

BISON OIL & GAS II, LLC

WELD COUNTY, COLORADO (NAD 83)

SE SE SEC. 11 T5N R61W 6th P.M.

GROTHER 5-61 11B-14-23-1

ORIGINAL WELLBORE

25 February, 2019

Plan: PROPOSAL #1





Project: WELD COUNTY, COLORADO (NAD 83)
Site: SE SE SEC. 11 T5N R61W 6th P.M.
Well: GROTHEER 5-61 11B-14-23-1
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 610ft FSL & 1269ft FEL of Sec 11	
500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
1359.41	1372.85	17.46	247.12	-51.29	-121.57	64.97	131.95	EOB TO 17.46° INC	
4669.43	4842.69	17.46	247.12	-455.92	-1080.62	577.54	1172.86	END OF TANGENT	
5528.84	5715.54	0.00	0.00	-507.21	-1202.19	642.51	1304.81	EOD TO VERTICAL	
5628.84	5815.54	0.00	0.00	-507.21	-1202.19	642.51	1304.81	KOP (10°/100ft BUR)	
6201.80	6715.54	90.00	180.34	-1080.16	-1205.59	1212.03	1877.76	BPI: 460ft FNL & 2465ft FEL of Sec 14	
6201.80	16421.31	90.00	180.35	-10785.75	-1263.73	10859.53	11583.54	EPI: 460ft FSL & 2451ft FEL of Sec 23	
6201.80	16521.50	90.00	180.30	-10885.94	-1264.30	10959.11	11683.72	BHL: 360ft FSL & 2451ft FEL of Sec 23	

PROPOSED LOCAL COORDINATES:

