

BISON OIL & GAS II, LLC

WELD COUNTY, COLORADO (NAD 83)

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

GROTHER 5-61 11B-2-3

ORIGINAL WELLBORE

26 April, 2022

Plan: PROPOSAL #2





Project: WELD COUNTY, COLORADO (NAD 83)
Site: SE SE SEC. 11 T5N R61W 6th P.M.
Well: GROTHEER 5-61 11B-2-3
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #2

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 460ft FSL & 1238ft FEL of Sec 11
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1000.00	12.00	188.50	995.62	-61.91	-9.26	-61.70	62.60	EOB TO 12° INC
3123.13	12.00	188.50	3072.36	-498.49	-74.52	-496.79	504.03	END OF TANGENT
3723.13	0.00	0.00	3667.98	-560.40	-83.78	-558.49	566.63	EOD TO VERTICAL
5597.79	0.00	0.00	5542.64	-560.40	-83.78	-558.49	566.63	KOP (10°/100ft BUR)
6497.79	90.00	347.15	6115.60	-1.79	-211.21	2.70	1139.59	BPI: 460ft FSL & 1449ft FEL of Sec 11
6936.48	90.00	0.31	6115.60	433.31	-259.02	438.72	1578.28	EOT TO 0.31° AZ
16213.37	90.00	0.31	6115.60	9710.07	-208.78	9712.31	10855.17	EPI: 460ft FNL & 1526ft FEL of Sec 2
16218.50	90.00	0.16	6115.60	9715.20	-208.76	9717.44	10860.30	EOT TO 0.16° AZ
16313.19	90.00	0.16	6115.60	9809.89	-208.50	9812.10	10954.99	BHL: 360ft FNL & 1527ft FEL of Sec 2

PROPOSED LOCAL COORDINATES:

