

BISON OIL & GAS II

WELD COUNTY

SEC 11-T5N-61W

GROTHER 5-61 11B-2-1

OWB

Design: FINAL SURVEY

Standard Survey Report

03 October, 2022

PROJECT DETAILS: WELD COUNTY

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

System Datum: Mean Sea Level



Magnetic Field
Strength: 51912.5nT
Dip Angle: 66.70°
Date: 6/23/2022
Model: IGRF2020

WELL DETAILS: GROTHEER 5-61 11B-2-1

+N/-S	+E/-W	Northing	Ground Level:	4692.50			
0.00	0.00	1394921.01	Easting	Latitude	Longitude	Slot	
			3370204.10	40.409842°N	104.170528°W		

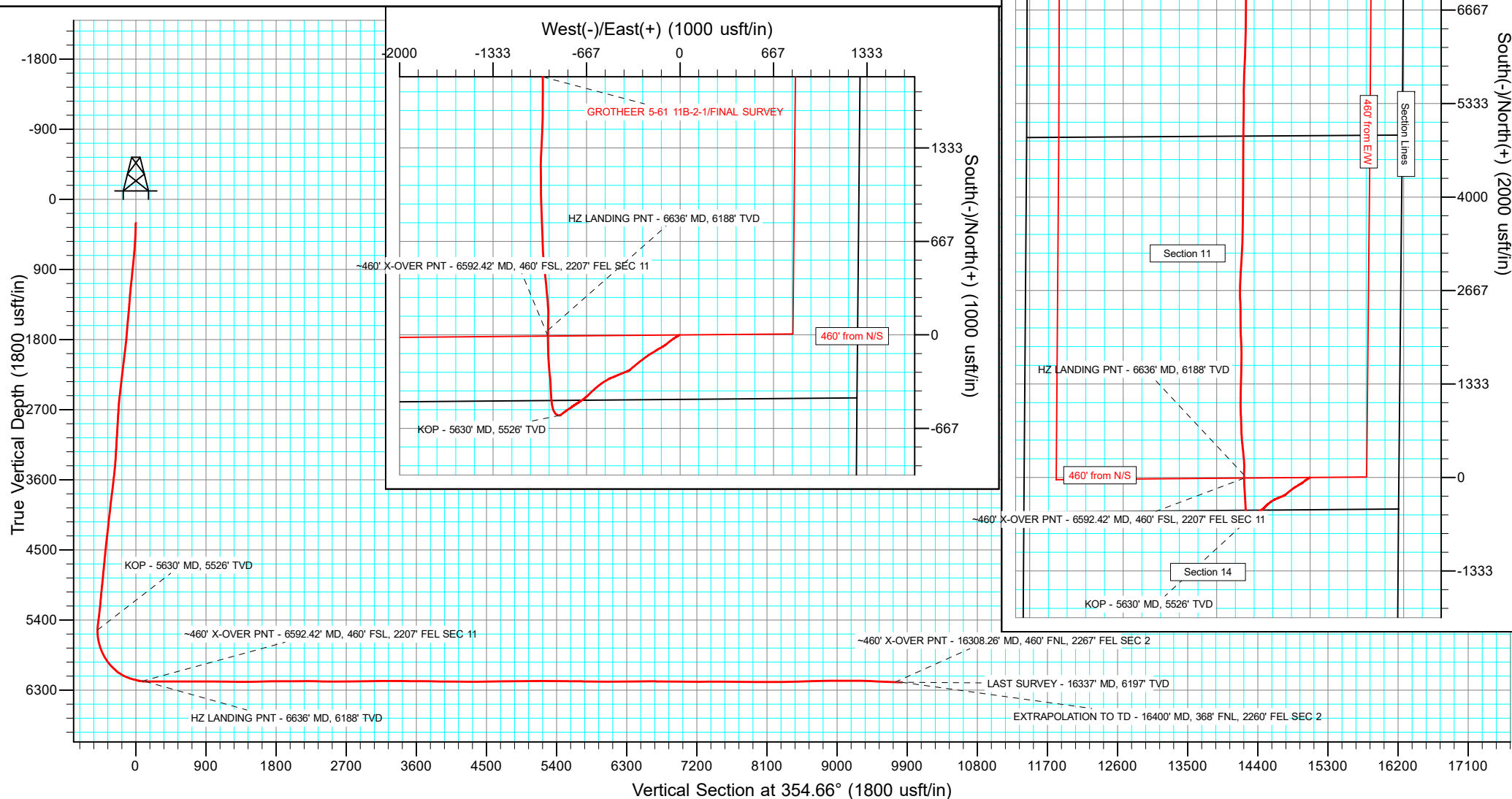
ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
5630.00	11.37	252.66	5526.48	-574.13	-857.16	-491.92	1033.16	KOP - 5630" MD, 5526" TVD
6592.42	83.80	359.96	6185.36	-9.79	-941.44	77.81	1629.81	-460" X-OVER PNT - 6592.42" MD, 460" FSL, 2207" FEL SEC 11
6636.00	89.31	0.10	6187.98	33.69	-941.41	121.10	1673.01	HZ LANDING PNT - 6636" MD, 6188" TVD
16308.26	88.58	4.32	6196.02	9699.15	-921.33	9742.80	11343.97	-460" X-OVER PNT - 16308.26" MD, 460" FNL, 2267" FEL SEC 2
16337.00	88.60	4.25	6196.73	9727.80	-919.18	9771.13	11372.70	LAST SURVEY - 16337" MD, 6197" TVD
16400.00	88.60	4.25	6198.27	9790.61	-914.52	9833.23	11435.69	EXTRAPOLATION TO TD - 16400" MD, 368" FNL, 2260" FEL SEC 2