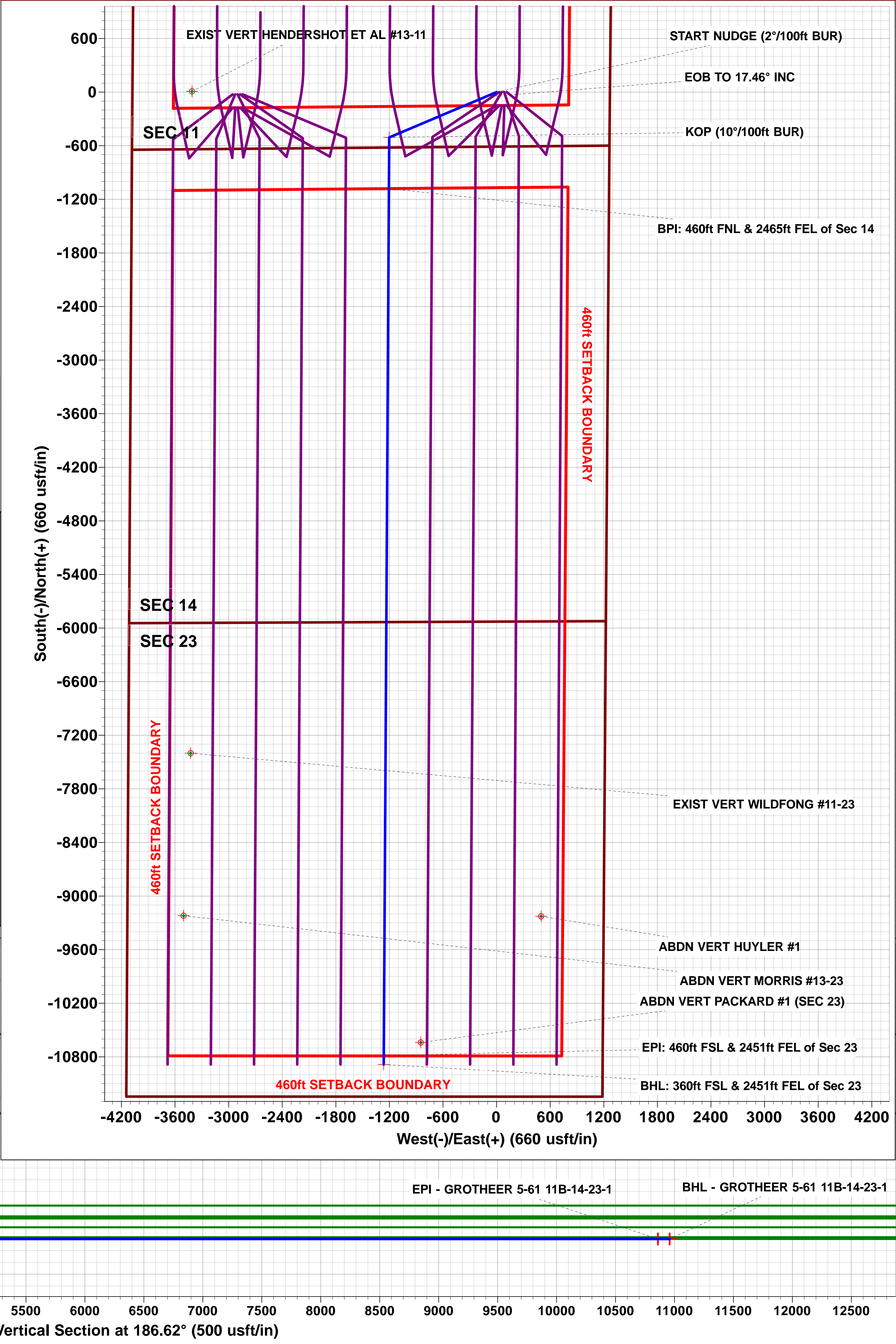
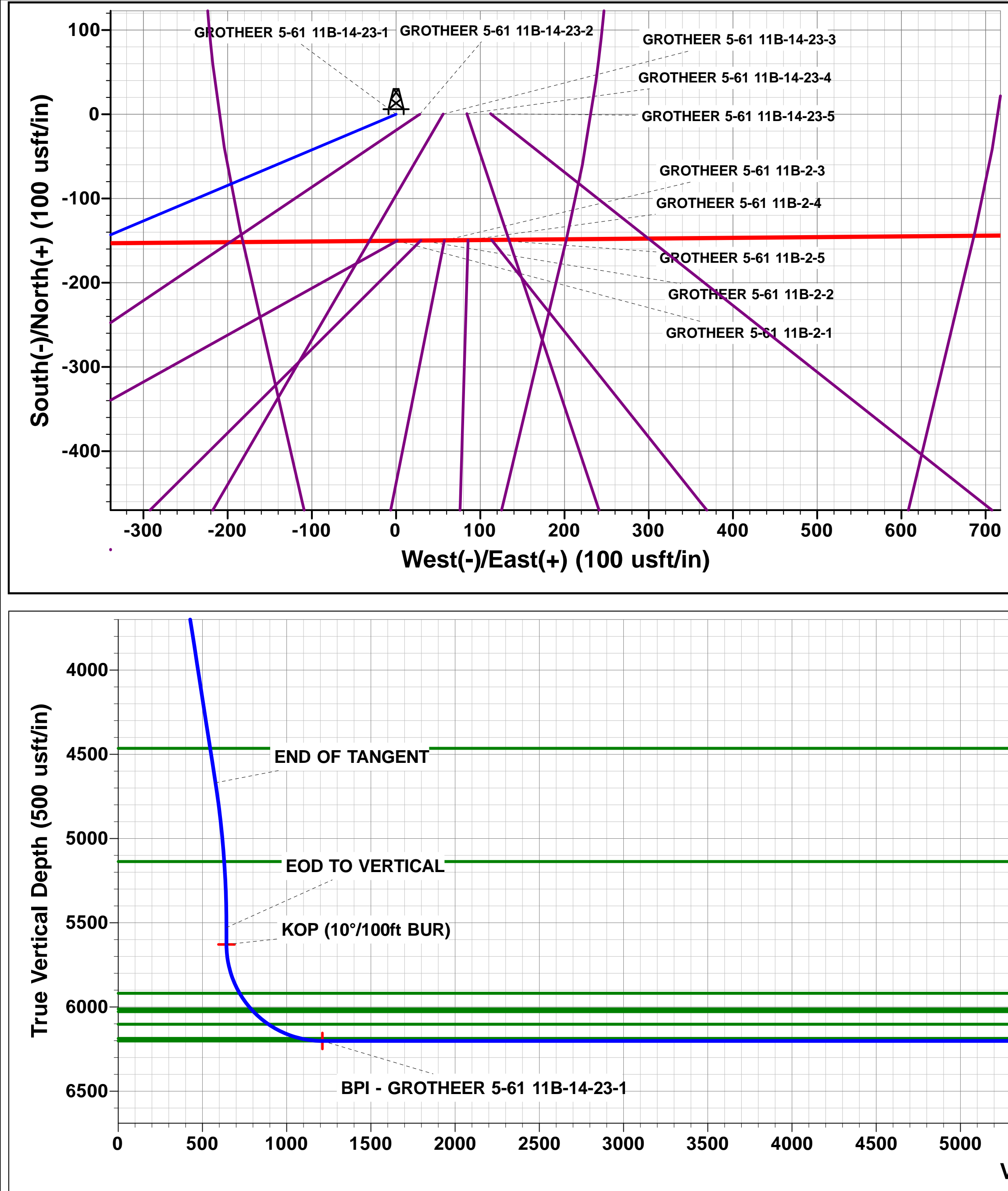
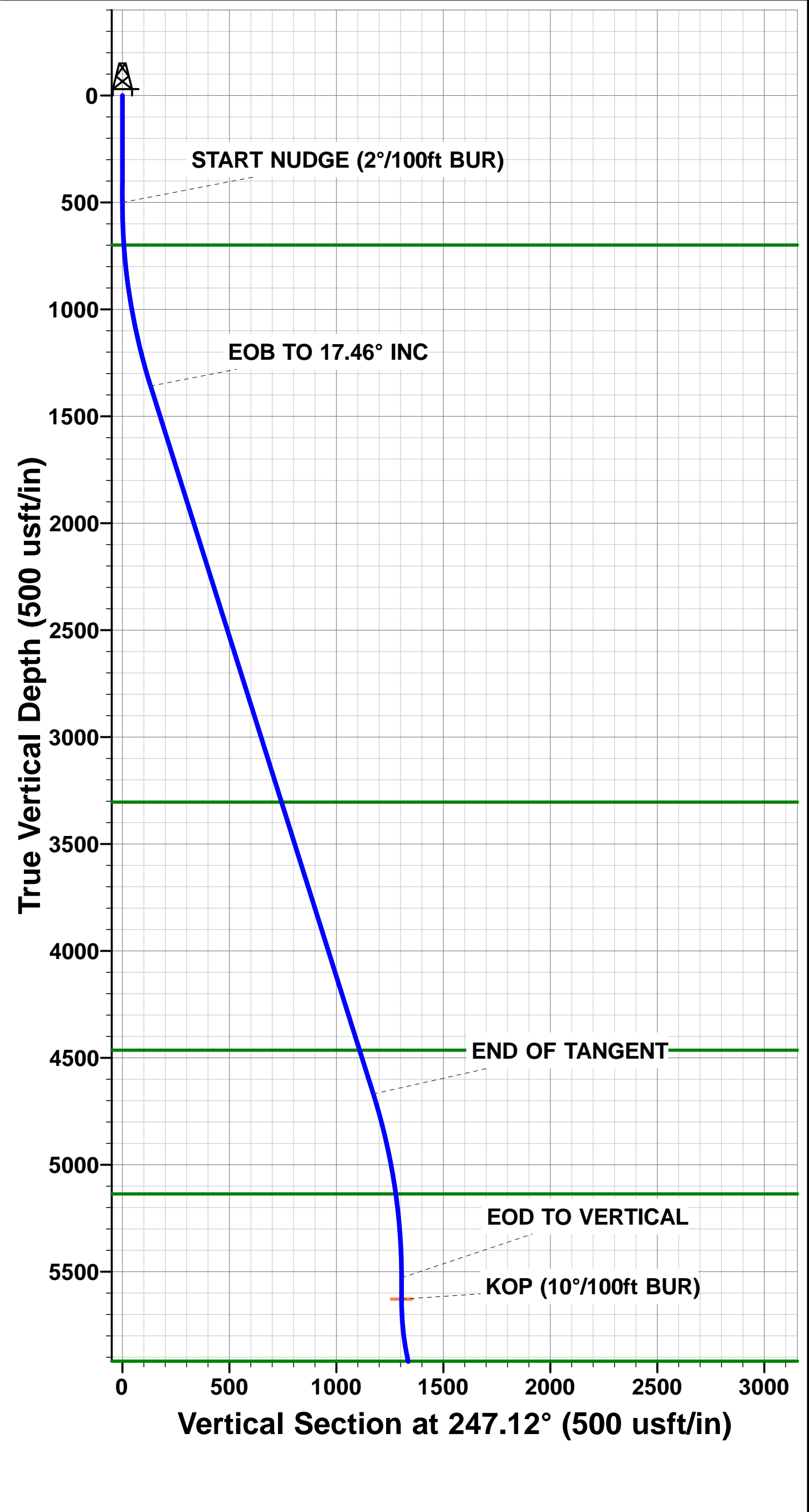
SHL: 610ft FSL & 1269ft FEL Sec 11