SHL: 460ft FSL & 1238ft FEL Sec 11

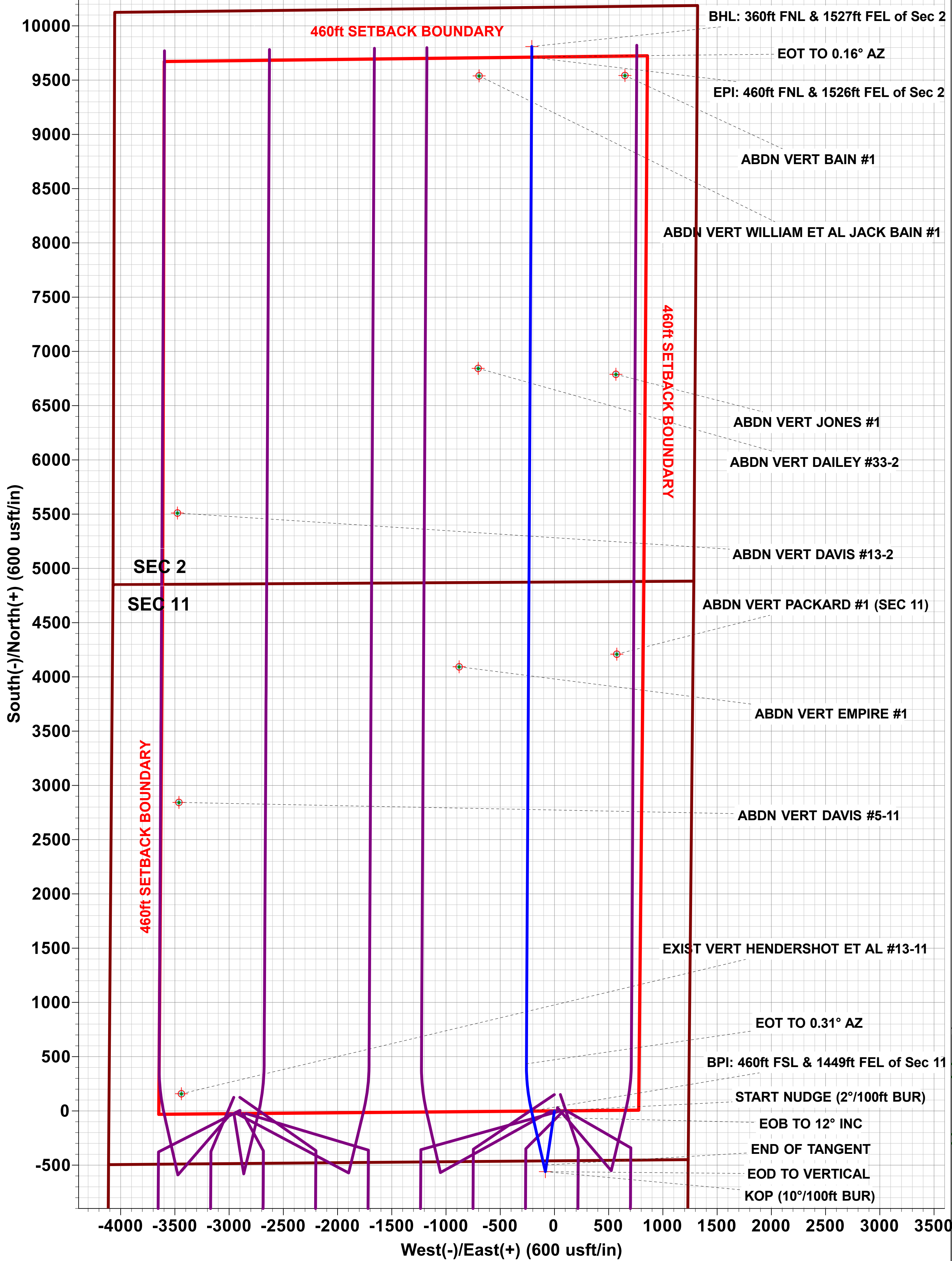
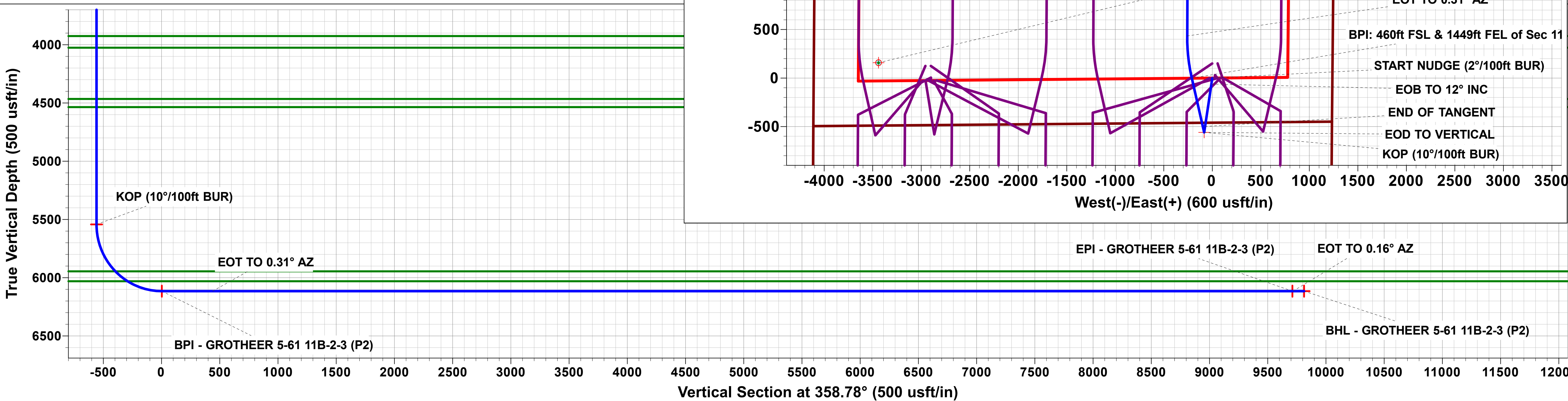
