

BISON OIL & GAS II, LLC

WELD COUNTY, COLORADO (NAD 83)

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

GROTHER 5-61 11A-2-3

ORIGINAL WELLBORE

25 February, 2019

Plan: PROPOSAL #1





Project: WELD COUNTY, COLORADO (NAD 83)
Site: SW SW SEC. 11 T5N R61W 6th P.M.
Well: GROTHEER 5-61 11A-2-3
Wellbore: ORIGINAL WELLBORE
Design: PROPOSAL #1

ANNOTATIONS									
TVD	MD	Inc	Azi	+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 & 1181ft FWL of Sec 11	
300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)	
895.62	900.00	12.00	173.59	-62.21	6.99	-61.97	62.60	EOB TO 12° INC	
2932.59	2982.47	12.00	173.59	-492.48	55.29	-490.57	495.57	END OF TANGENT	
3528.21	3582.47	0.00	0.00	-554.69	62.28	-552.54	558.18	EOD TO VERTICAL	
5575.74	5630.00	0.00	0.00	-554.69	62.28	-552.54	558.18	KOP (10°/100ft BUR)	
6148.70	6530.00	90.00	13.60	2.20	197.01	8.19	1131.13	BPI *NEW*: 460ft FSL & 1378ft FWL of Sec 11	
6148.70	6973.48	90.00	0.30	441.43	250.54	448.85	1574.61	EOT TO 0.3° AZ	
6148.70	16238.94	90.00	0.30	9706.77	298.41	9711.35	10840.07	EPI: 460ft FNL & 1428ft FWL of Sec 2	
6148.70	16243.63	90.00	0.16	9711.46	298.43	9716.05	10844.76	EOT TO 0.16° AZ	
6148.70	16339.12	90.00	0.16	9806.95	298.69	9811.50	10940.26	BHL: 360ft FNL & 1428ft FWL of Sec 2	

PROPOSED LOCAL COORDINATES:

