	0.00	0.00
1,900.00	3.01	212.12	1,898.67	-44.47	-27.92	44.78	0.00	0.00	0.00
2,000.00	3.01	212.12	1,998.53	-48.92	-30.72	49.26	0.00	0.00	0.00
2,100.00	3.01	212.12	2,098.39	-53.37	-33.51	53.74	0.00	0.00	0.00
2,200.00	3.01	212.12	2,198.25	-57.82	-36.30	58.22	0.00	0.00	0.00
2,300.00	3.01	212.12	2,298.11	-62.27	-39.10	62.70	0.00	0.00	0.00
2,400.00	3.01	212.12	2,397.98	-66.72	-41.89	67.18	0.00	0.00	0.00
2,500.00	3.01	212.12	2,497.84	-71.17	-44.68	71.66	0.00	0.00	0.00
2,600.00	3.01	212.12	2,597.70	-75.62	-47.48	76.14	0.00	0.00	0.00
2,700.00	3.01	212.12	2,697.56	-80.07	-50.27	80.62	0.00	0.00	0.00
2,800.00	3.01	212.12	2,797.42	-84.52	-53.06	85.10	0.00	0.00	0.00
2,900.00	3.01	212.12	2,897.29	-88.97	-55.86	89.58	0.00	0.00	0.00
3,000.00	3.01	212.12	2,997.15	-93.41	-58.65	94.06	0.00	0.00	0.00
3,100.00	3.01	212.12	3,097.01	-97.86	-61.44	98.54	0.00	0.00	0.00
3,135.04	3.01	212.12	3,132.00	-99.42	-62.42	100.11	0.00	0.00	0.00
<b>Parkman</b>									
3,200.00	3.01	212.12	3,196.87	-102.31	-64.23	103.02	0.00	0.00	0.00
3,300.00	3.01	212.12	3,296.73	-106.76	-67.03	107.50	0.00	0.00	0.00
3,400.00	3.01	212.12	3,396.59	-111.21	-69.82	111.98	0.00	0.00	0.00
3,500.00	3.01	212.12	3,496.46	-115.66	-72.61	116.46	0.00	0.00	0.00
3,600.00	3.01	212.12	3,596.32	-120.11	-75.41	120.94	0.00	0.00	0.00
3,700.00	3.01	212.12	3,696.18	-124.56	-78.20	125.42	0.00	0.00	0.00
3,800.00	3.01	212.12	3,796.04	-129.01	-80.99	129.90	0.00	0.00	0.00
3,856.03	3.01	212.12	3,852.00	-131.50	-82.56	132.41	0.00	0.00	0.00
<b>Sussex</b>									
3,900.00	3.01	212.12	3,895.90	-133.46	-83.79	134.38	0.00	0.00	0.00
4,000.00	3.01	212.12	3,995.77	-137.90	-86.58	138.86	0.00	0.00	0.00
4,100.00	3.01	212.12	4,095.63	-142.35	-89.37	143.34	0.00	0.00	0.00
4,200.00	3.01	212.12	4,195.49	-146.80	-92.17	147.82	0.00	0.00	0.00
4,300.00	3.01	212.12	4,295.35	-151.25	-94.96	152.30	0.00	0.00	0.00
4,400.00	3.01	212.12	4,395.21	-155.70	-97.75	156.78	0.00	0.00	0.00
4,500.00	3.01	212.12	4,495.08	-160.15	-100.55	161.26	0.00	0.00	0.00
4,597.06	3.01	212.12	4,592.00	-164.47	-103.26	165.60	0.00	0.00	0.00

## Survey Report



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<b>Design:</b>	Design #1	<b>Database:</b>	EDM