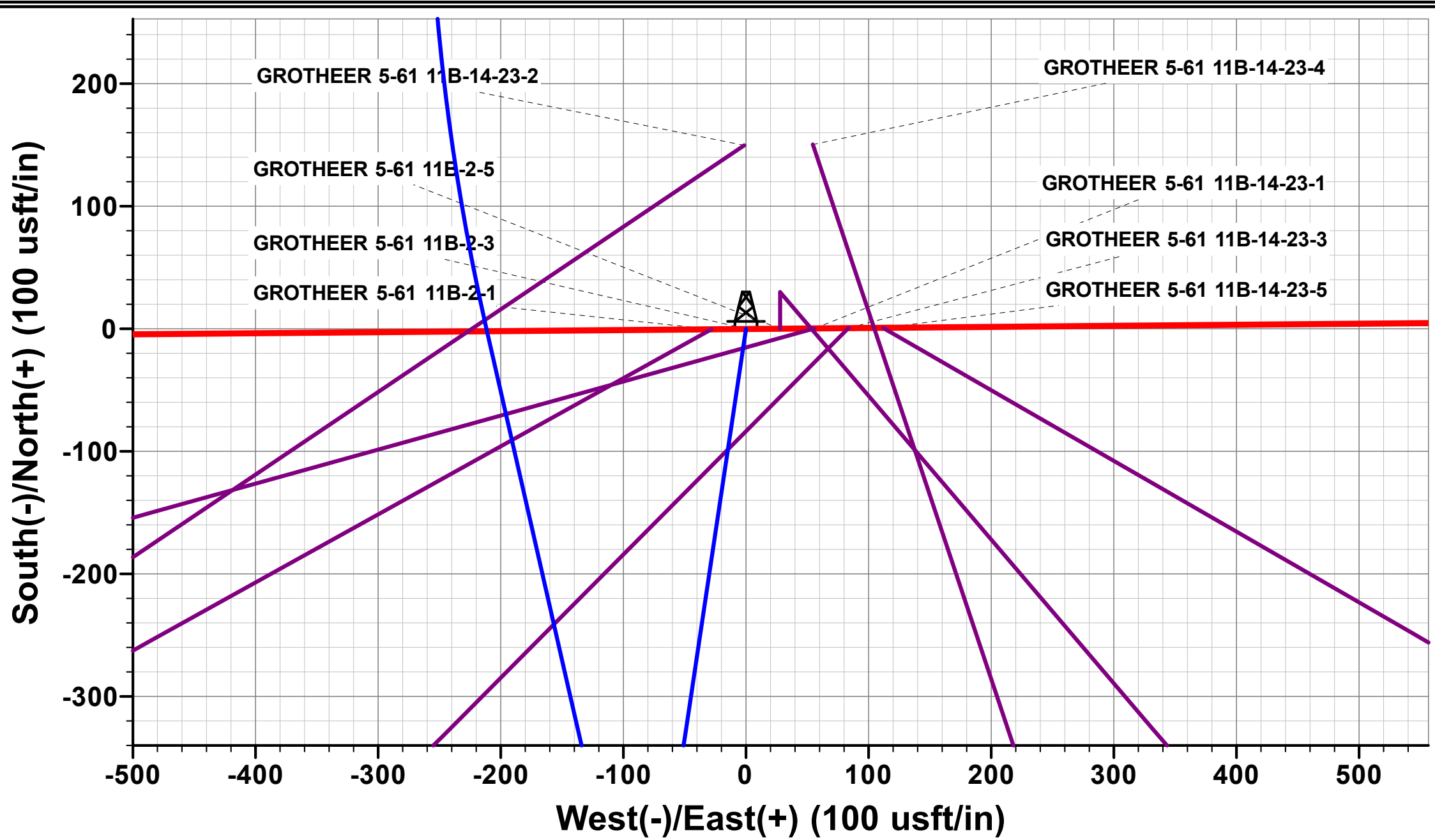
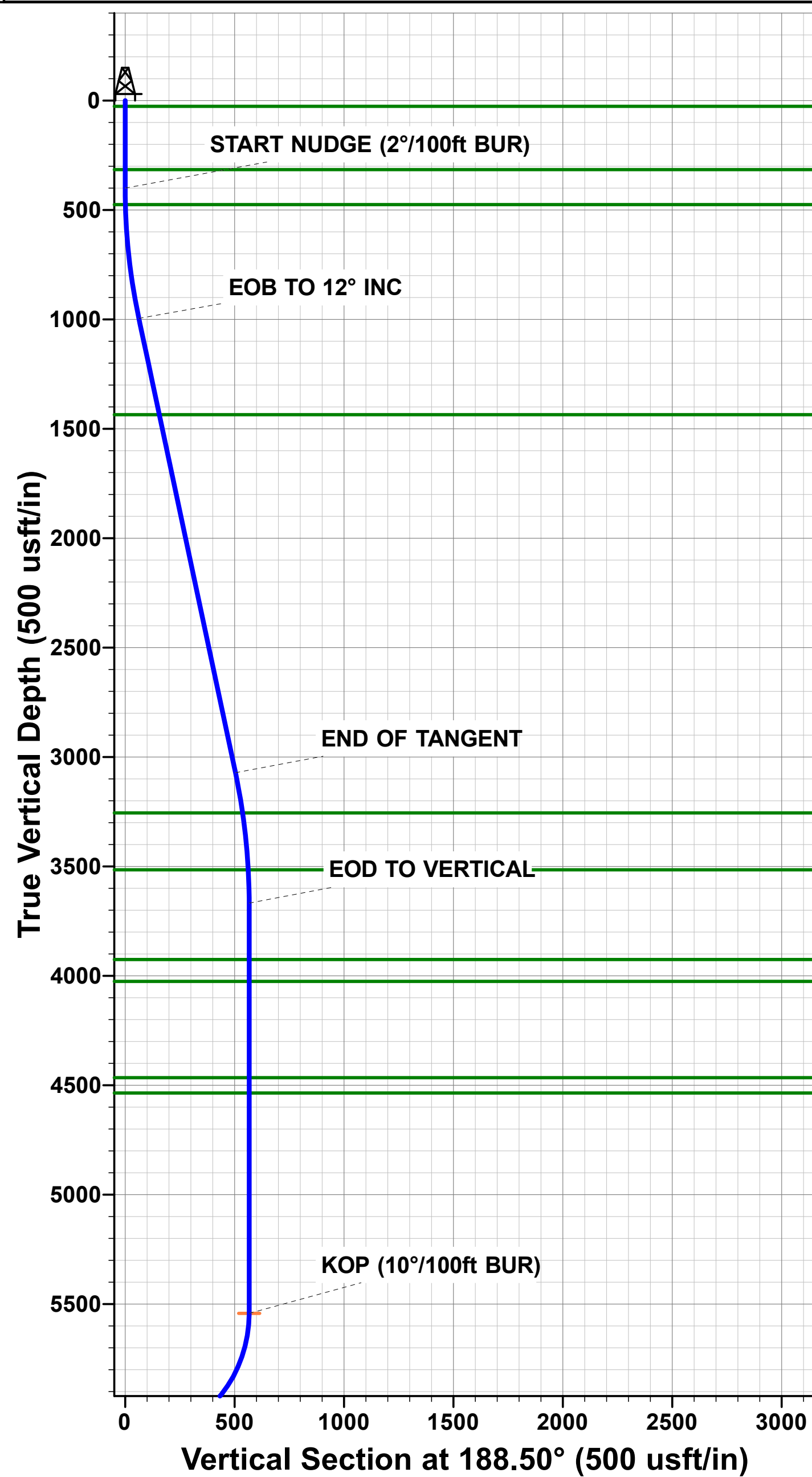
BPI : 460ft FSL & 1449ft FEL Sec 11