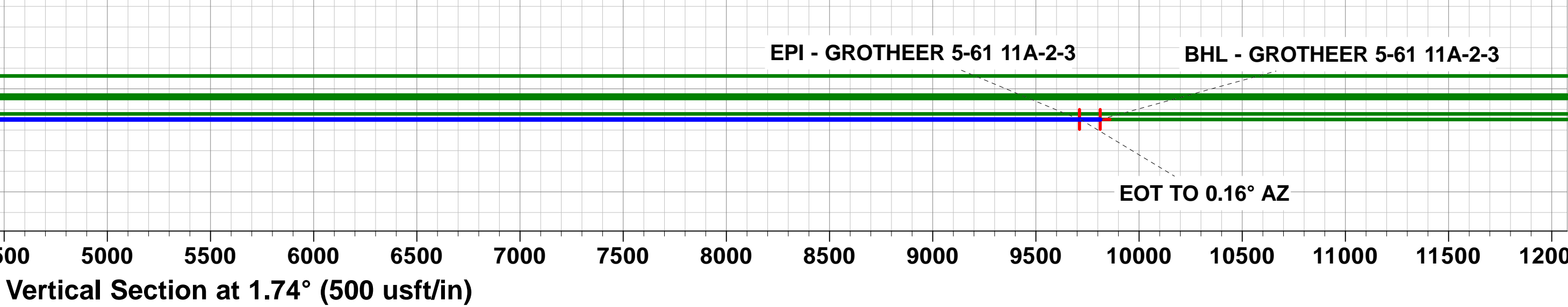
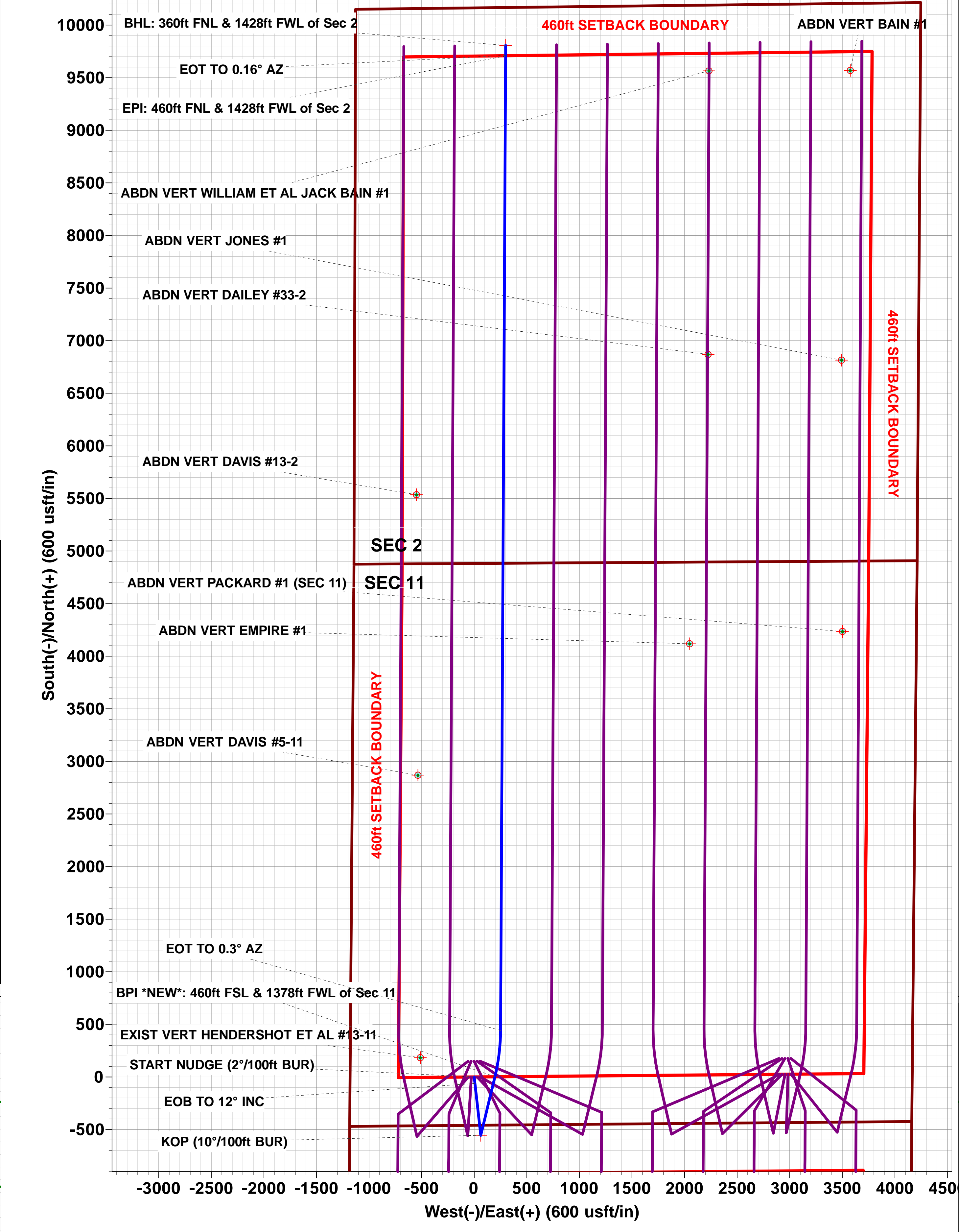
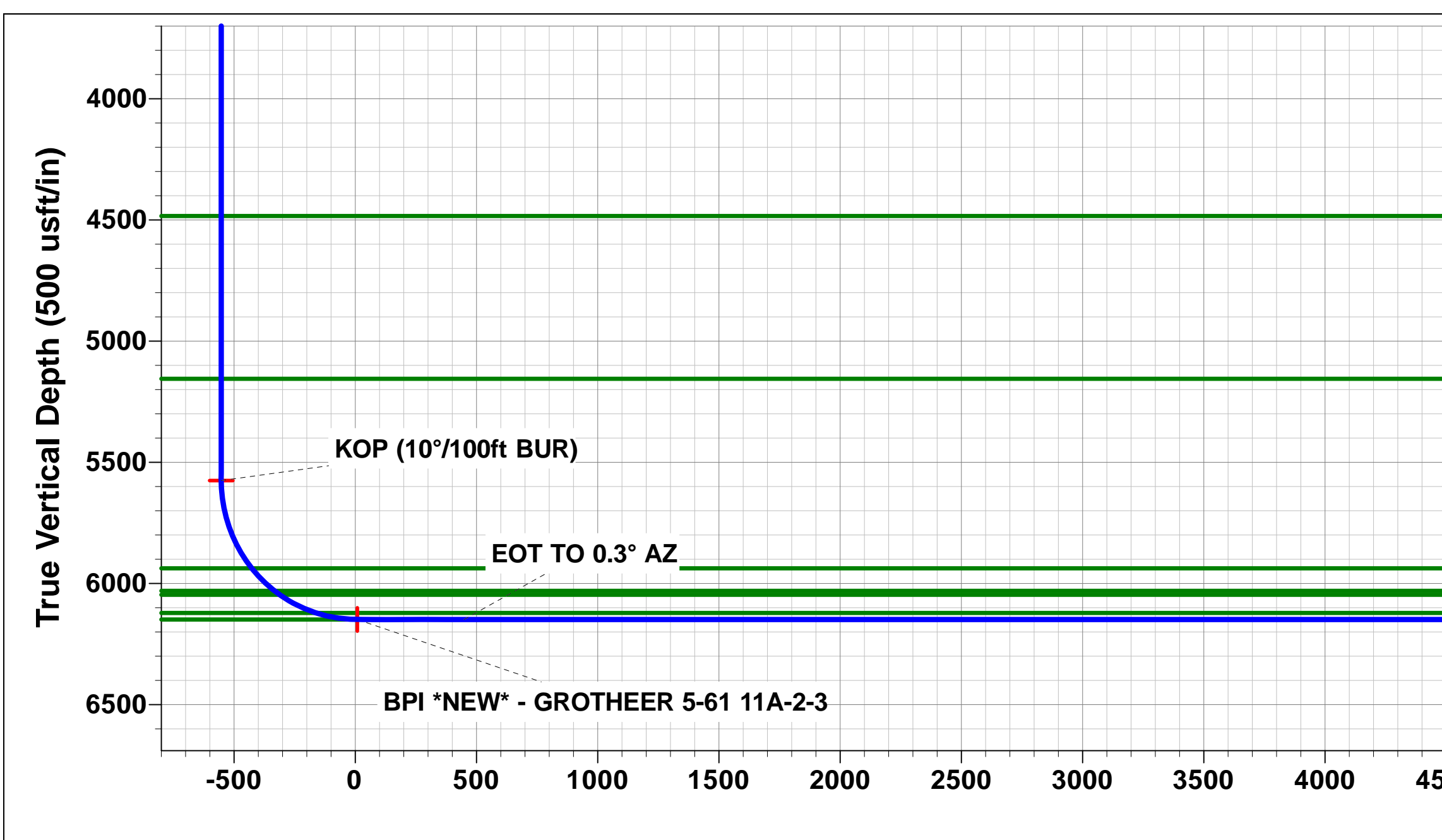