BPI : 460ft FNL & 2465ft FEL Sec 14

EPI: 460ft FSL & 2451ft FEL Sec 23

BHL: 360ft FSL & 2451ft FEL of Sec 23

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GROTHEER 5-61 11B-14-23-1	5628.84	-507.21	-1202.19	40.408862	-104.174850
BPI - GROTHEER 5-61 11B-14-23-1	6201.80	-1080.16	-1205.59	40.407289	-104.174862
EPI - GROTHEER 5-61 11B-14-23-1	6201.80	-10785.75	-1263.73	40.380648	-104.175069
BHL - GROTHEER 5-61 11B-14-23-1	6201.80	-10885.94	-1264.30	40.380373	-104.175071



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		SE SE SEC. 11 T5N R61W 6th P.M.			
Site Position:		Northing:	1,395,071.08 usft	Latitude:	40.410254
From:	Lat/Long	Easting:	3,370,200.45 usft	Longitude:	-104.170533
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.86 °

Well	GROTHEER 5-61 11B-14-23-1					
Well Position	+N/-S	0.00 usft	Northing:	1,395,071.08 usft	Latitude:	40.410254
	+E/-W	0.00 usft	Easting:	3,370,200.45 usft	Longitude:	-104.170533
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,689.80 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	25/02/2019	7.71	66.91	52,266

Design	PROPOSAL #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	186.62

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,714.80	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	-4,214.80	0.00	0.00	0.00	0.00	0.00	0.00	
1,372.85	17.46	247.12	1,359.41	-3,355.39	-51.29	-121.57	2.00	2.00	0.00	247.12	
4,842.69	17.46	247.12	4,669.43	-45.37	-455.92	-1,080.62	0.00	0.00	0.00	0.00	
5,715.54	0.00	0.00	5,528.84	814.04	-507.21	-1,202.19	2.00	-2.00	0.00	180.00	
5,815.54	0.00	0.00	5,628.84	914.04	-507.21	-1,202.19	0.00	0.00	0.00	0.00	KOP - GROTHEER
6,715.54	90.00	180.34	6,201.80	1,487.00	-1,080.16	-1,205.59	10.00	10.00	-19.96	180.34	BPI - GROTHEER !
16,421.31	90.00	180.35	6,201.80	1,487.00	-10,785.75	-1,263.73	0.00	0.00	0.00	82.22	EPI - GROTHEER !
16,521.50	90.00	180.30	6,201.80	1,487.00	-10,885.94	-1,264.30	0.05	0.00	-0.05	-91.04	BHL - GROTHEER