## 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)
<b>Shannon</b>									
4,600.00	3.01	212.12	4,594.94	-164.60	-103.34	165.73	0.00	0.00	0.00
4,700.00	3.01	212.12	4,694.80	-169.05	-106.13	170.21	0.00	0.00	0.00
4,800.00	3.01	212.12	4,794.66	-173.50	-108.93	174.69	0.00	0.00	0.00
4,900.00	3.01	212.12	4,894.52	-177.95	-111.72	179.17	0.00	0.00	0.00
5,000.00	3.01	212.12	4,994.39	-182.40	-114.51	183.65	0.00	0.00	0.00
5,100.00	3.01	212.12	5,094.25	-186.84	-117.31	188.13	0.00	0.00	0.00
5,200.00	3.01	212.12	5,194.11	-191.29	-120.10	192.61	0.00	0.00	0.00
5,301.37	3.01	212.12	5,295.34	-195.80	-122.93	197.15	0.00	0.00	0.00
<b>Start Drop -1.50</b>									
5,400.00	1.53	212.12	5,393.89	-199.11	-125.01	200.49	1.50	-1.50	0.00
5,502.12	0.00	0.00	5,496.00	-200.27	-125.74	201.65	1.50	-1.50	0.00
<b>Start 100.00 hold at 5502.12 MD</b>									
5,602.12	0.00	0.00	5,596.00	-200.27	-125.74	201.65	0.00	0.00	0.00
<b>Start Build 10.30</b>									
5,650.00	4.93	180.00	5,643.82	-202.33	-125.74	203.71	10.30	10.30	0.00
5,700.00	10.08	180.00	5,693.37	-208.86	-125.74	210.24	10.30	10.30	0.00
5,750.00	15.24	180.00	5,742.14	-219.82	-125.74	221.20	10.30	10.30	0.00
5,800.00	20.39	180.00	5,789.73	-235.10	-125.74	236.48	10.30	10.30	0.00
5,850.00	25.54	180.00	5,835.75	-254.61	-125.74	255.98	10.30	10.30	0.00
5,900.00	30.69	180.00	5,879.84	-278.16	-125.74	279.54	10.30	10.30	0.00
5,950.00	35.84	180.00	5,921.63	-305.58	-125.74	306.95	10.30	10.30	0.00
5,975.56	38.48	180.00	5,942.00	-321.02	-125.74	322.39	10.30	10.30	0.00
<b>Sharon Springs Shale</b>									
6,000.00	40.99	180.00	5,960.79	-336.64	-125.74	338.01	10.30	10.30	0.00
6,050.00	46.14	180.00	5,997.01	-371.08	-125.74	372.46	10.30	10.30	0.00
6,087.41	50.00	180.00	6,022.00	-398.92	-125.74	400.28	10.30	10.30	0.00
<b>Niobrara Formation</b>									
6,100.00	51.30	180.00	6,029.98	-408.65	-125.74	410.02	10.30	10.30	0.00
6,103.24	51.63	180.00	6,032.00	-411.18	-125.74	412.55	10.30	10.30	0.00
<b>Niobrara A Chalk</b>									
6,136.76	55.08	180.00	6,052.00	-438.07	-125.74	439.44	10.30	10.30	0.00
<b>Niobrara A Landing Point</b>									
6,150.00	56.45	180.00	6,059.45	-449.02	-125.74	450.39	10.30	10.30	0.00
6,200.00	61.60	180.00	6,085.18	-491.87	-125.74	493.24	10.30	10.30	0.00
6,250.00	66.75	180.00	6,106.95	-536.86	-125.74	538.23	10.30	10.30	0.00
6,291.83	71.06	180.00	6,122.00	-575.88	-125.74	577.24	10.30	10.30	0.00
<b>Niobrara B Chalk</b>									
6,300.00	71.90	180.00	6,124.60	-583.63	-125.74	584.99	10.30	10.30	0.00
6,350.00	77.05	180.00	6,137.97	-631.79	-125.74	633.15	10.30	10.30	0.00
6,400.00	82.21	180.00	6,146.97	-680.96	-125.74	682.31	10.30	10.30	0.00
6,450.00	87.36	180.00	6,151.52	-730.73	-125.74	732.08	10.30	10.30	0.00
6,464.73	88.87	180.00	6,152.00	-745.46	-125.74	746.81	10.30	10.30	0.00
<b>Niobrara B Landing Point</b>									

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<b>Design:</b>	Design #1	<b>Database:</b>	EDM