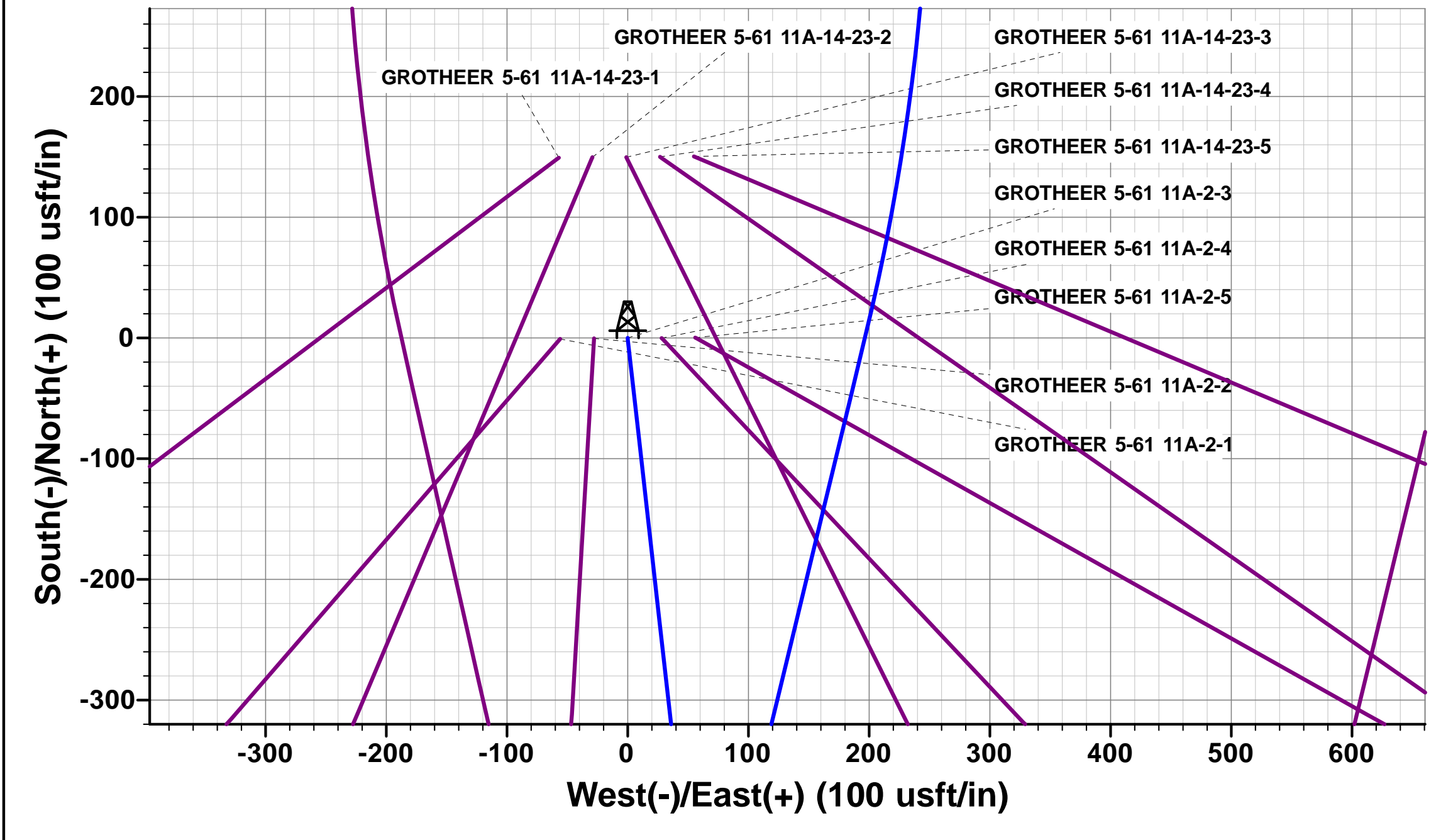
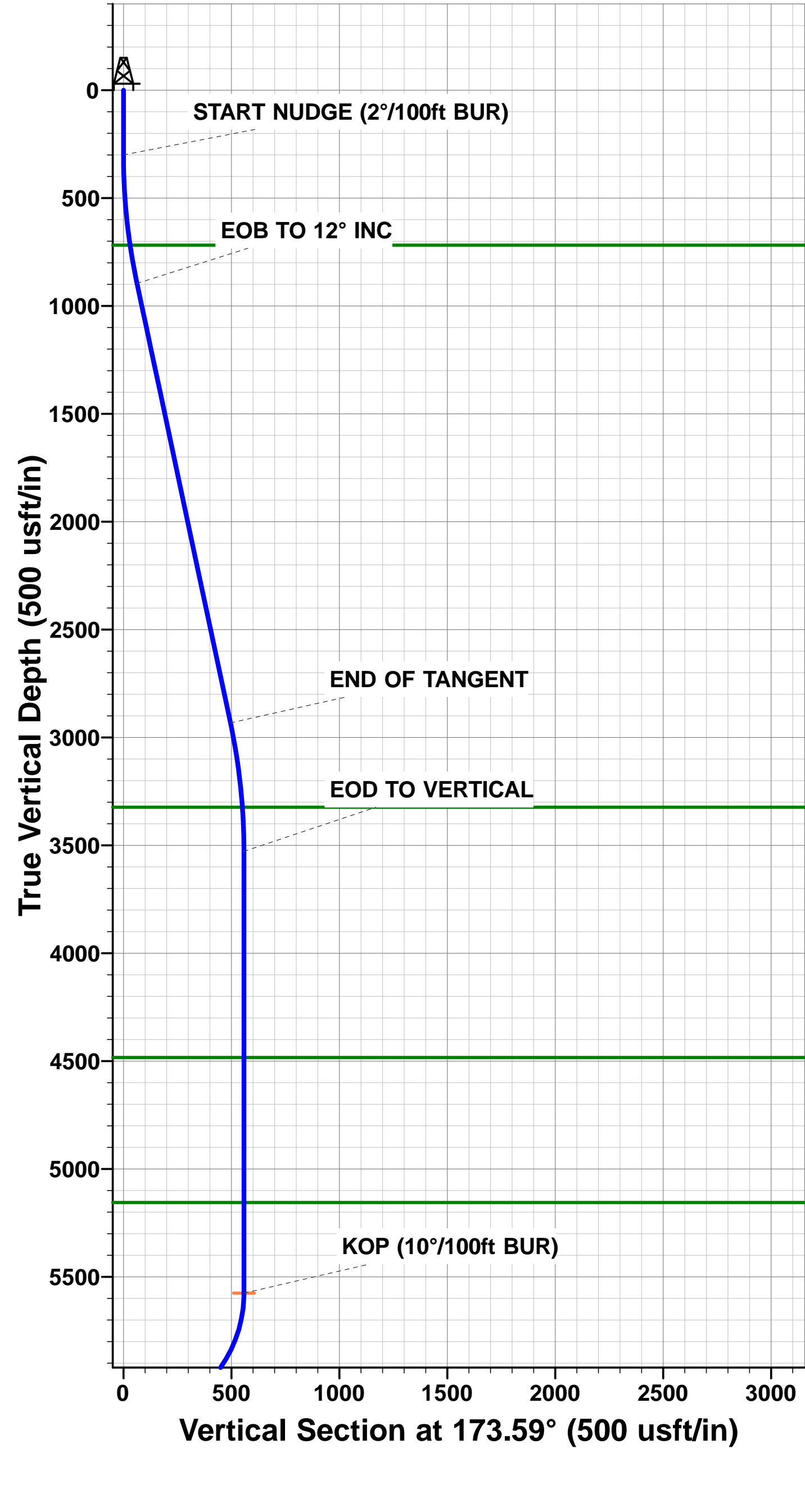
SHL: 460ft FSL & 1181ft FWL Sec 11