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
SHL: 610ft FSL & 1269ft FEL of Sec 11										
0.00	0.00	0.00	0.00	4,714.80	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,614.80	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,514.80	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,414.80	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	4,314.80	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
500.00	0.00	0.00	500.00	4,214.80	0.00	0.00	0.00	0.00	0.00	0.00
600.00	2.00	247.12	599.98	4,114.82	-0.68	-1.61	0.86	2.00	2.00	0.00
PIERRE SHALE (BASE FOX HILLS)										
699.96	4.00	247.12	699.80	4,015.00	-2.71	-6.43	3.44	2.00	2.00	0.00
700.00	4.00	247.12	699.84	4,014.96	-2.71	-6.43	3.44	2.00	2.00	0.00
800.00	6.00	247.12	799.45	3,915.35	-6.10	-14.46	7.73	2.00	2.00	0.00
900.00	8.00	247.12	898.70	3,816.10	-10.84	-25.69	13.73	2.00	2.00	0.00
1,000.00	10.00	247.12	997.47	3,717.33	-16.92	-40.10	21.43	2.00	2.00	0.00
1,100.00	12.00	247.12	1,095.62	3,619.18	-24.34	-57.68	30.83	2.00	2.00	0.00
1,200.00	14.00	247.12	1,193.06	3,521.74	-33.08	-78.40	41.90	2.00	2.00	0.00
1,300.00	16.00	247.12	1,289.64	3,425.16	-43.14	-102.25	54.65	2.00	2.00	0.00
EOB TO 17.46° INC										
1,372.85	17.46	247.12	1,359.41	3,355.39	-51.29	-121.57	64.97	2.00	2.00	0.00
1,400.00	17.46	247.12	1,385.31	3,329.49	-54.46	-129.07	68.98	0.00	0.00	0.00
1,500.00	17.46	247.12	1,480.70	3,234.10	-66.12	-156.71	83.76	0.00	0.00	0.00
1,600.00	17.46	247.12	1,576.10	3,138.70	-77.78	-184.35	98.53	0.00	0.00	0.00
1,700.00	17.46	247.12	1,671.49	3,043.31	-89.44	-211.99	113.30	0.00	0.00	0.00
1,800.00	17.46	247.12	1,766.88	2,947.92	-101.10	-239.63	128.07	0.00	0.00	0.00
1,900.00	17.46	247.12	1,862.28	2,852.52	-112.76	-267.27	142.84	0.00	0.00	0.00
2,000.00	17.46	247.12	1,957.67	2,757.13	-124.42	-294.91	157.62	0.00	0.00	0.00
2,100.00	17.46	247.12	2,053.07	2,661.73	-136.09	-322.55	172.39	0.00	0.00	0.00
2,200.00	17.46	247.12	2,148.46	2,566.34	-147.75	-350.19	187.16	0.00	0.00	0.00
2,300.00	17.46	247.12	2,243.86	2,470.94	-159.41	-377.83	201.93	0.00	0.00	0.00
2,400.00	17.46	247.12	2,339.25	2,375.55	-171.07	-405.47	216.70	0.00	0.00	0.00
2,500.00	17.46	247.12	2,434.64	2,280.16	-182.73	-433.11	231.48	0.00	0.00	0.00
2,600.00	17.46	247.12	2,530.04	2,184.76	-194.39	-460.75	246.25	0.00	0.00	0.00
2,700.00	17.46	247.12	2,625.43	2,089.37	-206.05	-488.39	261.02	0.00	0.00	0.00
2,800.00	17.46	247.12	2,720.83	1,993.97	-217.72	-516.03	275.79	0.00	0.00	0.00
2,900.00	17.46	247.12	2,816.22	1,898.58	-229.38	-543.67	290.57	0.00	0.00	0.00
3,000.00	17.46	247.12	2,911.62	1,803.18	-241.04	-571.31	305.34	0.00	0.00	0.00
3,100.00	17.46	247.12	3,007.01	1,707.79	-252.70	-598.95	320.11	0.00	0.00	0.00
3,200.00	17.46	247.12	3,102.40	1,612.40	-264.36	-626.59	334.88	0.00	0.00	0.00
3,300.00	17.46	247.12	3,197.80	1,517.00	-276.02	-654.23	349.65	0.00	0.00	0.00
3,400.00	17.46	247.12	3,293.19	1,421.61	-287.68	-681.87	364.43	0.00	0.00	0.00
PARKMAN										
3,412.17	17.46	247.12	3,304.80	1,410.00	-289.10	-685.23	366.22	0.00	0.00	0.00
3,500.00	17.46	247.12	3,388.59	1,326.21	-299.34	-709.51	379.20	0.00	0.00	0.00
3,600.00	17.46	247.12	3,483.98	1,230.82	-311.01	-737.15	393.97	0.00	0.00	0.00
3,700.00	17.46	247.12	3,579.37	1,135.43	-322.67	-764.79	408.74	0.00	0.00	0.00
3,800.00	17.46	247.12	3,674.77	1,040.03	-334.33	-792.43	423.51	0.00	0.00	0.00
3,900.00	17.46	247.12	3,770.16	944.64	-345.99	-820.07	438.29	0.00	0.00	0.00
4,000.00	17.46	247.12	3,865.56	849.24	-357.65	-847.71	453.06	0.00	0.00	0.00
4,100.00	17.46	247.12	3,960.95	753.85	-369.31	-875.34	467.83	0.00	0.00	0.00
4,200.00	17.46	247.12	4,056.35	658.45	-380.97	-902.98	482.60	0.00	0.00	0.00
4,300.00	17.46	247.12	4,151.74	563.06	-392.64	-930.62	497.37	0.00	0.00	0.00
4,400.00	17.46	247.12	4,247.13	467.67	-404.30	-958.26	512.15	0.00	0.00	0.00
4,500.00	17.46	247.12	4,342.53	372.27	-415.96	-985.90	526.92	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,600.00	17.46	247.12	4,437.92	276.88	-427.62	-1,013.54	541.69	0.00	0.00	0.00