SHL:
460' FSL, 1266' FEL
Sec 11-T5N-R61W

~460' X-OVER PNT:
460' FSL, 2207' FEL
Sec 11-T5N-R61W

BHL:
368' FNL, 2260' FEL
Sec 2-T5N-R61W



Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-1
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4716.50usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Project	WELD COUNTY		
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		SEC 11-T5N-61W			
Site Position:		Northing:	1,395,071.08 usft	Latitude:	40.410254°N
From:	Lat/Long	Easting:	3,370,200.45 usft	Longitude:	104.170533°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.86 °

Well	GROTHEER 5-61 11B-2-1					
Well Position	+N/-S	0.00 usft	Northing:	1,394,921.01 usft	Latitude:	40.409842°N
	+E/-W	0.00 usft	Easting:	3,370,204.09 usft	Longitude:	104.170528°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,692.50 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/23/2022	7.43	66.70	51,912.47219058

Design	FINAL SURVEY				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	354.66	

Survey Program	Date	10/3/2022			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
302.00	1,928.00	SURFACE SURVEY (OWB)	MWD	OWSG MWD - Standard	
2,055.00	16,400.00	FINAL SURVEY (OWB)	MWD	OWSG MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
302.00	2.20	257.00	301.93	-1.30	-5.65	-0.77	0.00	0.00	0.00	
376.00	3.70	237.40	375.83	-2.91	-9.05	-2.05	2.41	2.03	-26.49	
463.00	6.00	235.30	462.51	-7.01	-15.15	-5.57	2.65	2.64	-2.41	
556.00	8.00	238.60	554.82	-13.15	-24.67	-10.80	2.19	2.15	3.55	
637.00	9.30	237.30	634.89	-19.62	-34.99	-16.28	1.62	1.60	-1.60	
725.00	11.30	236.80	721.47	-28.18	-48.19	-23.58	2.27	2.27	-0.57	
812.00	11.00	233.20	806.83	-37.82	-61.97	-31.90	0.87	-0.34	-4.14	
899.00	10.00	231.30	892.37	-47.52	-74.51	-40.38	1.22	-1.15	-2.18	
986.00	10.20	230.60	978.02	-57.13	-86.36	-48.85	0.27	0.23	-0.80	
1,073.00	11.80	230.50	1,063.42	-67.68	-99.17	-58.16	1.84	1.84	-0.11	