BPI *NEW* : 460ft FSL & 1378ft FWL Sec 11

EPI: 460ft FNL & 1428ft FWL Sec 2

BHL: 360ft FNL & 1428ft FWL of Sec 2

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - GROTHEER 5-61 11A-2-3	5575.74	-554.69	62.28	40.408250	-104.180716
BPI *NEW* - GROTHEER 5-61 11A-2-3	6148.70	2.20	197.01	40.409779	-104.180233
EPI - GROTHEER 5-61 11A-2-3	6148.70	9706.77	298.41	40.436417	-104.179868
BHL - GROTHEER 5-61 11A-2-3	6148.70	9806.95	298.69	40.436692	-104.179867



Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11A-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Site:	SW SW SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11A-2-3	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	SW SW SEC. 11 T5N R61W 6th P.M.				
Site Position:		Northing:	1,395,001.09 usft	Latitude:	40.410183
From:	Lat/Long	Easting:	3,367,246.06 usft	Longitude:	-104.181145
Position Uncertainty:	0.00 usft	Slot Radius:	1.10000ft	Grid Convergence:	0.85 °

Well		GROTHEER 5-61 11A-2-3				
Well Position	+N-S	-149.38 usft	Northing:	1,394,852.59 usft	Latitude:	40.409773
	+E-W	57.09 usft	Easting:	3,367,305.36 usft	Longitude:	-104.180940
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,708.70 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	25/02/2019	7.72	66.91	52,265

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	1.74

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	-4,733.70	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-4,433.70	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	12.00	173.59	895.62	-3,838.08	-62.21	6.99	2.00	2.00	0.00	173.59	
2,982.47	12.00	173.59	2,932.59	-1,801.11	-492.48	55.29	0.00	0.00	0.00	0.00	
3,582.47	0.00	0.00	3,528.21	-1,205.49	-554.69	62.28	2.00	-2.00	0.00	180.00	
5,630.00	0.00	0.00	5,575.74	842.04	-554.69	62.28	0.00	0.00	0.00	0.00	KOP - GROTHEER
6,530.00	90.00	13.60	6,148.70	1,415.00	2.20	197.01	10.00	10.00	1.51	13.60	BPI *NEW* - GROT
6,973.48	90.00	0.30	6,148.70	1,415.00	441.43	250.54	3.00	0.00	-3.00	-90.00	
16,238.94	90.00	0.30	6,148.70	1,415.00	9,706.77	298.41	0.00	0.00	0.00	0.00	EPI - GROTHEER !
16,243.63	90.00	0.16	6,148.70	1,415.00	9,711.46	298.43	3.00	0.00	-3.00	-90.01	
16,339.12	90.00	0.16	6,148.70	1,415.00	9,806.95	298.69	0.00	0.00	0.00	0.00	BHL - GROTHEER