SUSSEX										
4,628.17	17.46	247.12	4,464.80	250.00	-430.90	-1,021.33	545.85	0.00	0.00	0.00
4,700.00	17.46	247.12	4,533.32	181.48	-439.28	-1,041.18	556.46	0.00	0.00	0.00
4,800.00	17.46	247.12	4,628.71	86.09	-450.94	-1,068.82	571.24	0.00	0.00	0.00
END OF TANGENT										
4,842.69	17.46	247.12	4,669.43	45.37	-455.92	-1,080.62	577.54	0.00	0.00	0.00
4,900.00	16.31	247.12	4,724.27	-9.47	-462.39	-1,095.96	585.74	2.00	-2.00	0.00
5,000.00	14.31	247.12	4,820.72	-105.92	-472.65	-1,120.29	598.74	2.00	-2.00	0.00
5,100.00	12.31	247.12	4,918.03	-203.23	-481.60	-1,141.50	610.08	2.00	-2.00	0.00
5,200.00	10.31	247.12	5,016.08	-301.28	-489.23	-1,159.57	619.73	2.00	-2.00	0.00
5,300.00	8.31	247.12	5,114.76	-399.96	-495.52	-1,174.47	627.70	2.00	-2.00	0.00
SHANNON										
5,322.26	7.87	247.12	5,136.80	-422.00	-496.73	-1,177.36	629.24	2.00	-2.00	0.00
5,400.00	6.31	247.12	5,213.94	-499.14	-500.46	-1,186.20	633.97	2.00	-2.00	0.00
5,500.00	4.31	247.12	5,313.51	-598.71	-504.06	-1,194.72	638.52	2.00	-2.00	0.00
5,600.00	2.31	247.12	5,413.33	-698.53	-506.30	-1,200.04	641.37	2.00	-2.00	0.00
5,700.00	0.31	247.12	5,513.30	-798.50	-507.19	-1,202.15	642.49	2.00	-2.00	0.00
EOD TO VERTICAL										
5,715.54	0.00	0.00	5,528.84	-814.04	-507.21	-1,202.19	642.51	2.00	-2.00	0.00
5,800.00	0.00	0.00	5,613.30	-898.50	-507.21	-1,202.19	642.51	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,815.54	0.00	0.00	5,628.84	-914.04	-507.21	-1,202.19	642.51	0.00	0.00	0.00
5,900.00	8.45	180.34	5,713.00	-998.20	-513.42	-1,202.23	648.69	10.00	10.00	0.00
6,000.00	18.45	180.34	5,810.13	-1,095.33	-536.65	-1,202.36	671.78	10.00	10.00	0.00
6,100.00	28.45	180.34	5,901.76	-1,186.96	-576.39	-1,202.60	711.27	10.00	10.00	0.00
SHARON SPRINGS SHALE										
6,119.56	30.40	180.34	5,918.80	-1,204.00	-586.00	-1,202.66	720.83	10.00	10.00	0.00
6,200.00	38.45	180.34	5,985.09	-1,270.29	-631.43	-1,202.93	765.99	10.00	10.00	0.00
NIOBRARA FORMATION										
6,234.97	41.94	180.34	6,011.80	-1,297.00	-653.99	-1,203.06	788.42	10.00	10.00	0.00
NIOBRARA A CHALK										
6,256.86	44.13	180.34	6,027.80	-1,313.00	-668.93	-1,203.15	803.27	10.00	10.00	0.00
6,300.00	48.45	180.34	6,057.60	-1,342.80	-700.11	-1,203.33	834.26	10.00	10.00	0.00
NIOBRARA B CHALK										
6,373.67	55.81	180.34	6,102.80	-1,388.00	-758.23	-1,203.68	892.03	10.00	10.00	0.00
6,400.00	58.45	180.34	6,117.09	-1,402.29	-780.33	-1,203.81	914.00	10.00	10.00	0.00
6,500.00	68.45	180.34	6,161.73	-1,446.93	-869.67	-1,204.34	1,002.80	10.00	10.00	0.00
NIOBRARA C CHALK										
6,584.15	76.86	180.34	6,186.80	-1,472.00	-949.92	-1,204.82	1,082.57	10.00	10.00	0.00
6,600.00	78.45	180.34	6,190.19	-1,475.39	-965.40	-1,204.91	1,097.96	10.00	10.00	0.00
6,700.00	88.45	180.34	6,201.59	-1,486.79	-1,064.62	-1,205.50	1,196.59	10.00	10.00	0.00
BPI: 460ft FNL & 2465ft FEL of Sec 14 - NIOBRARA C LP										
6,715.54	90.00	180.34	6,201.80	-1,487.00	-1,080.16	-1,205.59	1,212.03	10.00	10.00	0.00
6,800.00	90.00	180.34	6,201.80	-1,487.00	-1,164.62	-1,206.09	1,295.98	0.00	0.00	0.00
6,900.00	90.00	180.34	6,201.80	-1,487.00	-1,264.62	-1,206.68	1,395.38	0.00	0.00	0.00
7,000.00	90.00	180.34	6,201.80	-1,487.00	-1,364.61	-1,207.28	1,494.78	0.00	0.00	0.00
7,100.00	90.00	180.34	6,201.80	-1,487.00	-1,464.61	-1,207.87	1,594.18	0.00	0.00	0.00
7,200.00	90.00	180.34	6,201.80	-1,487.00	-1,564.61	-1,208.46	1,693.58	0.00	0.00	0.00
7,300.00	90.00	180.34	6,201.80	-1,487.00	-1,664.61	-1,209.06	1,792.98	0.00	0.00	0.00
7,400.00	90.00	180.34	6,201.81	-1,487.01	-1,764.61	-1,209.65	1,892.38	0.00	0.00	0.00
7,500.00	90.00	180.34	6,201.81	-1,487.01	-1,864.61	-1,210.25	1,991.78	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,600.00	90.00	180.34	6,201.81	-1,487.01	-1,964.60	-1,210.84	2,091.18	0.00	0.00	0.00
7,700.00	90.00	180.34	6,201.81	-1,487.01	-2,064.60	-1,211.44	2,190.57	0.00	0.00	0.00
7,800.00	90.00	180.34	6,201.81	-1,487.01	-2,164.60	-1,212.03	2,289.97	0.00	0.00	0.00