## 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)
6,475.65	90.00	180.00	6,152.11	-756.38	-125.74	757.73	10.30	10.30	0.00
<b>Start DLS 0.00 TFO -89.01</b>									
6,478.55	90.00	180.00	6,152.11	-759.27	-125.74	760.62	0.00	0.00	0.00
<b>BPI WADE 8-59 20A-29-32-1</b>									
6,500.00	90.00	180.00	6,152.11	-780.72	-125.74	782.07	0.00	0.00	0.00
6,600.00	90.00	180.00	6,152.11	-880.72	-125.73	882.06	0.00	0.00	0.00
6,700.00	90.00	180.00	6,152.11	-980.72	-125.73	982.06	0.00	0.00	0.00
6,800.00	90.00	180.00	6,152.11	-1,080.72	-125.73	1,082.05	0.00	0.00	0.00
6,900.00	90.00	180.00	6,152.11	-1,180.72	-125.72	1,182.04	0.00	0.00	0.00
7,000.00	90.00	180.00	6,152.11	-1,280.72	-125.72	1,282.04	0.00	0.00	0.00
7,100.00	90.00	180.00	6,152.11	-1,380.72	-125.71	1,382.03	0.00	0.00	0.00
7,200.00	90.00	179.99	6,152.11	-1,480.72	-125.70	1,482.03	0.00	0.00	0.00
7,300.00	90.00	179.99	6,152.11	-1,580.72	-125.69	1,582.02	0.00	0.00	0.00
7,400.00	90.00	179.99	6,152.11	-1,680.72	-125.68	1,682.01	0.00	0.00	0.00
7,500.00	90.00	179.99	6,152.11	-1,780.72	-125.67	1,782.01	0.00	0.00	0.00
7,600.00	90.00	179.99	6,152.11	-1,880.72	-125.66	1,882.00	0.00	0.00	0.00
7,700.00	90.00	179.99	6,152.11	-1,980.72	-125.64	1,981.99	0.00	0.00	0.00
7,800.00	90.00	179.99	6,152.11	-2,080.72	-125.63	2,081.99	0.00	0.00	0.00
7,900.00	90.00	179.99	6,152.11	-2,180.72	-125.61	2,181.98	0.00	0.00	0.00
8,000.00	90.00	179.99	6,152.10	-2,280.72	-125.59	2,281.98	0.00	0.00	0.00
8,100.00	90.00	179.99	6,152.10	-2,380.72	-125.57	2,381.97	0.00	0.00	0.00
8,200.00	90.00	179.99	6,152.10	-2,480.72	-125.55	2,481.96	0.00	0.00	0.00
8,300.00	90.00	179.99	6,152.10	-2,580.72	-125.53	2,581.96	0.00	0.00	0.00
8,400.00	90.00	179.99	6,152.10	-2,680.72	-125.50	2,681.95	0.00	0.00	0.00
8,500.00	90.00	179.99	6,152.10	-2,780.72	-125.48	2,781.94	0.00	0.00	0.00
8,600.00	90.00	179.98	6,152.10	-2,880.72	-125.45	2,881.94	0.00	0.00	0.00
8,700.00	90.00	179.98	6,152.10	-2,980.72	-125.43	2,981.93	0.00	0.00	0.00
8,800.00	90.00	179.98	6,152.10	-3,080.72	-125.40	3,081.92	0.00	0.00	0.00
8,900.00	90.00	179.98	6,152.10	-3,180.72	-125.37	3,181.92	0.00	0.00	0.00
9,000.00	90.00	179.98	6,152.10	-3,280.72	-125.34	3,281.91	0.00	0.00	0.00
9,100.00	90.00	179.98	6,152.10	-3,380.72	-125.31	3,381.90	0.00	0.00	0.00
9,200.00	90.00	179.98	6,152.10	-3,480.72	-125.27	3,481.90	0.00	0.00	0.00
9,300.00	90.00	179.98	6,152.10	-3,580.72	-125.24	3,581.89	0.00	0.00	0.00
9,400.00	90.00	179.98	6,152.10	-3,680.72	-125.20	3,681.89	0.00	0.00	0.00
9,500.00	90.00	179.98	6,152.10	-3,780.72	-125.16	3,781.88	0.00	0.00	0.00
9,600.00	90.00	179.98	6,152.10	-3,880.72	-125.13	3,881.87	0.00	0.00	0.00
9,700.00	90.00	179.98	6,152.10	-3,980.72	-125.09	3,981.87	0.00	0.00	0.00
9,800.00	90.00	179.98	6,152.10	-4,080.72	-125.04	4,081.86	0.00	0.00	0.00
9,900.00	90.00	179.98	6,152.09	-4,180.72	-125.00	4,181.85	0.00	0.00	0.00
10,000.00	90.00	179.97	6,152.09	-4,280.72	-124.96	4,281.85	0.00	0.00	0.00
10,100.00	90.00	179.97	6,152.09	-4,380.72	-124.91	4,381.84	0.00	0.00	0.00
10,200.00	90.00	179.97	6,152.09	-4,480.72	-124.87	4,481.83	0.00	0.00	0.00
10,300.00	90.00	179.97	6,152.09	-4,580.72	-124.82	4,581.83	0.00	0.00	0.00