Planning Report



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Site:	SW SW SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11A-2-3	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: 460ft FSL & 1181ft FWL of Sec 11										
0.00	0.00	0.00	0.00	4,733.70	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,633.70	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,533.70	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
300.00	0.00	0.00	300.00	4,433.70	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	173.59	399.98	4,333.72	-1.73	0.19	-1.73	2.00	2.00	0.00
500.00	4.00	173.59	499.84	4,233.86	-6.93	0.78	-6.91	2.00	2.00	0.00
600.00	6.00	173.59	599.45	4,134.25	-15.60	1.75	-15.54	2.00	2.00	0.00
700.00	8.00	173.59	698.70	4,035.00	-27.71	3.11	-27.60	2.00	2.00	0.00
PIERRE SHALE (BASE FOX HILLS)										
720.21	8.40	173.59	718.70	4,015.00	-30.57	3.43	-30.45	2.00	2.00	0.00
800.00	10.00	173.59	797.47	3,936.23	-43.25	4.86	-43.08	2.00	2.00	0.00
EOB TO 12° INC										
900.00	12.00	173.59	895.62	3,838.08	-62.21	6.99	-61.97	2.00	2.00	0.00
1,000.00	12.00	173.59	993.44	3,740.26	-82.87	9.30	-82.55	0.00	0.00	0.00
1,100.00	12.00	173.59	1,091.25	3,642.45	-103.53	11.62	-103.13	0.00	0.00	0.00
1,200.00	12.00	173.59	1,189.07	3,544.63	-124.20	13.94	-123.71	0.00	0.00	0.00
1,300.00	12.00	173.59	1,286.88	3,446.82	-144.86	16.26	-144.29	0.00	0.00	0.00
1,400.00	12.00	173.59	1,384.70	3,349.00	-165.52	18.58	-164.88	0.00	0.00	0.00
1,500.00	12.00	173.59	1,482.51	3,251.19	-186.18	20.90	-185.46	0.00	0.00	0.00
1,600.00	12.00	173.59	1,580.33	3,153.37	-206.84	23.22	-206.04	0.00	0.00	0.00
1,700.00	12.00	173.59	1,678.14	3,055.56	-227.50	25.54	-226.62	0.00	0.00	0.00
1,800.00	12.00	173.59	1,775.96	2,957.74	-248.16	27.86	-247.20	0.00	0.00	0.00
1,900.00	12.00	173.59	1,873.77	2,859.93	-268.83	30.18	-267.78	0.00	0.00	0.00
2,000.00	12.00	173.59	1,971.59	2,762.11	-289.49	32.50	-288.36	0.00	0.00	0.00
2,100.00	12.00	173.59	2,069.40	2,664.30	-310.15	34.82	-308.94	0.00	0.00	0.00
2,200.00	12.00	173.59	2,167.22	2,566.48	-330.81	37.14	-329.52	0.00	0.00	0.00
2,300.00	12.00	173.59	2,265.03	2,468.67	-351.47	39.46	-350.11	0.00	0.00	0.00
2,400.00	12.00	173.59	2,362.84	2,370.86	-372.13	41.78	-370.69	0.00	0.00	0.00
2,500.00	12.00	173.59	2,460.66	2,273.04	-392.79	44.10	-391.27	0.00	0.00	0.00
2,600.00	12.00	173.59	2,558.47	2,175.23	-413.45	46.42	-411.85	0.00	0.00	0.00
2,700.00	12.00	173.59	2,656.29	2,077.41	-434.12	48.74	-432.43	0.00	0.00	0.00
2,800.00	12.00	173.59	2,754.10	1,979.60	-454.78	51.06	-453.01	0.00	0.00	0.00
2,900.00	12.00	173.59	2,851.92	1,881.78	-475.44	53.38	-473.59	0.00	0.00	0.00
END OF TANGENT										
2,982.47	12.00	173.59	2,932.59	1,801.11	-492.48	55.29	-490.57	0.00	0.00	0.00
3,000.00	11.65	173.59	2,949.74	1,783.96	-496.05	55.70	-494.12	2.00	-2.00	0.00
3,100.00	9.65	173.59	3,048.02	1,685.68	-514.41	57.76	-512.41	2.00	-2.00	0.00
3,200.00	7.65	173.59	3,146.87	1,586.83	-529.36	59.44	-527.30	2.00	-2.00	0.00
3,300.00	5.65	173.59	3,246.20	1,487.50	-540.86	60.73	-538.76	2.00	-2.00	0.00
PARKMAN										
3,377.79	4.09	173.59	3,323.70	1,410.00	-547.43	61.46	-545.30	2.00	-2.00	0.00
3,400.00	3.65	173.59	3,345.86	1,387.84	-548.92	61.63	-546.79	2.00	-2.00	0.00
3,500.00	1.65	173.59	3,445.75	1,287.95	-553.51	62.15	-551.36	2.00	-2.00	0.00
EOD TO VERTICAL										
3,582.47	0.00	0.00	3,528.21	1,205.49	-554.69	62.28	-552.54	2.00	-2.00	0.00
3,600.00	0.00	0.00	3,545.74	1,187.96	-554.69	62.28	-552.54	0.00	0.00	0.00
3,700.00	0.00	0.00	3,645.74	1,087.96	-554.69	62.28	-552.54	0.00	0.00	0.00
3,800.00	0.00	0.00	3,745.74	987.96	-554.69	62.28	-552.54	0.00	0.00	0.00
3,900.00	0.00	0.00	3,845.74	887.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,000.00	0.00	0.00	3,945.74	787.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,100.00	0.00	0.00	4,045.74	687.96	-554.69	62.28	-552.54	0.00	0.00	0.00