7,900.00	90.00	180.34	6,201.81	-1,487.01	-2,264.60	-1,212.62	2,389.37	0.00	0.00	0.00
8,000.00	90.00	180.34	6,201.81	-1,487.01	-2,364.60	-1,213.22	2,488.77	0.00	0.00	0.00
8,100.00	90.00	180.34	6,201.81	-1,487.01	-2,464.60	-1,213.81	2,588.17	0.00	0.00	0.00
8,200.00	90.00	180.34	6,201.81	-1,487.01	-2,564.59	-1,214.41	2,687.57	0.00	0.00	0.00
8,300.00	90.00	180.34	6,201.81	-1,487.01	-2,664.59	-1,215.00	2,786.97	0.00	0.00	0.00
8,400.00	90.00	180.34	6,201.81	-1,487.01	-2,764.59	-1,215.60	2,886.37	0.00	0.00	0.00
8,500.00	90.00	180.34	6,201.81	-1,487.01	-2,864.59	-1,216.19	2,985.77	0.00	0.00	0.00
8,600.00	90.00	180.34	6,201.81	-1,487.01	-2,964.59	-1,216.79	3,085.17	0.00	0.00	0.00
8,700.00	90.00	180.34	6,201.81	-1,487.01	-3,064.58	-1,217.39	3,184.57	0.00	0.00	0.00
8,800.00	90.00	180.34	6,201.81	-1,487.01	-3,164.58	-1,217.98	3,283.97	0.00	0.00	0.00
8,900.00	90.00	180.34	6,201.81	-1,487.01	-3,264.58	-1,218.58	3,383.36	0.00	0.00	0.00
9,000.00	90.00	180.34	6,201.81	-1,487.01	-3,364.58	-1,219.17	3,482.76	0.00	0.00	0.00
9,100.00	90.00	180.34	6,201.81	-1,487.01	-3,464.58	-1,219.77	3,582.16	0.00	0.00	0.00
9,200.00	90.00	180.34	6,201.81	-1,487.01	-3,564.58	-1,220.37	3,681.56	0.00	0.00	0.00
9,300.00	90.00	180.34	6,201.82	-1,487.02	-3,664.57	-1,220.96	3,780.96	0.00	0.00	0.00
9,400.00	90.00	180.34	6,201.82	-1,487.02	-3,764.57	-1,221.56	3,880.36	0.00	0.00	0.00
9,500.00	90.00	180.34	6,201.82	-1,487.02	-3,864.57	-1,222.15	3,979.76	0.00	0.00	0.00
9,600.00	90.00	180.34	6,201.82	-1,487.02	-3,964.57	-1,222.75	4,079.16	0.00	0.00	0.00
9,700.00	90.00	180.34	6,201.82	-1,487.02	-4,064.57	-1,223.35	4,178.56	0.00	0.00	0.00
9,800.00	90.00	180.34	6,201.82	-1,487.02	-4,164.57	-1,223.94	4,277.96	0.00	0.00	0.00
9,900.00	90.00	180.34	6,201.82	-1,487.02	-4,264.56	-1,224.54	4,377.36	0.00	0.00	0.00
10,000.00	90.00	180.34	6,201.82	-1,487.02	-4,364.56	-1,225.14	4,476.76	0.00	0.00	0.00
10,100.00	90.00	180.34	6,201.82	-1,487.02	-4,464.56	-1,225.74	4,576.16	0.00	0.00	0.00
10,200.00	90.00	180.34	6,201.82	-1,487.02	-4,564.56	-1,226.33	4,675.56	0.00	0.00	0.00
10,300.00	90.00	180.34	6,201.82	-1,487.02	-4,664.56	-1,226.93	4,774.96	0.00	0.00	0.00
10,400.00	90.00	180.34	6,201.82	-1,487.02	-4,764.55	-1,227.53	4,874.36	0.00	0.00	0.00
10,500.00	90.00	180.34	6,201.82	-1,487.02	-4,864.55	-1,228.13	4,973.76	0.00	0.00	0.00
10,600.00	90.00	180.34	6,201.82	-1,487.02	-4,964.55	-1,228.72	5,073.15	0.00	0.00	0.00
10,700.00	90.00	180.34	6,201.82	-1,487.02	-5,064.55	-1,229.32	5,172.55	0.00	0.00	0.00
10,800.00	90.00	180.34	6,201.82	-1,487.02	-5,164.55	-1,229.92	5,271.95	0.00	0.00	0.00
10,900.00	90.00	180.34	6,201.82	-1,487.02	-5,264.55	-1,230.52	5,371.35	0.00	0.00	0.00
11,000.00	90.00	180.34	6,201.82	-1,487.02	-5,364.54	-1,231.12	5,470.75	0.00	0.00	0.00
11,100.00	90.00	180.34	6,201.82	-1,487.02	-5,464.54	-1,231.72	5,570.15	0.00	0.00	0.00
11,200.00	90.00	180.34	6,201.82	-1,487.02	-5,564.54	-1,232.31	5,669.55	0.00	0.00	0.00
11,300.00	90.00	180.34	6,201.82	-1,487.02	-5,664.54	-1,232.91	5,768.95	0.00	0.00	0.00
11,400.00	90.00	180.34	6,201.82	-1,487.02	-5,764.54	-1,233.51	5,868.35	0.00	0.00	0.00
11,500.00	90.00	180.34	6,201.82	-1,487.02	-5,864.53	-1,234.11	5,967.75	0.00	0.00	0.00
11,600.00	90.00	180.34	6,201.82	-1,487.02	-5,964.53	-1,234.71	6,067.15	0.00	0.00	0.00
11,700.00	90.00	180.34	6,201.82	-1,487.02	-6,064.53	-1,235.31	6,166.55	0.00	0.00	0.00
11,800.00	90.00	180.34	6,201.82	-1,487.02	-6,164.53	-1,235.91	6,265.95	0.00	0.00	0.00
11,900.00	90.00	180.34	6,201.82	-1,487.02	-6,264.53	-1,236.51	6,365.35	0.00	0.00	0.00
12,000.00	90.00	180.34	6,201.82	-1,487.02	-6,364.53	-1,237.11	6,464.75	0.00	0.00	0.00
12,100.00	90.00	180.34	6,201.82	-1,487.02	-6,464.52	-1,237.71	6,564.15	0.00	0.00	0.00
12,200.00	90.00	180.34	6,201.82	-1,487.02	-6,564.52	-1,238.31	6,663.55	0.00	0.00	0.00
12,300.00	90.00	180.34	6,201.82	-1,487.02	-6,664.52	-1,238.91	6,762.95	0.00	0.00	0.00