## Survey Report



<b>Company:</b>	Bison Oil & Gas II, LLC	<b>Local Co-ordinate Reference:</b>	Well WADE 8-59 20A-29-32-1
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB 25 @ 4895.90usft
<b>Site:</b>	WADE 8-59 20A	<b>MD Reference:</b>	KB 25 @ 4895.90usft
<b>Well:</b>	WADE 8-59 20A-29-32-1	<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>	EDM

## 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)
10,400.00	90.00	179.97	6,152.09	-4,680.72	-124.77	4,681.82	0.00	0.00	0.00
10,500.00	90.00	179.97	6,152.09	-4,780.72	-124.72	4,781.81	0.00	0.00	0.00
10,600.00	90.00	179.97	6,152.09	-4,880.72	-124.67	4,881.81	0.00	0.00	0.00
10,700.00	90.00	179.97	6,152.09	-4,980.72	-124.62	4,981.80	0.00	0.00	0.00
10,800.00	90.00	179.97	6,152.09	-5,080.72	-124.57	5,081.79	0.00	0.00	0.00
10,900.00	90.00	179.97	6,152.09	-5,180.72	-124.51	5,181.79	0.00	0.00	0.00
11,000.00	90.00	179.97	6,152.09	-5,280.72	-124.46	5,281.78	0.00	0.00	0.00
11,100.00	90.00	179.97	6,152.08	-5,380.72	-124.40	5,381.77	0.00	0.00	0.00
11,200.00	90.00	179.97	6,152.08	-5,480.72	-124.34	5,481.76	0.00	0.00	0.00
11,300.00	90.00	179.97	6,152.08	-5,580.72	-124.28	5,581.76	0.00	0.00	0.00
11,400.00	90.00	179.96	6,152.08	-5,680.72	-124.22	5,681.75	0.00	0.00	0.00
11,500.00	90.00	179.96	6,152.08	-5,780.72	-124.16	5,781.74	0.00	0.00	0.00
11,600.00	90.00	179.96	6,152.08	-5,880.72	-124.09	5,881.74	0.00	0.00	0.00
11,700.00	90.00	179.96	6,152.08	-5,980.72	-124.03	5,981.73	0.00	0.00	0.00
11,800.00	90.00	179.96	6,152.08	-6,080.72	-123.96	6,081.72	0.00	0.00	0.00
11,900.00	90.00	179.96	6,152.08	-6,180.72	-123.90	6,181.72	0.00	0.00	0.00
12,000.00	90.00	179.96	6,152.07	-6,280.72	-123.83	6,281.71	0.00	0.00	0.00
12,100.00	90.00	179.96	6,152.07	-6,380.72	-123.76	6,381.70	0.00	0.00	0.00
12,200.00	90.00	179.96	6,152.07	-6,480.72	-123.69	6,481.70	0.00	0.00	0.00