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Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,160.00	12.50	238.30	1,148.48	-78.28	-114.05	-67.34	2.05	0.80	8.97
1,248.00	10.60	241.10	1,234.69	-87.20	-129.24	-74.80	2.25	-2.16	3.18
1,335.00	11.30	241.90	1,320.11	-95.08	-143.76	-81.30	0.82	0.80	0.92
1,422.00	11.90	237.90	1,405.33	-103.87	-158.88	-88.64	1.15	0.69	-4.60
1,509.00	10.70	236.40	1,490.65	-113.10	-173.21	-96.50	1.42	-1.38	-1.72
1,597.00	10.40	238.50	1,577.16	-121.77	-186.79	-103.87	0.55	-0.34	2.39
1,684.00	10.90	239.50	1,662.66	-130.05	-200.57	-110.83	0.61	0.57	1.15
1,771.00	11.70	238.80	1,747.97	-138.80	-215.20	-118.18	0.93	0.92	-0.80
1,858.00	12.20	234.80	1,833.09	-148.66	-230.26	-126.60	1.11	0.57	-4.60
1,928.00	12.70	234.00	1,901.44	-157.45	-242.53	-134.21	0.76	0.71	-1.14
2,055.00	12.64	232.78	2,025.35	-174.06	-264.89	-148.67	0.22	-0.05	-0.96
2,150.00	12.28	231.98	2,118.11	-186.57	-281.12	-159.62	0.42	-0.38	-0.84
2,245.00	12.11	231.52	2,210.97	-198.99	-296.88	-170.52	0.21	-0.18	-0.48
2,340.00	11.89	231.21	2,303.89	-211.33	-312.31	-181.36	0.24	-0.23	-0.33
2,434.00	11.62	230.07	2,395.92	-223.47	-327.12	-192.08	0.38	-0.29	-1.21
2,529.00	11.28	229.47	2,489.03	-235.65	-341.52	-202.86	0.38	-0.36	-0.63
2,624.00	10.97	228.78	2,582.25	-247.64	-355.38	-213.52	0.36	-0.33	-0.73
2,719.00	9.17	245.52	2,675.80	-256.74	-369.07	-221.30	3.60	-1.89	17.62
2,814.00	12.90	249.19	2,769.03	-263.64	-385.88	-226.61	3.99	3.93	3.86
2,910.00	12.35	248.13	2,862.70	-271.28	-405.42	-232.39	0.62	-0.57	-1.10
3,005.00	11.36	247.52	2,955.68	-278.64	-423.50	-238.04	1.05	-1.04	-0.64
3,099.00	11.31	247.66	3,047.84	-285.68	-440.58	-243.47	0.06	-0.05	0.15
3,220.00	9.67	245.65	3,166.82	-294.38	-460.81	-250.25	1.39	-1.36	-1.66
3,314.00	12.06	248.10	3,259.13	-301.30	-477.12	-255.62	2.59	2.54	2.61
3,409.00	12.75	248.17	3,351.91	-308.90	-496.06	-261.43	0.73	0.73	0.07
3,504.00	13.39	239.13	3,444.46	-318.44	-515.23	-269.14	2.25	0.67	-9.52
3,600.00	13.49	238.05	3,537.83	-330.07	-534.28	-278.95	0.28	0.10	-1.12
3,695.00	13.34	237.53	3,630.24	-341.82	-552.92	-288.91	0.20	-0.16	-0.55
3,790.00	13.05	231.62	3,722.73	-354.36	-570.58	-299.76	1.45	-0.31	-6.22
3,884.00	12.56	230.72	3,814.39	-367.42	-586.81	-311.26	0.56	-0.52	-0.96
3,979.00	11.66	229.46	3,907.28	-380.20	-602.10	-322.56	0.99	-0.95	-1.33
4,074.00	10.46	227.73	4,000.51	-392.24	-615.78	-333.27	1.31	-1.26	-1.82
4,169.00	10.31	227.37	4,093.96	-403.80	-628.42	-343.61	0.17	-0.16	-0.38
4,264.00	9.43	225.14	4,187.55	-415.05	-640.19	-353.71	1.01	-0.93	-2.35
4,359.00	10.37	223.41	4,281.13	-426.75	-651.58	-364.30	1.04	0.99	-1.82
4,453.00	11.31	232.35	4,373.46	-438.53	-664.69	-374.81	2.05	1.00	9.51
4,548.00	10.19	226.04	4,466.80	-450.05	-678.12	-385.03	1.71	-1.18	-6.64
4,643.00	11.81	236.82	4,560.06	-461.21	-692.31	-394.82	2.75	1.71	11.35
4,738.00	10.74	236.28	4,653.22	-471.44	-707.81	-403.57	1.13	-1.13	-0.57
4,833.00	12.88	238.09	4,746.21	-481.95	-724.16	-412.52	2.29	2.25	1.91
4,928.00	10.68	236.26	4,839.20	-492.44	-740.47	-421.44	2.35	-2.32	-1.93
5,024.00	13.01	236.88	4,933.15	-503.29	-756.92	-430.71	2.43	2.43	0.65
5,119.00	10.47	230.58	5,026.16	-514.61	-772.55	-440.54	2.99	-2.67	-6.63