12,400.00	90.00	180.34	6,201.82	-1,487.02	-6,764.52	-1,239.51	6,862.35	0.00	0.00	0.00
12,500.00	90.00	180.34	6,201.82	-1,487.02	-6,864.52	-1,240.11	6,961.75	0.00	0.00	0.00
12,600.00	90.00	180.34	6,201.82	-1,487.02	-6,964.51	-1,240.71	7,061.15	0.00	0.00	0.00
12,700.00	90.00	180.34	6,201.82	-1,487.02	-7,064.51	-1,241.31	7,160.55	0.00	0.00	0.00
12,800.00	90.00	180.34	6,201.82	-1,487.02	-7,164.51	-1,241.91	7,259.95	0.00	0.00	0.00
12,900.00	90.00	180.34	6,201.82	-1,487.02	-7,264.51	-1,242.51	7,359.35	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,000.00	90.00	180.34	6,201.82	-1,487.02	-7,364.51	-1,243.11	7,458.75	0.00	0.00	0.00
13,100.00	90.00	180.34	6,201.82	-1,487.02	-7,464.51	-1,243.71	7,558.15	0.00	0.00	0.00
13,200.00	90.00	180.34	6,201.82	-1,487.02	-7,564.50	-1,244.31	7,657.55	0.00	0.00	0.00
13,300.00	90.00	180.34	6,201.82	-1,487.02	-7,664.50	-1,244.91	7,756.95	0.00	0.00	0.00
13,400.00	90.00	180.34	6,201.82	-1,487.02	-7,764.50	-1,245.51	7,856.35	0.00	0.00	0.00
13,500.00	90.00	180.34	6,201.82	-1,487.02	-7,864.50	-1,246.11	7,955.75	0.00	0.00	0.00
13,600.00	90.00	180.34	6,201.82	-1,487.02	-7,964.50	-1,246.72	8,055.15	0.00	0.00	0.00
13,700.00	90.00	180.34	6,201.82	-1,487.02	-8,064.49	-1,247.32	8,154.55	0.00	0.00	0.00
13,800.00	90.00	180.34	6,201.82	-1,487.02	-8,164.49	-1,247.92	8,253.95	0.00	0.00	0.00
13,900.00	90.00	180.34	6,201.81	-1,487.01	-8,264.49	-1,248.52	8,353.35	0.00	0.00	0.00
14,000.00	90.00	180.34	6,201.81	-1,487.01	-8,364.49	-1,249.12	8,452.75	0.00	0.00	0.00
14,100.00	90.00	180.34	6,201.81	-1,487.01	-8,464.49	-1,249.72	8,552.15	0.00	0.00	0.00
14,200.00	90.00	180.35	6,201.81	-1,487.01	-8,564.49	-1,250.33	8,651.55	0.00	0.00	0.00
14,300.00	90.00	180.35	6,201.81	-1,487.01	-8,664.48	-1,250.93	8,750.95	0.00	0.00	0.00
14,400.00	90.00	180.35	6,201.81	-1,487.01	-8,764.48	-1,251.53	8,850.35	0.00	0.00	0.00
14,500.00	90.00	180.35	6,201.81	-1,487.01	-8,864.48	-1,252.13	8,949.75	0.00	0.00	0.00
14,600.00	90.00	180.35	6,201.81	-1,487.01	-8,964.48	-1,252.74	9,049.15	0.00	0.00	0.00
14,700.00	90.00	180.35	6,201.81	-1,487.01	-9,064.48	-1,253.34	9,148.55	0.00	0.00	0.00
14,800.00	90.00	180.35	6,201.81	-1,487.01	-9,164.48	-1,253.94	9,247.95	0.00	0.00	0.00
14,900.00	90.00	180.35	6,201.81	-1,487.01	-9,264.47	-1,254.54	9,347.35	0.00	0.00	0.00
15,000.00	90.00	180.35	6,201.81	-1,487.01	-9,364.47	-1,255.15	9,446.75	0.00	0.00	0.00
15,100.00	90.00	180.35	6,201.81	-1,487.01	-9,464.47	-1,255.75	9,546.15	0.00	0.00	0.00
15,200.00	90.00	180.35	6,201.81	-1,487.01	-9,564.47	-1,256.35	9,645.55	0.00	0.00	0.00
15,300.00	90.00	180.35	6,201.81	-1,487.01	-9,664.47	-1,256.96	9,744.95	0.00	0.00	0.00
15,400.00	90.00	180.35	6,201.81	-1,487.01	-9,764.46	-1,257.56	9,844.35	0.00	0.00	0.00
15,500.00	90.00	180.35	6,201.81	-1,487.01	-9,864.46	-1,258.17	9,943.75	0.00	0.00	0.00
15,600.00	90.00	180.35	6,201.81	-1,487.01	-9,964.46	-1,258.77	10,043.15	0.00	0.00	0.00
15,700.00	90.00	180.35	6,201.81	-1,487.01	-10,064.46	-1,259.37	10,142.55	0.00	0.00	0.00
15,800.00	90.00	180.35	6,201.80	-1,487.00	-10,164.46	-1,259.98	10,241.95	0.00	0.00	0.00
15,900.00	90.00	180.35	6,201.80	-1,487.00	-10,264.46	-1,260.58	10,341.35	0.00	0.00	0.00
16,000.00	90.00	180.35	6,201.80	-1,487.00	-10,364.45	-1,261.19	10,440.75	0.00	0.00	0.00
16,100.00	90.00	180.35	6,201.80	-1,487.00	-10,464.45	-1,261.79	10,540.15	0.00	0.00	0.00
16,200.00	90.00	180.35	6,201.80	-1,487.00	-10,564.45	-1,262.39	10,639.55	0.00	0.00	0.00
16,300.00	90.00	180.35	6,201.80	-1,487.00	-10,664.45	-1,263.00	10,738.95	0.00	0.00	0.00
16,400.00	90.00	180.35	6,201.80	-1,487.00	-10,764.45	-1,263.60	10,838.35	0.00	0.00	0.00
EPI: 460ft FSL & 2451ft FEL of Sec 23										
16,421.31	90.00	180.35	6,201.80	-1,487.00	-10,785.75	-1,263.73	10,859.53	0.00	0.00	0.00
16,500.00	90.00	180.31	6,201.80	-1,487.00	-10,864.44	-1,264.18	10,937.75	0.05	0.00	-0.05
BHL: 360ft FSL & 2451ft FEL of Sec 23										
16,521.50	90.00	180.30	6,201.80	-1,487.00	-10,885.94	-1,264.30	10,959.11	0.05	0.00	-0.05