Planning Report



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Well:	GROTHEER 5-61 11A-2-3	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)
4,200.00	0.00	0.00	4,145.74	587.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,300.00	0.00	0.00	4,245.74	487.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,400.00	0.00	0.00	4,345.74	387.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,500.00	0.00	0.00	4,445.74	287.96	-554.69	62.28	-552.54	0.00	0.00	0.00
SUSSEX										
4,537.96	0.00	0.00	4,483.70	250.00	-554.69	62.28	-552.54	0.00	0.00	0.00
4,600.00	0.00	0.00	4,545.74	187.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,700.00	0.00	0.00	4,645.74	87.96	-554.69	62.28	-552.54	0.00	0.00	0.00
4,800.00	0.00	0.00	4,745.74	-12.04	-554.69	62.28	-552.54	0.00	0.00	0.00
4,900.00	0.00	0.00	4,845.74	-112.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,000.00	0.00	0.00	4,945.74	-212.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,100.00	0.00	0.00	5,045.74	-312.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,200.00	0.00	0.00	5,145.74	-412.04	-554.69	62.28	-552.54	0.00	0.00	0.00
SHANNON										
5,209.96	0.00	0.00	5,155.70	-422.00	-554.69	62.28	-552.54	0.00	0.00	0.00
5,300.00	0.00	0.00	5,245.74	-512.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,400.00	0.00	0.00	5,345.74	-612.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,500.00	0.00	0.00	5,445.74	-712.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,600.00	0.00	0.00	5,545.74	-812.04	-554.69	62.28	-552.54	0.00	0.00	0.00
KOP (10°/100ft BUR)										
5,630.00	0.00	0.00	5,575.74	-842.04	-554.69	62.28	-552.54	0.00	0.00	0.00
5,700.00	7.00	13.60	5,645.57	-911.87	-550.54	63.28	-548.36	10.00	10.00	0.00
5,800.00	17.00	13.60	5,743.26	-1,009.56	-530.36	68.17	-528.04	10.00	10.00	0.00
5,900.00	27.00	13.60	5,835.86	-1,102.16	-493.99	76.96	-491.42	10.00	10.00	0.00
6,000.00	37.00	13.60	5,920.55	-1,186.85	-442.55	89.41	-439.63	10.00	10.00	0.00
SHARON SPRINGS SHALE										
6,021.79	39.18	13.60	5,937.70	-1,204.00	-429.49	92.57	-426.47	10.00	10.00	0.00
6,100.00	47.00	13.60	5,994.77	-1,261.07	-377.60	105.12	-374.22	10.00	10.00	0.00
NIOBRARA FORMATION										
6,155.66	52.57	13.60	6,030.70	-1,297.00	-336.30	115.12	-332.64	10.00	10.00	0.00
NIOBRARA A CHALK										
6,182.83	55.28	13.60	6,046.70	-1,313.00	-314.96	120.28	-311.15	10.00	10.00	0.00
6,200.00	57.00	13.60	6,056.26	-1,322.56	-301.10	123.63	-297.20	10.00	10.00	0.00
6,300.00	67.00	13.60	6,103.15	-1,369.45	-215.40	144.37	-210.90	10.00	10.00	0.00
NIOBRARA B CHALK										
6,353.41	72.34	13.60	6,121.70	-1,388.00	-166.74	156.14	-161.90	10.00	10.00	0.00
6,400.00	77.00	13.60	6,134.01	-1,400.31	-123.07	166.70	-117.94	10.00	10.00	0.00
6,500.00	87.00	13.60	6,147.91	-1,414.21	-26.95	189.96	-21.15	10.00	10.00	0.00
BPI *NEW*: 460ft FSL & 1378ft FWL of Sec 11 - NIOBRARA B LP										
6,530.00	90.00	13.60	6,148.70	-1,415.00	2.20	197.01	8.19	10.00	10.00	0.00
6,600.00	90.00	11.50	6,148.70	-1,415.00	70.52	212.22	76.95	3.00	0.00	-3.00
6,700.00	90.00	8.50	6,148.70	-1,415.00	168.99	229.58	175.90	3.00	0.00	-3.00
6,800.00	90.00	5.50	6,148.70	-1,415.00	268.24	241.77	275.47	3.00	0.00	-3.00
6,900.00	90.00	2.50	6,148.70	-1,415.00	367.98	248.75	375.38	3.00	0.00	-3.00
EOT TO 0.3° AZ										
6,973.48	90.00	0.30	6,148.70	-1,415.00	441.43	250.54	448.85	3.00	0.00	-3.00
7,000.00	90.00	0.30	6,148.70	-1,415.00	467.95	250.68	475.37	0.00	0.00	0.00
7,100.00	90.00	0.30	6,148.70	-1,415.00	567.95	251.19	575.34	0.00	0.00	0.00
7,200.00	90.00	0.30	6,148.70	-1,415.00	667.95	251.71	675.30	0.00	0.00	0.00
7,300.00	90.00	0.30	6,148.70	-1,415.00	767.95	252.23	775.27	0.00	0.00	0.00
7,400.00	90.00	0.30	6,148.70	-1,415.00	867.95	252.74	875.24	0.00	0.00	0.00
7,500.00	90.00	0.30	6,148.70	-1,415.00	967.95	253.26	975.21	0.00	0.00	0.00
7,600.00	90.00	0.30	6,148.70	-1,415.00	1,067.95	253.78	1,075.18	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11A-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Site:	SW SW SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11A-2-3	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)
7,700.00	90.00	0.30	6,148.70	-1,415.00	1,167.94	254.29	1,175.14	0.00	0.00	0.00
7,800.00	90.00	0.30	6,148.70	-1,415.00	1,267.94	254.81	1,275.11	0.00	0.00	0.00
7,900.00	90.00	0.30	6,148.70	-1,415.00	1,367.94	255.33	1,375.08	0.00	0.00	0.00
8,000.00	90.00	0.30	6,148.70	-1,415.00	1,467.94	255.84	1,475.05	0.00	0.00	0.00
8,100.00	90.00	0.30	6,148.70	-1,415.00	1,567.94	256.36	1,575.02	0.00	0.00	0.00
8,200.00	90.00	0.30	6,148.70	-1,415.00	1,667.94	256.88	1,674.98	0.00	0.00	0.00
8,300.00	90.00	0.30	6,148.70	-1,415.00	1,767.94	257.39	1,774.95	0.00	0.00	0.00
8,400.00	90.00	0.30	6,148.70	-1,415.00	1,867.94	257.91	1,874.92	0.00	0.00	0.00
8,500.00	90.00	0.30	6,148.70	-1,415.00	1,967.93	258.43	1,974.89	0.00	0.00	0.00
8,600.00	90.00	0.30	6,148.70	-1,415.00	2,067.93	258.94	2,074.86	0.00	0.00	0.00
8,700.00	90.00	0.30	6,148.70	-1,415.00	2,167.93	259.46	2,174.83	0.00	0.00	0.00
8,800.00	90.00	0.30	6,148.70	-1,415.00	2,267.93	259.98	2,274.79	0.00	0.00	0.00
8,900.00	90.00	0.30	6,148.70	-1,415.00	2,367.93	260.49	2,374.76	0.00	0.00	0.00
9,000.00	90.00	0.30	6,148.70	-1,415.00	2,467.93	261.01	2,474.73	0.00	0.00	0.00
9,100.00	90.00	0.30	6,148.70	-1,415.00	2,567.93	261.53	2,574.70	0.00	0.00	0.00
9,200.00	90.00	0.30	6,148.70	-1,415.00	2,667.92	262.04	2,674.67	0.00	0.00	0.00
9,300.00	90.00	0.30	6,148.70	-1,415.00	2,767.92	262.56	2,774.63	0.00	0.00	0.00
9,400.00	90.00	0.30	6,148.70	-1,415.00	2,867.92	263.08	2,874.60	0.00	0.00	0.00
9,500.00	90.00	0.30	6,148.70	-1,415.00	2,967.92	263.59	2,974.57	0.00	0.00	0.00
9,600.00	90.00	0.30	6,148.70	-1,415.00	3,067.92	264.11	3,074.54	0.00	0.00	0.00
9,700.00	90.00	0.30	6,148.70	-1,415.00	3,167.92	264.63	3,174.51	0.00	0.00	0.00
9,800.00	90.00	0.30	6,148.70	-1,415.00	3,267.92	265.14	3,274.47	0.00	0.00	0.00