Survey Report

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Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,214.00	10.62	239.45	5,119.56	-524.55	-786.75	-449.10	1.71	0.16	9.34	
5,309.00	11.32	235.22	5,212.83	-534.31	-801.95	-457.41	1.12	0.74	-4.45	
5,404.00	13.44	233.59	5,305.61	-546.19	-818.50	-467.70	2.26	2.23	-1.72	
5,498.00	11.97	231.57	5,397.31	-558.73	-834.92	-478.66	1.63	-1.56	-2.15	
5,592.00	12.02	233.28	5,489.26	-570.64	-850.41	-489.08	0.38	0.05	1.82	
5,630.00	11.37	252.66	5,526.48	-574.13	-857.16	-491.92	10.43	-1.72	50.99	
KOP - 5630' MD, 5526' TVD										
5,688.00	12.87	280.88	5,583.24	-574.61	-868.97	-491.30	10.43	2.59	48.66	
5,782.00	16.57	317.83	5,674.33	-562.67	-888.29	-477.62	10.51	3.94	39.31	
5,878.00	19.79	339.66	5,765.63	-537.25	-903.15	-450.93	7.79	3.35	22.74	
5,972.00	27.23	350.16	5,851.81	-501.07	-912.38	-414.05	9.05	7.91	11.17	
6,067.00	36.90	355.74	5,932.24	-451.09	-918.22	-363.74	10.64	10.18	5.87	
6,161.00	43.79	357.92	6,003.84	-390.37	-921.50	-302.97	7.48	7.33	2.32	
6,256.00	50.67	355.14	6,068.32	-320.82	-925.82	-233.32	7.55	7.24	-2.93	
6,351.00	66.17	353.71	6,117.92	-240.53	-933.74	-152.64	16.37	16.32	-1.51	
6,446.00	72.03	358.32	6,151.81	-152.05	-939.83	-63.99	7.65	6.17	4.85	
6,541.00	77.30	359.79	6,176.93	-60.48	-941.33	27.32	5.74	5.55	1.55	
6,592.42	83.80	359.96	6,185.36	-9.79	-941.44	77.81	12.65	12.64	0.33	
~460' X-OVER PNT - 6592.42' MD, 460' FSL, 2207' FEL SEC 11										
6,636.00	89.31	0.10	6,187.98	33.69	-941.41	121.10	12.65	12.64	0.32	
HZ LANDING PNT - 6636' MD, 6188' TVD										
6,730.00	90.18	1.73	6,188.40	127.68	-939.91	214.54	1.97	0.93	1.73	
6,826.00	89.95	354.61	6,188.29	223.57	-942.98	310.30	7.42	-0.24	-7.42	
6,921.00	90.48	355.31	6,187.93	318.20	-951.32	405.29	0.92	0.56	0.74	
7,015.00	90.10	353.39	6,187.46	411.74	-960.58	499.29	2.08	-0.40	-2.04	
7,111.00	89.95	354.35	6,187.42	507.19	-970.83	595.28	1.01	-0.16	1.00	
7,205.00	90.38	357.42	6,187.15	600.93	-977.57	689.24	3.30	0.46	3.27	
7,300.00	89.13	358.26	6,187.55	695.86	-981.15	784.09	1.59	-1.32	0.88	
7,395.00	89.52	358.01	6,188.67	790.80	-984.24	878.91	0.49	0.41	-0.26	
7,490.00	90.37	357.27	6,188.76	885.72	-988.16	973.78	1.19	0.89	-0.78	
7,585.00	89.40	359.24	6,188.95	980.67	-991.05	1,068.59	2.31	-1.02	2.07	
7,679.00	89.27	359.98	6,190.04	1,074.66	-991.69	1,162.23	0.80	-0.14	0.79	
7,775.00	88.82	359.07	6,191.64	1,170.64	-992.48	1,257.87	1.06	-0.47	-0.95	
7,869.00	88.70	2.36	6,193.68	1,264.60	-991.31	1,351.32	3.50	-0.13	3.50	
7,964.00	91.17	3.02	6,193.79	1,359.49	-986.85	1,445.38	2.69	2.60	0.69	
8,059.00	92.22	2.39	6,190.98	1,454.34	-982.37	1,539.40	1.29	1.11	-0.66	
8,155.00	90.53	0.48	6,188.67	1,550.27	-979.97	1,634.69	2.66	-1.76	-1.99	
8,250.00	91.70	0.45	6,186.82	1,645.25	-979.20	1,729.19	1.23	1.23	-0.03	
8,344.00	90.03	0.75	6,185.41	1,739.23	-978.21	1,822.67	1.81	-1.78	0.32	
8,438.00	89.23	357.85	6,186.01	1,833.21	-979.36	1,916.35	3.20	-0.85	-3.09	
8,532.00	89.67	356.48	6,186.92	1,927.09	-984.01	2,010.25	1.53	0.47	-1.46	
8,626.00	91.41	358.02	6,186.03	2,020.97	-988.52	2,104.15	2.47	1.85	1.64	
8,722.00	89.65	358.92	6,185.14	2,116.93	-991.08	2,199.93	2.06	-1.83	0.94	
8,816.00	89.60	359.05	6,185.76	2,210.91	-992.75	2,293.66	0.15	-0.05	0.14	