EPI: 460ft FNL & 1526ft FEL Sec 2

BHL: 360ft FNL & 1527ft FEL of Sec 2

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GROTHEER 5-61 11B-2-3 (P2)	5542.64	-560.40	-83.78	40.408305	-104.170728
BPI - GROTHEER 5-61 11B-2-3 (P2)	6115.60	-1.79	-211.21	40.409838	-104.171185
EPI - GROTHEER 5-61 11B-2-3 (P2)	6115.60	9710.07	-208.78	40.436496	-104.171177
BHL - GROTHEER 5-61 11B-2-3 (P2)	6115.60	9809.89	-208.50	40.436770	-104.171176



Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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
From:	Lat/Long	Easting:	3,370,200.45 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000 ft
		Latitude:	40.410254
		Longitude:	-104.170533
		Grid Convergence:	0.86 °

Well	GROTHEER 5-61 11B-2-3		
Well Position	+N/-S	-149.76 usft	Northing:
	+E/-W	29.52 usft	Easting:
Position Uncertainty	0.00 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2022-04-26	7.44	66.71	51,929.29742374

Design	PROPOSAL #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	358.78

Plan Sections											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,715.60	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	-4,315.60	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	12.00	188.50	995.62	-3,719.98	-61.91	-9.26	2.00	2.00	0.00	188.50	
3,123.13	12.00	188.50	3,072.36	-1,643.24	-498.49	-74.52	0.00	0.00	0.00	0.00	
3,723.13	0.00	0.00	3,667.98	-1,047.62	-560.40	-83.78	2.00	-2.00	0.00	180.00	
5,597.79	0.00	0.00	5,542.64	827.04	-560.40	-83.78	0.00	0.00	0.00	0.00	KOP - GROTHEER
6,497.79	90.00	347.15	6,115.60	1,400.00	-1.79	-211.21	10.00	10.00	-1.43	347.15	BPI - GROTHEER !
6,936.48	90.00	0.31	6,115.60	1,400.00	433.32	-259.02	3.00	0.00	3.00	90.00	
16,213.37	90.00	0.31	6,115.60	1,400.00	9,710.07	-208.78	0.00	0.00	0.00	0.00	EPI - GROTHEER !
16,218.50	90.00	0.16	6,115.60	1,400.00	9,715.20	-208.76	3.00	0.00	-3.00	-90.00	
16,313.19	90.00	0.16	6,115.60	1,400.00	9,809.89	-208.50	0.00	0.00	0.00	0.00	BHL - GROTHEER

Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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: 460ft FSL & 1238ft FEL of Sec 11										
0.00	0.00	0.00	0.00	4,715.60	0.00	0.00	0.00	0.00	0.00	0.00
Laramie-Fox Hills Formation										
26.60	0.00	0.00	26.60	4,689.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,615.60	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,515.60	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	4,415.60	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Formation										
315.60	0.00	0.00	315.60	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
400.00	0.00	0.00	400.00	4,315.60	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre aquifer										
475.61	1.51	188.50	475.60	4,240.00	-0.99	-0.15	-0.98	2.00	2.00	0.00
500.00	2.00	188.50	499.98	4,215.62	-1.73	-0.26	-1.72	2.00	2.00	0.00
600.00	4.00	188.50	599.84	4,115.76	-6.90	-1.03	-6.88	2.00	2.00	0.00
700.00	6.00	188.50	699.45	4,016.15	-15.52	-2.32	-15.47	2.00	2.00	0.00
800.00	8.00	188.50	798.70	3,916.90	-27.57	-4.12	-27.48	2.00	2.00	0.00
900.00	10.00	188.50	897.47	3,818.13	-43.04	-6.44	-42.90	2.00	2.00	0.00
EOB TO 12° INC										
1,000.00	12.00	188.50	995.62	3,719.98	-61.91	-9.26	-61.70	2.00	2.00	0.00
1,100.00	12.00	188.50	1,093.44	3,622.16	-82.48	-12.33	-82.20	0.00	0.00	0.00
1,200.00	12.00	188.50	1,191.25	3,524.35	-103.04	-15.40	-102.69	0.00	0.00	0.00
1,300.00	12.00	188.50	1,289.07	3,426.53	-123.60	-18.48	-123.18	0.00	0.00	0.00
1,400.00	12.00	188.50	1,386.88	3,328.72	-144.16	-21.55	-143.67	0.00	0.00	0.00
Base of Upper Pierre aquifer										
1,449.81	12.00	188.50	1,435.60	3,280.00	-154.41	-23.08	-153.88	0.00	0.00	0.00
1,500.00	12.00	188.50	1,484.70	3,230.90	-164.73	-24.63	-164.17	0.00	0.00	0.00
1,600.00	12.00	188.50	1,582.51	3,133.09	-185.29	-27.70	-184.66	0.00	0.00	0.00
1,700.00	12.00	188.50	1,680.33	3,035.27	-205.85	-30.78	-205.15	0.00	0.00	0.00
1,800.00	12.00	188.50	1,778.14	2,937.46	-226.42	-33.85	-225.65	0.00	0.00	0.00
1,900.00	12.00	188.50	1,875.96	2,839.64	-246.98	-36.92	-246.14	0.00	0.00	0.00
2,000.00	12.00	188.50	1,973.77	2,741.83	-267.54	-40.00	-266.63	0.00	0.00	0.00
2,100.00	12.00	188.50	2,071.59	2,644.01	-288.10	-43.07	-287.12	0.00	0.00	0.00
2,200.00	12.00	188.50	2,169.40	2,546.20	-308.67	-46.15	-307.62	0.00	0.00	0.00
2,300.00	12.00	188.50	2,267.22	2,448.38	-329.23	-49.22	-328.11	0.00	0.00	0.00
2,400.00	12.00	188.50	2,365.03	2,350.57	-349.79	-52.29	-348.60	0.00	0.00	0.00
2,500.00	12.00	188.50	2,462.84	2,252.76	-370.35	-55.37	-369.09	0.00	0.00	0.00
2,600.00	12.00	188.50	2,560.66	2,154.94	-390.92	-58.44	-389.59	0.00	0.00	0.00
2,700.00	12.00	188.50	2,658.47	2,057.13	-411.48	-61.52	-410.08	0.00	0.00	0.00
2,800.00	12.00	188.50	2,756.29	1,959.31	-432.04	-64.59	-430.57	0.00	0.00	0.00
2,900.00	12.00	188.50	2,854.10	1,861.50	-452.60	-67.67	-451.06	0.00	0.00	0.00
3,000.00	12.00	188.50	2,951.92	1,763.68	-473.17	-70.74	-471.56	0.00	0.00	0.00
3,100.00	12.00	188.50	3,049.73	1,665.87	-493.73	-73.81	-492.05	0.00	0.00	0.00
END OF TANGENT										
3,123.13	12.00	188.50	3,072.36	1,643.24	-498.49	-74.52	-496.79	0.00	0.00	0.00
3,200.00	10.46	188.50	3,147.75	1,567.85	-513.29	-76.74	-511.55	2.00	-2.00	0.00
3,300.00	8.46	188.50	3,246.39	1,469.21	-529.55	-79.17	-527.75	2.00	-2.00	0.00
Larimer ("Parkman") sandstone										
3,309.31	8.28	188.50	3,255.60	1,460.00	-530.89	-79.37	-529.09	2.00	-2.00	0.00
3,400.00	6.46	188.50	3,345.54	1,370.06	-542.40	-81.09	-540.55	2.00	-2.00	0.00
3,500.00	4.46	188.50	3,445.08	1,270.52	-551.81	-82.50	-549.93	2.00	-2.00	0.00
Pierre Formation										
3,570.68	3.05	188.50	3,515.60	1,200.00	-556.39	-83.18	-554.50	2.00	-2.00	0.00

Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
3,600.00	2.46	188.50	3,544.89	1,170.71	-557.78	-83.39	-555.89	2.00	-2.00	0.00
3,700.00	0.46	188.50	3,644.85	1,070.75	-560.31	-83.77	-558.40	2.00	-2.00	0.00
EOD TO VERTICAL										
3,723.13	0.00	0.00	3,667.98	1,047.62	-560.40	-83.78	-558.49	2.00	-2.00	0.00
3,800.00	0.00	0.00	3,744.85	970.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
3,900.00	0.00	0.00	3,844.85	870.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
Terry ("Sussex") sandstone										
3,980.75	0.00	0.00	3,925.60	790.00	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,000.00	0.00	0.00	3,944.85	770.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
Pierre Formation										
4,080.75	0.00	0.00	4,025.60	690.00	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,100.00	0.00	0.00	4,044.85	670.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,200.00	0.00	0.00	4,144.85	570.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,300.00	0.00	0.00	4,244.85	470.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,400.00	0.00	0.00	4,344.85	370.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,500.00	0.00	0.00	4,444.85	270.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
Hygiene ("Shannon") sandstone										
4,520.75	0.00	0.00	4,465.60	250.00	-560.40	-83.78	-558.49	0.00	0.00	0.00
Pierre Formation										
4,590.75	0.00	0.00	4,535.60	180.00	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,600.00	0.00	0.00	4,544.85	170.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,700.00	0.00	0.00	4,644.85	70.75	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,800.00	0.00	0.00	4,744.85	-29.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
4,900.00	0.00	0.00	4,844.85	-129.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,000.00	0.00	0.00	4,944.85	-229.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,100.00	0.00	0.00	5,044.85	-329.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,200.00	0.00	0.00	5,144.85	-429.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,300.00	0.00	0.00	5,244.85	-529.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,400.00	0.00	0.00	5,344.85	-629.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,500.00	0.00	0.00	5,444.85	-729.25	-560.40	-83.78	-558.49	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,597.79	0.00	0.00	5,542.64	-827.04	-560.40	-83.78	-558.49	0.00	0.00	0.00
5,600.00	0.22	347.15	5,544.85	-829.25	-560.40	-83.78	-558.49	10.00	10.00	0.00
5,700.00	10.22	347.15	5,644.31	-928.71	-551.54	-85.80	-549.59	10.00	10.00	0.00
5,800.00	20.22	347.15	5,740.68	-1,025.08	-525.97	-91.64	-523.90	10.00	10.00	0.00
5,900.00	30.22	347.15	5,831.03	-1,115.43	-484.48	-101.10	-482.22	10.00	10.00	0.00
6,000.00	40.22	347.15	5,912.62	-1,197.02	-428.32	-113.91	-425.81	10.00	10.00	0.00
Sharon Springs Member										
6,044.71	44.69	347.15	5,945.60	-1,230.00	-398.90	-120.62	-396.25	10.00	10.00	0.00
6,100.00	50.22	347.15	5,982.97	-1,267.37	-359.21	-129.68	-356.37	10.00	10.00	0.00
Niobrara Formation										
6,181.70	58.39	347.15	6,030.60	-1,315.00	-294.57	-144.42	-291.43	10.00	10.00	0.00
6,200.00	60.22	347.15	6,039.94	-1,324.34	-279.23	-147.92	-276.02	10.00	10.00	0.00
6,300.00	70.22	347.15	6,081.80	-1,366.20	-190.82	-168.09	-187.21	10.00	10.00	0.00
6,400.00	80.22	347.15	6,107.27	-1,391.67	-96.67	-189.57	-92.62	10.00	10.00	0.00
BPI: 460ft FSL & 1449ft FEL of Sec 11										
6,497.79	90.00	347.15	6,115.60	-1,400.00	-1.79	-211.21	2.70	10.00	10.00	0.00
6,500.00	90.00	347.22	6,115.60	-1,400.00	0.36	-211.70	4.86	3.00	0.01	3.00
6,600.00	90.00	350.22	6,115.60	-1,400.00	98.42	-231.27	103.31	3.00	0.00	3.00
6,700.00	90.00	353.22	6,115.60	-1,400.00	197.36	-245.67	202.54	3.00	0.00	3.00
6,800.00	90.00	356.22	6,115.60	-1,400.00	296.93	-254.88	302.28	3.00	0.00	3.00
6,900.00	90.00	359.22	6,115.60	-1,400.00	396.84	-258.87	402.25	3.00	0.00	3.00

Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
EOT TO 0.31° AZ										
6,936.48	90.00	0.31	6,115.60	-1,400.00	433.31	-259.02	438.72	3.00	0.00	3.00
7,000.00	90.00	0.31	6,115.60	-1,400.00	496.83	-258.67	502.22	0.00	0.00	0.00
7,100.00	90.00	0.31	6,115.60	-1,400.00	596.83	-258.13	602.18	0.00	0.00	0.00
7,200.00	90.00	0.31	6,115.60	-1,400.00	696.83	-257.59	702.15	0.00	0.00	0.00
7,300.00	90.00	0.31	6,115.60	-1,400.00	796.83	-257.05	802.11	0.00	0.00	0.00
7,400.00	90.00	0.31	6,115.60	-1,400.00	896.83	-256.51	902.08	0.00	0.00	0.00
7,500.00	90.00	0.31	6,115.60	-1,400.00	996.83	-255.97	1,002.04	0.00	0.00	0.00
7,600.00	90.00	0.31	6,115.60	-1,400.00	1,096.82	-255.43	1,102.00	0.00	0.00	0.00
7,700.00	90.00	0.31	6,115.60	-1,400.00	1,196.82	-254.88	1,201.97	0.00	0.00	0.00
7,800.00	90.00	0.31	6,115.60	-1,400.00	1,296.82	-254.34	1,301.93	0.00	0.00	0.00
7,900.00	90.00	0.31	6,115.60	-1,400.00	1,396.82	-253.80	1,401.90	0.00	0.00	0.00
8,000.00	90.00	0.31	6,115.60	-1,400.00	1,496.82	-253.26	1,501.86	0.00	0.00	0.00
8,100.00	90.00	0.31	6,115.60	-1,400.00	1,596.82	-252.72	1,601.83	0.00	0.00	0.00
8,200.00	90.00	0.31	6,115.60	-1,400.00	1,696.82	-252.18	1,701.79	0.00	0.00	0.00
8,300.00	90.00	0.31	6,115.60	-1,400.00	1,796.81	-251.63	1,801.76	0.00	0.00	0.00
8,400.00	90.00	0.31	6,115.60	-1,400.00	1,896.81	-251.09	1,901.72	0.00	0.00	0.00
8,500.00	90.00	0.31	6,115.60	-1,400.00	1,996.81	-250.55	2,001.68	0.00	0.00	0.00
8,600.00	90.00	0.31	6,115.60	-1,400.00	2,096.81	-250.01	2,101.65	0.00	0.00	0.00
8,700.00	90.00	0.31	6,115.60	-1,400.00	2,196.81	-249.47	2,201.61	0.00	0.00	0.00
8,800.00	90.00	0.31	6,115.60	-1,400.00	2,296.81	-248.93	2,301.58	0.00	0.00	0.00
8,900.00	90.00	0.31	6,115.60	-1,400.00	2,396.81	-248.39	2,401.54	0.00	0.00	0.00
9,000.00	90.00	0.31	6,115.60	-1,400.00	2,496.80	-247.84	2,501.51	0.00	0.00	0.00
9,100.00	90.00	0.31	6,115.60	-1,400.00	2,596.80	-247.30	2,601.47	0.00	0.00	0.00
9,200.00	90.00	0.31	6,115.60	-1,400.00	2,696.80	-246.76	2,701.44	0.00	0.00	0.00
9,300.00	90.00	0.31	6,115.60	-1,400.00	2,796.80	-246.22	2,801.40	0.00	0.00	0.00
9,400.00	90.00	0.31	6,115.60	-1,400.00	2,896.80	-245.68	2,901.36	0.00	0.00	0.00
9,500.00	90.00	0.31	6,115.60	-1,400.00	2,996.80	-245.14	3,001.33	0.00	0.00	0.00
9,600.00	90.00	0.31	6,115.60	-1,400.00	3,096.80	-244.59	3,101.29	0.00	0.00	0.00
9,700.00	90.00	0.31	6,115.60	-1,400.00	3,196.79	-244.05	3,201.26	0.00	0.00	0.00
9,800.00	90.00	0.31	6,115.60	-1,400.00	3,296.79	-243.51	3,301.22	0.00	0.00	0.00
9,900.00	90.00	0.31	6,115.60	-1,400.00	3,396.79	-242.97	3,401.19	0.00	0.00	0.00
10,000.00	90.00	0.31	6,115.60	-1,400.00	3,496.79	-242.43	3,501.15	0.00	0.00	0.00
10,100.00	90.00	0.31	6,115.60	-1,400.00	3,596.79	-241.89	3,601.12	0.00	0.00	0.00
10,200.00	90.00	0.31	6,115.60	-1,400.00	3,696.79	-241.34	3,701.08	0.00	0.00	0.00
10,300.00	90.00	0.31	6,115.60	-1,400.00	3,796.79	-240.80	3,801.04	0.00	0.00	0.00
10,400.00	90.00	0.31	6,115.60	-1,400.00	3,896.78	-240.26	3,901.01	0.00	0.00	0.00
10,500.00	90.00	0.31	6,115.60	-1,400.00	3,996.78	-239.72	4,000.97	0.00	0.00	0.00
10,600.00	90.00	0.31	6,115.60	-1,400.00	4,096.78	-239.18	4,100.94	0.00	0.00	0.00
10,700.00	90.00	0.31	6,115.60	-1,400.00	4,196.78	-238.64	4,200.90	0.00	0.00	0.00