12,300.00	90.00	179.96	6,152.07	-6,580.72	-123.61	6,581.69	0.00	0.00	0.00
12,400.00	90.00	179.96	6,152.07	-6,680.72	-123.54	6,681.68	0.00	0.00	0.00
12,500.00	90.00	179.96	6,152.07	-6,780.72	-123.47	6,781.67	0.00	0.00	0.00
12,600.00	90.00	179.96	6,152.07	-6,880.72	-123.39	6,881.67	0.00	0.00	0.00
12,700.00	90.00	179.96	6,152.07	-6,980.72	-123.31	6,981.66	0.00	0.00	0.00
12,800.00	90.00	179.95	6,152.06	-7,080.72	-123.23	7,081.65	0.00	0.00	0.00
12,900.00	90.00	179.95	6,152.06	-7,180.72	-123.16	7,181.65	0.00	0.00	0.00
13,000.00	90.00	179.95	6,152.06	-7,280.72	-123.07	7,281.64	0.00	0.00	0.00
13,100.00	90.00	179.95	6,152.06	-7,380.72	-122.99	7,381.63	0.00	0.00	0.00
13,200.00	90.00	179.95	6,152.06	-7,480.72	-122.91	7,481.63	0.00	0.00	0.00
13,300.00	90.00	179.95	6,152.06	-7,580.72	-122.82	7,581.62	0.00	0.00	0.00
13,400.00	90.00	179.95	6,152.06	-7,680.72	-122.74	7,681.61	0.00	0.00	0.00
13,500.00	90.00	179.95	6,152.05	-7,780.72	-122.65	7,781.60	0.00	0.00	0.00
13,600.00	90.00	179.95	6,152.05	-7,880.72	-122.56	7,881.60	0.00	0.00	0.00
13,700.00	90.00	179.95	6,152.05	-7,980.72	-122.47	7,981.59	0.00	0.00	0.00
13,800.00	90.00	179.95	6,152.05	-8,080.72	-122.38	8,081.58	0.00	0.00	0.00
13,900.00	90.00	179.95	6,152.05	-8,180.72	-122.29	8,181.58	0.00	0.00	0.00
14,000.00	90.00	179.95	6,152.05	-8,280.72	-122.20	8,281.57	0.00	0.00	0.00
14,100.00	90.00	179.95	6,152.04	-8,380.72	-122.10	8,381.56	0.00	0.00	0.00
14,200.00	90.00	179.94	6,152.04	-8,480.72	-122.00	8,481.55	0.00	0.00	0.00
14,300.00	90.00	179.94	6,152.04	-8,580.72	-121.91	8,581.55	0.00	0.00	0.00
14,400.00	90.00	179.94	6,152.04	-8,680.72	-121.81	8,681.54	0.00	0.00	0.00
14,500.00	90.00	179.94	6,152.04	-8,780.72	-121.71	8,781.53	0.00	0.00	0.00
14,600.00	90.00	179.94	6,152.04	-8,880.72	-121.61	8,881.52	0.00	0.00	0.00
14,700.00	90.00	179.94	6,152.03	-8,980.72	-121.51	8,981.52	0.00	0.00	0.00