9,900.00	90.00	0.30	6,148.70	-1,415.00	3,367.92	265.66	3,374.44	0.00	0.00	0.00
10,000.00	90.00	0.30	6,148.70	-1,415.00	3,467.91	266.18	3,474.41	0.00	0.00	0.00
10,100.00	90.00	0.30	6,148.70	-1,415.00	3,567.91	266.69	3,574.38	0.00	0.00	0.00
10,200.00	90.00	0.30	6,148.70	-1,415.00	3,667.91	267.21	3,674.35	0.00	0.00	0.00
10,300.00	90.00	0.30	6,148.70	-1,415.00	3,767.91	267.73	3,774.31	0.00	0.00	0.00
10,400.00	90.00	0.30	6,148.70	-1,415.00	3,867.91	268.24	3,874.28	0.00	0.00	0.00
10,500.00	90.00	0.30	6,148.70	-1,415.00	3,967.91	268.76	3,974.25	0.00	0.00	0.00
10,600.00	90.00	0.30	6,148.70	-1,415.00	4,067.91	269.28	4,074.22	0.00	0.00	0.00
10,700.00	90.00	0.30	6,148.70	-1,415.00	4,167.90	269.79	4,174.19	0.00	0.00	0.00
10,800.00	90.00	0.30	6,148.70	-1,415.00	4,267.90	270.31	4,274.15	0.00	0.00	0.00
10,900.00	90.00	0.30	6,148.70	-1,415.00	4,367.90	270.83	4,374.12	0.00	0.00	0.00
11,000.00	90.00	0.30	6,148.70	-1,415.00	4,467.90	271.34	4,474.09	0.00	0.00	0.00
11,100.00	90.00	0.30	6,148.70	-1,415.00	4,567.90	271.86	4,574.06	0.00	0.00	0.00
11,200.00	90.00	0.30	6,148.70	-1,415.00	4,667.90	272.38	4,674.03	0.00	0.00	0.00
11,300.00	90.00	0.30	6,148.70	-1,415.00	4,767.90	272.89	4,773.99	0.00	0.00	0.00
11,400.00	90.00	0.30	6,148.70	-1,415.00	4,867.90	273.41	4,873.96	0.00	0.00	0.00
11,500.00	90.00	0.30	6,148.70	-1,415.00	4,967.89	273.93	4,973.93	0.00	0.00	0.00
11,600.00	90.00	0.30	6,148.70	-1,415.00	5,067.89	274.44	5,073.90	0.00	0.00	0.00
11,700.00	90.00	0.30	6,148.70	-1,415.00	5,167.89	274.96	5,173.87	0.00	0.00	0.00
11,800.00	90.00	0.30	6,148.70	-1,415.00	5,267.89	275.48	5,273.83	0.00	0.00	0.00
11,900.00	90.00	0.30	6,148.70	-1,415.00	5,367.89	275.99	5,373.80	0.00	0.00	0.00
12,000.00	90.00	0.30	6,148.70	-1,415.00	5,467.89	276.51	5,473.77	0.00	0.00	0.00
12,100.00	90.00	0.30	6,148.70	-1,415.00	5,567.89	277.03	5,573.74	0.00	0.00	0.00
12,200.00	90.00	0.30	6,148.70	-1,415.00	5,667.88	277.54	5,673.71	0.00	0.00	0.00
12,300.00	90.00	0.30	6,148.70	-1,415.00	5,767.88	278.06	5,773.67	0.00	0.00	0.00
12,400.00	90.00	0.30	6,148.70	-1,415.00	5,867.88	278.58	5,873.64	0.00	0.00	0.00
12,500.00	90.00	0.30	6,148.70	-1,415.00	5,967.88	279.10	5,973.61	0.00	0.00	0.00
12,600.00	90.00	0.30	6,148.70	-1,415.00	6,067.88	279.61	6,073.58	0.00	0.00	0.00
12,700.00	90.00	0.30	6,148.70	-1,415.00	6,167.88	280.13	6,173.55	0.00	0.00	0.00
12,800.00	90.00	0.30	6,148.70	-1,415.00	6,267.88	280.65	6,273.51	0.00	0.00	0.00
12,900.00	90.00	0.30	6,148.70	-1,415.00	6,367.88	281.16	6,373.48	0.00	0.00	0.00
13,000.00	90.00	0.30	6,148.70	-1,415.00	6,467.87	281.68	6,473.45	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11A-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Site:	SW SW SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11A-2-3	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)
13,100.00	90.00	0.30	6,148.70	-1,415.00	6,567.87	282.20	6,573.42	0.00	0.00	0.00
13,200.00	90.00	0.30	6,148.70	-1,415.00	6,667.87	282.71	6,673.39	0.00	0.00	0.00
13,300.00	90.00	0.30	6,148.70	-1,415.00	6,767.87	283.23	6,773.36	0.00	0.00	0.00
13,400.00	90.00	0.30	6,148.70	-1,415.00	6,867.87	283.75	6,873.32	0.00	0.00	0.00
13,500.00	90.00	0.30	6,148.70	-1,415.00	6,967.87	284.26	6,973.29	0.00	0.00	0.00
13,600.00	90.00	0.30	6,148.70	-1,415.00	7,067.87	284.78	7,073.26	0.00	0.00	0.00
13,700.00	90.00	0.30	6,148.70	-1,415.00	7,167.86	285.30	7,173.23	0.00	0.00	0.00
13,800.00	90.00	0.30	6,148.70	-1,415.00	7,267.86	285.81	7,273.20	0.00	0.00	0.00
13,900.00	90.00	0.30	6,148.70	-1,415.00	7,367.86	286.33	7,373.16	0.00	0.00	0.00
14,000.00	90.00	0.30	6,148.70	-1,415.00	7,467.86	286.85	7,473.13	0.00	0.00	0.00
14,100.00	90.00	0.30	6,148.70	-1,415.00	7,567.86	287.36	7,573.10	0.00	0.00	0.00
14,200.00	90.00	0.30	6,148.70	-1,415.00	7,667.86	287.88	7,673.07	0.00	0.00	0.00
14,300.00	90.00	0.30	6,148.70	-1,415.00	7,767.86	288.40	7,773.04	0.00	0.00	0.00
14,400.00	90.00	0.30	6,148.70	-1,415.00	7,867.86	288.91	7,873.00	0.00	0.00	0.00
14,500.00	90.00	0.30	6,148.70	-1,415.00	7,967.85	289.43	7,972.97	0.00	0.00	0.00
14,600.00	90.00	0.30	6,148.70	-1,415.00	8,067.85	289.95	8,072.94	0.00	0.00	0.00
14,700.00	90.00	0.30	6,148.70	-1,415.00	8,167.85	290.46	8,172.91	0.00	0.00	0.00
14,800.00	90.00	0.30	6,148.70	-1,415.00	8,267.85	290.98	8,272.88	0.00	0.00	0.00
14,900.00	90.00	0.30	6,148.70	-1,415.00	8,367.85	291.50	8,372.84	0.00	0.00	0.00
15,000.00	90.00	0.30	6,148.70	-1,415.00	8,467.85	292.01	8,472.81	0.00	0.00	0.00
15,100.00	90.00	0.30	6,148.70	-1,415.00	8,567.85	292.53	8,572.78	0.00	0.00	0.00
15,200.00	90.00	0.30	6,148.70	-1,415.00	8,667.84	293.05	8,672.75	0.00	0.00	0.00
15,300.00	90.00	0.30	6,148.70	-1,415.00	8,767.84	293.56	8,772.72	0.00	0.00	0.00
15,400.00	90.00	0.30	6,148.70	-1,415.00	8,867.84	294.08	8,872.68	0.00	0.00	0.00
15,500.00	90.00	0.30	6,148.70	-1,415.00	8,967.84	294.60	8,972.65	0.00	0.00	0.00
15,600.00	90.00	0.30	6,148.70	-1,415.00	9,067.84	295.11	9,072.62	0.00	0.00	0.00
15,700.00	90.00	0.30	6,148.70	-1,415.00	9,167.84	295.63	9,172.59	0.00	0.00	0.00
15,800.00	90.00	0.30	6,148.70	-1,415.00	9,267.84	296.15	9,272.56	0.00	0.00	0.00
15,900.00	90.00	0.30	6,148.70	-1,415.00	9,367.83	296.66	9,372.52	0.00	0.00	0.00
16,000.00	90.00	0.30	6,148.70	-1,415.00	9,467.83	297.18	9,472.49	0.00	0.00	0.00
16,100.00	90.00	0.30	6,148.70	-1,415.00	9,567.83	297.70	9,572.46	0.00	0.00	0.00
16,200.00	90.00	0.30	6,148.70	-1,415.00	9,667.83	298.21	9,672.43	0.00	0.00	0.00
EPI: 460ft FNL & 1428ft FWL of Sec 2										
16,238.94	90.00	0.30	6,148.70	-1,415.00	9,706.77	298.41	9,711.35	0.00	0.00	0.00
EOT TO 0.16° AZ										
16,243.63	90.00	0.16	6,148.70	-1,415.00	9,711.46	298.43	9,716.05	3.00	0.00	-3.00
16,300.00	90.00	0.16	6,148.70	-1,415.00	9,767.83	298.59	9,772.39	0.00	0.00	0.00
BHL: 360ft FNL & 1428ft FWL of Sec 2										
16,339.12	90.00	0.16	6,148.70	-1,415.00	9,806.95	298.69	9,811.50	0.00	0.00	0.00

Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well GROTHEER 5-61 11A-2-3
Company:	BISON OIL & GAS II, LLC	TVD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 25' @ 4733.70usft (Original Well Elev)
Site:	SW SW SEC. 11 T5N R61W 6th P.M.	North Reference:	True
Well:	GROTHEER 5-61 11A-2-3	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
720.21	718.70	PIERRE SHALE (BASE FOX HILLS			
3,377.79	3,323.70	PARKMAN			
4,537.96	4,483.70	SUSSEX			
5,209.96	5,155.70	SHANNON			
6,021.79	5,937.70	SHARON SPRINGS SHALE			
6,155.66	6,030.70	NIOBRARA FORMATION			
6,182.83	6,046.70	NIOBRARA A CHALK			
6,353.41	6,121.70	NIOBRARA B CHALK			
6,530.00	6,148.70	NIOBRARA B 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: 460ft FSL & 1181ft FWL of Sec 11
300.00	300.00	0.00	0.00	START NUDGE (2°/100ft BUR)
900.00	895.62	-62.21	6.99	EOB TO 12° INC
2,982.47	2,932.59	-492.48	55.29	END OF TANGENT
3,582.47	3,528.21	-554.69	62.28	EOD TO VERTICAL
5,630.00	5,575.74	-554.69	62.28	KOP (10°/100ft BUR)
6,530.00	6,148.70	2.20	197.01	BPI *NEW*: 460ft FSL & 1378ft FWL of Sec 11
6,973.48	6,148.70	441.43	250.54	EOT TO 0.3° AZ
16,238.94	6,148.70	9,706.77	298.41	EPI: 460ft FNL & 1428ft FWL of Sec 2
16,243.63	6,148.70	9,711.46	298.43	EOT TO 0.16° AZ
16,339.12	6,148.70	9,806.95	298.69	BHL: 360ft FNL & 1428ft FWL of Sec 2