10,800.00	90.00	0.31	6,115.60	-1,400.00	4,296.78	-238.10	4,300.87	0.00	0.00	0.00
10,900.00	90.00	0.31	6,115.60	-1,400.00	4,396.78	-237.55	4,400.83	0.00	0.00	0.00
11,000.00	90.00	0.31	6,115.60	-1,400.00	4,496.77	-237.01	4,500.80	0.00	0.00	0.00
11,100.00	90.00	0.31	6,115.60	-1,400.00	4,596.77	-236.47	4,600.76	0.00	0.00	0.00
11,200.00	90.00	0.31	6,115.60	-1,400.00	4,696.77	-235.93	4,700.72	0.00	0.00	0.00
11,300.00	90.00	0.31	6,115.60	-1,400.00	4,796.77	-235.39	4,800.69	0.00	0.00	0.00
11,400.00	90.00	0.31	6,115.60	-1,400.00	4,896.77	-234.85	4,900.65	0.00	0.00	0.00
11,500.00	90.00	0.31	6,115.60	-1,400.00	4,996.77	-234.30	5,000.62	0.00	0.00	0.00
11,600.00	90.00	0.31	6,115.60	-1,400.00	5,096.77	-233.76	5,100.58	0.00	0.00	0.00
11,700.00	90.00	0.31	6,115.60	-1,400.00	5,196.76	-233.22	5,200.55	0.00	0.00	0.00
11,800.00	90.00	0.31	6,115.60	-1,400.00	5,296.76	-232.68	5,300.51	0.00	0.00	0.00
11,900.00	90.00	0.31	6,115.60	-1,400.00	5,396.76	-232.14	5,400.48	0.00	0.00	0.00
12,000.00	90.00	0.31	6,115.60	-1,400.00	5,496.76	-231.60	5,500.44	0.00	0.00	0.00
12,100.00	90.00	0.31	6,115.60	-1,400.00	5,596.76	-231.06	5,600.40	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
12,200.00	90.00	0.31	6,115.60	-1,400.00	5,696.76	-230.51	5,700.37	0.00	0.00	0.00
12,300.00	90.00	0.31	6,115.60	-1,400.00	5,796.76	-229.97	5,800.33	0.00	0.00	0.00
12,400.00	90.00	0.31	6,115.60	-1,400.00	5,896.75	-229.43	5,900.30	0.00	0.00	0.00
12,500.00	90.00	0.31	6,115.60	-1,400.00	5,996.75	-228.89	6,000.26	0.00	0.00	0.00
12,600.00	90.00	0.31	6,115.60	-1,400.00	6,096.75	-228.35	6,100.23	0.00	0.00	0.00
12,700.00	90.00	0.31	6,115.60	-1,400.00	6,196.75	-227.81	6,200.19	0.00	0.00	0.00
12,800.00	90.00	0.31	6,115.60	-1,400.00	6,296.75	-227.26	6,300.16	0.00	0.00	0.00
12,900.00	90.00	0.31	6,115.60	-1,400.00	6,396.75	-226.72	6,400.12	0.00	0.00	0.00
13,000.00	90.00	0.31	6,115.60	-1,400.00	6,496.75	-226.18	6,500.08	0.00	0.00	0.00
13,100.00	90.00	0.31	6,115.60	-1,400.00	6,596.74	-225.64	6,600.05	0.00	0.00	0.00
13,200.00	90.00	0.31	6,115.60	-1,400.00	6,696.74	-225.10	6,700.01	0.00	0.00	0.00
13,300.00	90.00	0.31	6,115.60	-1,400.00	6,796.74	-224.56	6,799.98	0.00	0.00	0.00
13,400.00	90.00	0.31	6,115.60	-1,400.00	6,896.74	-224.01	6,899.94	0.00	0.00	0.00
13,500.00	90.00	0.31	6,115.60	-1,400.00	6,996.74	-223.47	6,999.91	0.00	0.00	0.00
13,600.00	90.00	0.31	6,115.60	-1,400.00	7,096.74	-222.93	7,099.87	0.00	0.00	0.00
13,700.00	90.00	0.31	6,115.60	-1,400.00	7,196.74	-222.39	7,199.84	0.00	0.00	0.00
13,800.00	90.00	0.31	6,115.60	-1,400.00	7,296.73	-221.85	7,299.80	0.00	0.00	0.00
13,900.00	90.00	0.31	6,115.60	-1,400.00	7,396.73	-221.31	7,399.76	0.00	0.00	0.00
14,000.00	90.00	0.31	6,115.60	-1,400.00	7,496.73	-220.77	7,499.73	0.00	0.00	0.00
14,100.00	90.00	0.31	6,115.60	-1,400.00	7,596.73	-220.22	7,599.69	0.00	0.00	0.00
14,200.00	90.00	0.31	6,115.60	-1,400.00	7,696.73	-219.68	7,699.66	0.00	0.00	0.00
14,300.00	90.00	0.31	6,115.60	-1,400.00	7,796.73	-219.14	7,799.62	0.00	0.00	0.00
14,400.00	90.00	0.31	6,115.60	-1,400.00	7,896.73	-218.60	7,899.59	0.00	0.00	0.00
14,500.00	90.00	0.31	6,115.60	-1,400.00	7,996.72	-218.06	7,999.55	0.00	0.00	0.00
14,600.00	90.00	0.31	6,115.60	-1,400.00	8,096.72	-217.52	8,099.52	0.00	0.00	0.00