## Survey Report



<b>Company:</b>	Bison Oil & Gas II, LLC	<b>Local Co-ordinate Reference:</b>	Well WADE 8-59 20A-29-32-1
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB 25 @ 4895.90usft
<b>Site:</b>	WADE 8-59 20A	<b>MD Reference:</b>	KB 25 @ 4895.90usft
<b>Well:</b>	WADE 8-59 20A-29-32-1	<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>	EDM

## 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)
14,800.00	90.00	179.94	6,152.03	-9,080.72	-121.40	9,081.51	0.00	0.00	0.00
14,900.00	90.00	179.94	6,152.03	-9,180.72	-121.30	9,181.50	0.00	0.00	0.00
15,000.00	90.00	179.94	6,152.03	-9,280.72	-121.19	9,281.49	0.00	0.00	0.00
15,100.00	90.00	179.94	6,152.03	-9,380.72	-121.08	9,381.49	0.00	0.00	0.00
15,200.00	90.00	179.94	6,152.03	-9,480.72	-120.98	9,481.48	0.00	0.00	0.00
15,300.00	90.00	179.94	6,152.02	-9,580.72	-120.87	9,581.47	0.00	0.00	0.00
15,400.00	90.00	179.94	6,152.02	-9,680.72	-120.76	9,681.47	0.00	0.00	0.00
15,500.00	90.00	179.94	6,152.02	-9,780.72	-120.64	9,781.46	0.00	0.00	0.00
15,600.00	90.00	179.93	6,152.02	-9,880.72	-120.53	9,881.45	0.00	0.00	0.00
15,700.00	90.00	179.93	6,152.02	-9,980.72	-120.42	9,981.44	0.00	0.00	0.00
15,800.00	90.00	179.93	6,152.01	-10,080.72	-120.30	10,081.44	0.00	0.00	0.00
15,900.00	90.00	179.93	6,152.01	-10,180.72	-120.18	10,181.43	0.00	0.00	0.00
16,000.00	90.00	179.93	6,152.01	-10,280.72	-120.06	10,281.42	0.00	0.00	0.00
16,100.00	90.00	179.93	6,152.01	-10,380.72	-119.94	10,381.41	0.00	0.00	0.00
16,200.00	90.00	179.93	6,152.01	-10,480.72	-119.82	10,481.41	0.00	0.00	0.00
16,300.00	90.00	179.93	6,152.00	-10,580.72	-119.70	10,581.40	0.00	0.00	0.00
16,400.00	90.00	179.93	6,152.00	-10,680.72	-119.58	10,681.39	0.00	0.00	0.00
16,444.31	90.00	179.93	6,152.00	-10,725.03	-119.52	10,725.69	0.00	0.00	0.00
<b>Start DLS 0.76 TFO 90.10 - EPI WADE 8-59 20A-29-32-1</b>									
16,500.00	90.00	180.35	6,152.00	-10,780.72	-119.66	10,781.38	0.76	0.00	0.76
16,538.82	90.00	180.65	6,152.00	-10,819.54	-120.00	10,820.20	0.76	0.00	0.76
<b>TD at 16538.82 - zBHL WADE 8-59 20A-29-32-1</b>									

## Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
EPI WADE 8-59 20A-:	0.00	0.00	6,152.00	-10,725.03	-119.52	1,469,375.52	3,413,684.20	40° 36' 44.251 N	104° 0' 35.705 W
- plan hits target center									
- Point									
BPI WADE 8-59 20A-:	0.00	0.00	6,152.00	-759.27	-125.74	1,479,341.27	3,413,677.98	40° 38' 22.715 N	104° 0' 33.613 W
- plan misses target center by 0.11usft at 6478.55usft MD (6152.11 TVD, -759.27 N, -125.74 E)									
- Point									
zBHL WADE 8-59 20A-:	0.00	0.00	6,152.00	-10,825.24	-120.06	1,469,275.31	3,413,683.66	40° 36' 43.261 N	104° 0' 35.734 W
- plan misses target center by 5.70usft at 16538.82usft MD (6152.00 TVD, -10819.54 N, -120.00 E)									
- Point									

## Survey Report



<b>Company:</b>	Bison Oil & Gas II, LLC	<b>Local Co-ordinate Reference:</b>	Well WADE 8-59 20A-29-32-1
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>TVD Reference:</b>	KB 25 @ 4895.90usft
<b>Site:</b>	WADE 8-59 20A	<b>MD Reference:</b>	KB 25 @ 4895.90usft
<b>Well:</b>	WADE 8-59 20A-29-32-1	<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>	EDM

## Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
410.00	410.00	Pierre Shale (Base of Fox Hills)			
3,135.04	3,132.00	Parkman			
3,856.03	3,852.00	Sussex			
4,597.06	4,592.00	Shannon			
5,975.56	5,942.00	Sharon Springs Shale			
6,087.41	6,022.00	Niobrara Formation			
6,103.24	6,032.00	Niobrara A Chalk			
6,136.76	6,052.00	Niobrara A Landing Point			
6,291.83	6,122.00	Niobrara B Chalk			
6,464.74	6,152.00	Niobrara B Landing Point			

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
800	800	0	0	Start Build 1.50
1001	1001	-4	-3	Start 4300.62 hold at 1000.75 MD
5301	5295	-196	-123	Start Drop -1.50
5502	5496	-200	-126	Start 100.00 hold at 5502.12 MD
5602	5596	-200	-126	Start Build 10.30
6476	6152	-756	-126	Start DLS 0.00 TFO -89.01
16,444	6152	-10,725	-120	Start DLS 0.76 TFO 90.10
16,539	6152	-10,820	-120	TD at 16538.82

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