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-14-23-1
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4714.80usft (Original Well Elev)
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-14-23-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
699.96	699.80	PIERRE SHALE (BASE FOX HILLS			
3,412.17	3,304.80	PARKMAN			
4,628.17	4,464.80	SUSSEX			
5,322.26	5,136.80	SHANNON			
6,119.56	5,918.80	SHARON SPRINGS SHALE			
6,234.97	6,011.80	NIOBRARA FORMATION			
6,256.86	6,027.80	NIOBRARA A CHALK			
6,373.67	6,102.80	NIOBRARA B CHALK			
6,584.15	6,186.80	NIOBRARA C CHALK			
6,715.54	6,201.80	NIOBRARA C LP			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 610ft FSL & 1269ft FEL of Sec 11
500.00	500.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,372.85	1,359.41	-51.29	-121.57	EOB TO 17.46° INC
4,842.69	4,669.43	-455.92	-1,080.62	END OF TANGENT
5,715.54	5,528.84	-507.21	-1,202.19	EOD TO VERTICAL
5,815.54	5,628.84	-507.21	-1,202.19	KOP (10°/100ft BUR)
6,715.54	6,201.80	-1,080.16	-1,205.59	BPI: 460ft FNL & 2465ft FEL of Sec 14
16,421.31	6,201.80	-10,785.75	-1,263.73	EPI: 460ft FSL & 2451ft FEL of Sec 23
16,521.50	6,201.80	-10,885.94	-1,264.30	BHL: 360ft FSL & 2451ft FEL of Sec 23