14,700.00	90.00	0.31	6,115.60	-1,400.00	8,196.72	-216.97	8,199.48	0.00	0.00	0.00
14,800.00	90.00	0.31	6,115.60	-1,400.00	8,296.72	-216.43	8,299.44	0.00	0.00	0.00
14,900.00	90.00	0.31	6,115.60	-1,400.00	8,396.72	-215.89	8,399.41	0.00	0.00	0.00
15,000.00	90.00	0.31	6,115.60	-1,400.00	8,496.72	-215.35	8,499.37	0.00	0.00	0.00
15,100.00	90.00	0.31	6,115.60	-1,400.00	8,596.71	-214.81	8,599.34	0.00	0.00	0.00
15,200.00	90.00	0.31	6,115.60	-1,400.00	8,696.71	-214.27	8,699.30	0.00	0.00	0.00
15,300.00	90.00	0.31	6,115.60	-1,400.00	8,796.71	-213.73	8,799.27	0.00	0.00	0.00
15,400.00	90.00	0.31	6,115.60	-1,400.00	8,896.71	-213.18	8,899.23	0.00	0.00	0.00
15,500.00	90.00	0.31	6,115.60	-1,400.00	8,996.71	-212.64	8,999.20	0.00	0.00	0.00
15,600.00	90.00	0.31	6,115.60	-1,400.00	9,096.71	-212.10	9,099.16	0.00	0.00	0.00
15,700.00	90.00	0.31	6,115.60	-1,400.00	9,196.71	-211.56	9,199.12	0.00	0.00	0.00
15,800.00	90.00	0.31	6,115.60	-1,400.00	9,296.70	-211.02	9,299.09	0.00	0.00	0.00
15,900.00	90.00	0.31	6,115.60	-1,400.00	9,396.70	-210.48	9,399.05	0.00	0.00	0.00
16,000.00	90.00	0.31	6,115.60	-1,400.00	9,496.70	-209.93	9,499.02	0.00	0.00	0.00
16,100.00	90.00	0.31	6,115.60	-1,400.00	9,596.70	-209.39	9,598.98	0.00	0.00	0.00
16,200.00	90.00	0.31	6,115.60	-1,400.00	9,696.70	-208.85	9,698.95	0.00	0.00	0.00
EPI: 460ft FNL & 1526ft FEL of Sec 2										
16,213.37	90.00	0.31	6,115.60	-1,400.00	9,710.07	-208.78	9,712.31	0.00	0.00	0.00
EOT TO 0.16° AZ										
16,218.50	90.00	0.16	6,115.60	-1,400.00	9,715.20	-208.76	9,717.44	3.00	0.00	-3.00
16,300.00	90.00	0.16	6,115.60	-1,400.00	9,796.70	-208.54	9,798.92	0.00	0.00	0.00
BHL: 360ft FNL & 1527ft FEL of Sec 2										
16,313.19	90.00	0.16	6,115.60	-1,400.00	9,809.89	-208.50	9,812.10	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.15.1	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KBE 24ft @ 4715.60usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KBE 24ft @ 4715.60usft
Site:	SE SE SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11B-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
26.60	26.60	Laramie-Fox Hills Formation			
315.60	315.60	Pierre Formation			
475.61	475.60	Upper Pierre aquifer			
1,449.81	1,435.60	Base of Upper Pierre aquifer			
3,309.31	3,255.60	Larimer ("Parkman") sandstone			
3,570.68	3,515.60	Pierre Formation			
3,980.75	3,925.60	Terry ("Sussex") sandstone			
4,080.75	4,025.60	Pierre Formation			
4,520.75	4,465.60	Hygiene ("Shannon") sandstone			
4,590.75	4,535.60	Pierre Formation			
6,044.71	5,945.60	Sharon Springs Member			
6,181.70	6,030.60	Niobrara Formation			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 460ft FSL & 1238ft FEL of Sec 11
400.00	400.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,000.00	995.62	-61.91	-9.26	EOB TO 12° INC
3,123.13	3,072.36	-498.49	-74.52	END OF TANGENT
3,723.13	3,667.98	-560.40	-83.78	EOD TO VERTICAL
5,597.79	5,542.64	-560.40	-83.78	KOP (10°/100ft BUR)
6,497.79	6,115.60	-1.79	-211.21	BPI: 460ft FSL & 1449ft FEL of Sec 11
6,936.48	6,115.60	433.31	-259.02	EOT TO 0.31° AZ
16,213.37	6,115.60	9,710.07	-208.78	EPI: 460ft FNL & 1526ft FEL of Sec 2
16,218.50	6,115.60	9,715.20	-208.76	EOT TO 0.16° AZ
16,313.19	6,115.60	9,809.89	-208.50	BHL: 360ft FNL & 1527ft FEL of Sec 2