Survey Report

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Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4716.50usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,910.00	88.64	359.91	6,187.20	2,304.89	-993.60	2,387.31	1.37	-1.02	0.91
9,003.00	89.92	359.98	6,188.37	2,397.89	-993.69	2,479.91	1.38	1.38	0.08
9,099.00	90.14	356.87	6,188.32	2,493.84	-996.33	2,575.69	3.25	0.23	-3.24
9,193.00	89.96	359.05	6,188.24	2,587.77	-999.68	2,669.53	2.33	-0.19	2.32
9,287.00	89.95	359.08	6,188.31	2,681.76	-1,001.21	2,763.25	0.03	-0.01	0.03
9,382.00	90.22	3.13	6,188.17	2,776.72	-999.38	2,857.63	4.27	0.28	4.26
9,478.00	91.27	4.02	6,186.92	2,872.52	-993.39	2,952.46	1.43	1.09	0.93
9,573.00	92.04	3.31	6,184.18	2,967.29	-987.32	3,046.25	1.10	0.81	-0.75
9,668.00	90.16	3.29	6,182.35	3,062.11	-981.85	3,140.15	1.98	-1.98	-0.02
9,763.00	90.72	2.92	6,181.62	3,156.97	-976.71	3,234.12	0.71	0.59	-0.39
9,858.00	89.05	3.04	6,181.81	3,251.84	-971.77	3,328.12	1.76	-1.76	0.13
9,952.00	89.61	2.78	6,182.91	3,345.71	-967.00	3,421.14	0.66	0.60	-0.28
10,047.00	88.99	0.87	6,184.07	3,440.65	-963.97	3,515.39	2.11	-0.65	-2.01
10,143.00	89.38	0.65	6,185.44	3,536.63	-962.70	3,610.83	0.47	0.41	-0.23
10,237.00	90.72	0.53	6,185.36	3,630.62	-961.73	3,704.33	1.43	1.43	-0.13
10,332.00	88.68	0.98	6,185.86	3,725.61	-960.48	3,798.79	2.20	-2.15	0.47
10,427.00	88.85	0.86	6,187.90	3,820.57	-958.96	3,893.20	0.22	0.18	-0.13
10,521.00	89.78	0.44	6,189.03	3,914.56	-957.89	3,986.68	1.09	0.99	-0.45
10,615.00	90.29	0.25	6,188.97	4,008.56	-957.32	4,080.22	0.58	0.54	-0.20
10,711.00	89.11	0.11	6,189.47	4,104.55	-957.02	4,175.77	1.24	-1.23	-0.15
10,837.00	88.63	359.58	6,191.96	4,230.53	-957.36	4,301.23	0.57	-0.38	-0.42
10,932.00	91.01	1.12	6,192.26	4,325.52	-956.78	4,395.75	2.98	2.51	1.62
11,027.00	91.13	0.49	6,190.48	4,420.49	-955.45	4,490.19	0.67	0.13	-0.66
11,122.00	91.05	359.37	6,188.67	4,515.47	-955.56	4,584.77	1.18	-0.08	-1.18
11,217.00	90.28	0.64	6,187.57	4,610.46	-955.56	4,679.35	1.56	-0.81	1.34
11,311.00	90.71	0.24	6,186.76	4,704.45	-954.83	4,772.87	0.62	0.46	-0.43
11,407.00	91.45	359.96	6,184.95	4,800.44	-954.67	4,868.42	0.82	0.77	-0.29
11,501.00	90.50	1.44	6,183.35	4,894.41	-953.52	4,961.88	1.87	-1.01	1.57
11,596.00	89.85	1.55	6,183.06	4,989.38	-951.04	5,056.20	0.69	-0.68	0.12
11,691.00	90.62	1.00	6,182.67	5,084.35	-948.93	5,150.57	1.00	0.81	-0.58
11,787.00	89.46	1.25	6,182.60	5,180.33	-947.04	5,245.96	1.24	-1.21	0.26
11,881.00	89.58	359.98	6,183.39	5,274.32	-946.03	5,339.45	1.36	0.13	-1.35
11,976.00	90.18	359.47	6,183.59	5,369.32	-946.49	5,434.07	0.83	0.63	-0.54
12,072.00	88.44	359.74	6,184.75	5,465.31	-947.15	5,529.71	1.83	-1.81	0.28
12,167.00	90.44	1.48	6,185.67	5,560.29	-946.14	5,624.18	2.79	2.11	1.83
12,262.00	88.53	1.32	6,186.53	5,655.25	-943.82	5,718.52	2.02	-2.01	-0.17
12,356.00	89.25	2.59	6,188.35	5,749.18	-940.61	5,811.74	1.55	0.77	1.35
12,451.00	89.84	2.27	6,189.10	5,844.09	-936.58	5,905.86	0.71	0.62	-0.34
12,546.00	90.18	2.15	6,189.09	5,939.02	-932.92	6,000.04	0.38	0.36	-0.13
12,642.00	89.99	2.63	6,188.94	6,034.93	-928.92	6,095.17	0.54	-0.20	0.50
12,736.00	89.97	3.14	6,188.98	6,128.81	-924.19	6,188.20	0.54	-0.02	0.54
12,831.00	90.02	0.74	6,188.99	6,223.75	-920.97	6,282.43	2.53	0.05	-2.53
12,926.00	90.15	0.59	6,188.84	6,318.75	-919.87	6,376.91	0.21	0.14	-0.16

Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-1
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4716.50usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
13,021.00	90.68	0.66	6,188.16	6,413.74	-918.83	6,471.39	0.56	0.56	0.07	
13,116.00	91.31	0.77	6,186.51	6,508.72	-917.65	6,565.85	0.67	0.66	0.12	
13,211.00	88.51	359.42	6,186.66	6,603.70	-917.49	6,660.41	3.27	-2.95	-1.42	
13,305.00	89.68	0.98	6,188.14	6,697.69	-917.16	6,753.96	2.07	1.24	1.66	
13,400.00	89.59	0.85	6,188.75	6,792.67	-915.64	6,848.39	0.17	-0.09	-0.14	
13,494.00	89.47	0.83	6,189.52	6,886.66	-914.26	6,941.84	0.13	-0.13	-0.02	
13,589.00	89.12	0.62	6,190.69	6,981.64	-913.06	7,036.30	0.43	-0.37	-0.22	
13,684.00	89.39	0.29	6,191.92	7,076.63	-912.31	7,130.81	0.45	0.28	-0.35	
13,780.00	89.98	0.85	6,192.45	7,172.63	-911.35	7,226.30	0.85	0.61	0.58	
13,874.00	90.31	359.29	6,192.21	7,266.62	-911.24	7,319.88	1.70	0.35	-1.66	
13,968.00	91.66	359.51	6,190.60	7,360.60	-912.22	7,413.54	1.46	1.44	0.23	
14,064.00	89.07	358.65	6,189.98	7,456.58	-913.76	7,509.24	2.84	-2.70	-0.90	
14,159.00	89.57	357.82	6,191.11	7,551.53	-916.69	7,604.05	1.02	0.53	-0.87	
14,253.00	88.74	356.71	6,192.50	7,645.41	-921.17	7,697.94	1.47	-0.88	-1.18	
14,348.00	89.54	357.99	6,193.92	7,740.29	-925.57	7,792.82	1.59	0.84	1.35	
14,444.00	89.82	357.63	6,194.46	7,836.22	-929.23	7,888.68	0.48	0.29	-0.37	
14,539.00	90.25	1.48	6,194.40	7,931.20	-929.97	7,983.31	4.08	0.45	4.05	
14,634.00	89.89	1.50	6,194.29	8,026.17	-927.50	8,077.64	0.38	-0.38	0.02	
14,729.00	89.78	1.35	6,194.56	8,121.14	-925.14	8,171.98	0.20	-0.12	-0.16	
14,825.00	89.39	0.35	6,195.25	8,217.12	-923.72	8,267.42	1.12	-0.41	-1.04	
14,920.00	91.41	1.63	6,194.59	8,312.10	-922.07	8,361.83	2.52	2.13	1.35	
15,015.00	91.83	359.52	6,191.91	8,407.05	-921.12	8,456.28	2.26	0.44	-2.22	
15,110.00	93.97	359.52	6,187.10	8,501.92	-921.92	8,550.81	2.25	2.25	0.00	
15,205.00	90.54	359.13	6,183.36	8,596.82	-923.03	8,645.41	3.63	-3.61	-0.41	
15,300.00	90.74	358.36	6,182.30	8,691.80	-925.11	8,740.16	0.84	0.21	-0.81	
15,395.00	90.92	357.92	6,180.92	8,786.73	-928.20	8,834.98	0.50	0.19	-0.46	
15,490.00	90.26	359.38	6,179.95	8,881.70	-930.44	8,929.74	1.69	-0.69	1.54	
15,585.00	90.26	358.92	6,179.52	8,976.69	-931.85	9,024.45	0.48	0.00	-0.48	
15,679.00	90.87	358.48	6,178.59	9,070.66	-933.98	9,118.21	0.80	0.65	-0.47	
15,774.00	89.10	359.49	6,178.61	9,165.64	-935.66	9,212.93	2.15	-1.86	1.06	
15,869.00	89.78	359.37	6,179.54	9,260.63	-936.61	9,307.60	0.73	0.72	-0.13	
15,964.00	87.30	1.42	6,181.96	9,355.58	-935.95	9,402.08	3.39	-2.61	2.16	
16,059.00	87.01	1.33	6,186.68	9,450.44	-933.67	9,496.31	0.32	-0.31	-0.09	
16,155.00	87.49	1.86	6,191.28	9,546.29	-931.01	9,591.50	0.74	0.50	0.55	
16,250.00	88.55	4.45	6,194.57	9,641.08	-925.78	9,685.40	2.94	1.12	2.73	
16,308.26	88.58	4.32	6,196.02	9,699.15	-921.33	9,742.80	0.24	0.06	-0.23	
~460' X-OVER PNT - 16308.26' MD, 460' FNL, 2267' FEL SEC 2										
16,337.00	88.60	4.25	6,196.73	9,727.80	-919.18	9,771.13	0.24	0.06	-0.23	
LAST SURVEY - 16337' MD, 6197' TVD										
16,400.00	88.60	4.25	6,198.27	9,790.61	-914.52	9,833.23	0.00	0.00	0.00	
EXTRAPOLATION TO TD - 16400' MD, 368' FNL, 2260' FEL SEC 2										

Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-1
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4716.50usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4716.50usft
Well:	GROTHEER 5-61 11B-2-1	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
EPI- GROTHEER 5-61 1 - actual wellpath misses target center by 22.08usft at 16309.78usft MD (6196.06 TVD, 9700.67 N, -921.21 E) - Point	0.00	0.00	6,192.00	9,699.15	-899.56	1,404,605.21	3,369,159.26	40.436465°N	104.173760°W
LP- GROTHEER 5-61 1' - actual wellpath misses target center by 26.09usft at 6592.80usft MD (6185.41 TVD, -9.41 N, -941.44 E) - Point	0.00	0.00	6,192.00	-9.79	-966.68	1,394,896.73	3,369,237.71	40.409815°N	104.174000°W
PBHL- GROTHEER 5-6 - actual wellpath misses target center by 18.47usft at 16400.00usft MD (6198.27 TVD, 9790.61 N, -914.52 E) - Point	0.00	0.00	6,192.00	9,798.97	-899.28	1,404,705.02	3,369,158.05	40.436739°N	104.173759°W

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,630.00	5,526.48	-574.13	-857.16	KOP - 5630' MD, 5526' TVD	
6,592.42	6,185.36	-9.79	-941.44	~460' X-OVER PNT - 6592.42' MD, 460' FSL, 2207' FEL SEC 11	
6,636.00	6,187.98	33.69	-941.41	HZ LANDING PNT - 6636' MD, 6188' TVD	
16,308.26	6,196.02	9,699.15	-921.33	~460' X-OVER PNT - 16308.26' MD, 460' FNL, 2267' FEL SEC 2	
16,337.00	6,196.73	9,727.80	-919.18	LAST SURVEY - 16337' MD, 6197' TVD	
16,400.00	6,198.27	9,790.61	-914.52	EXTRAPOLATION TO TD - 16400' MD, 368' FNL, 2260' FEL SEC 2	

Checked By: _____	Approved By: _____	Date: _____
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