

BISON OIL & GAS II

WELD COUNTY

SEC 11-T5N-61W

GROTHER 5-61 11B-2-5

OWB

Design: FINAL SURVEY

Standard Survey Report

15 September, 2022

Project: WELD COUNTY
Site: SEC 11-T5N-61W
Well: GROTHEER 5-61 11B-2-5
Wellbore: OWB
Design: FINAL SURVEY

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



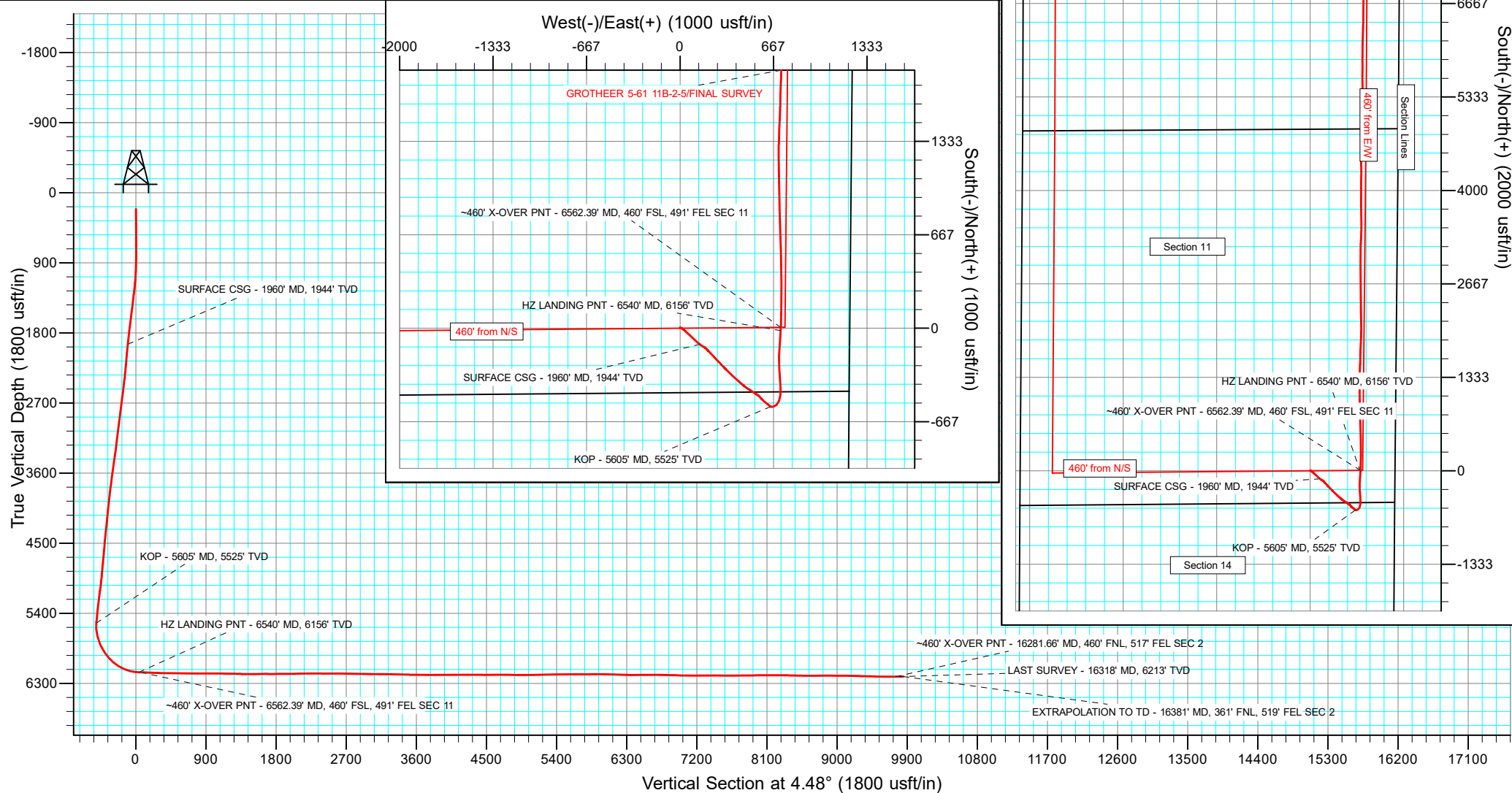
Azimuths to True North
Magnetic North: 7.43°
Magnetic Field
Strength: 51912.5snT
Dip Angle: 66.70°
Date: 6/23/2022
Model: IGRF2020

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

+N/-S	+E/-W	Northing	Ground Level:	4690.10	Latitude	Longitude	Slot
0.00	0.00	1394922.22	Easting	3370260.06	40.409843°N	104.170327°W	

ANNOTATIONS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation	
1960.00	10.73	127.46	1943.75	-114.62	141.09	-103.24	190.34	SURFACE CSG - 1960' MD, 1944' TVD	
5605.00	10.35	122.51	5525.19	-559.44	645.80	-507.25	866.97	KOP - 5605' MD, 5525' TVD	
6540.00	87.67	1.77	6155.80	-16.52	717.99	39.66	1453.65	HZ LANDING PNT - 6540' MD, 6156' TVD	
6562.39	87.74	1.63	6156.70	5.85	718.65	62.00	1476.02	~460' X-OVER PNT - 6562.39' MD, 460' FSL, 491' FEL SEC 11	
16281.66	90.54	358.96	6213.21	9721.35	772.13	9751.97	11193.93	~460' X-OVER PNT - 16281.66' MD, 460' FNL, 517' FEL SEC 2	
16318.00	90.95	358.72	6212.74	9757.68	771.40	9788.13	11230.27	LAST SURVEY - 16318' MD, 6213' TVD	
16381.00	90.95	358.72	6211.69	9820.66	769.99	9850.80	11293.26	EXTRAPOLATION TO TD - 16381' MD, 361' FNL, 519' FEL SEC 2	

SHL:
460' FSL, 1210' FEL
Sec 11-T5N-R61W
~460' X-OVER PNT:
460' FSL, 491' FEL
Sec 11-T5N-R61W
~460' X-OVER PNT:
460' FNL, 517' FEL
Sec 2-T5N-R61W
BHL:
361' FNL, 519' FEL
Sec 2-T5N-R61W



Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-5
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4714.10usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4714.10usft
Well:	GROTHEER 5-61 11B-2-5	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-2-5					
Well Position	+N/-S	0.00 usft	Northing:	1,394,922.22 usft	Latitude:	40.409843°N
	+E/-W	0.00 usft	Easting:	3,370,260.05 usft	Longitude:	104.170327°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,690.10 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/23/2022	7.43	66.70	51,912.51189368

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	4.48	

Survey Program	Date	9/15/2022			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
302.00	1,909.00	SURFACE SURVEY (OWB)	MWD	OWSG MWD - Standard	
2,150.00	16,381.00	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)
	210.00	0.70	345.00	210.00	1.19	-0.32	1.16	0.00	0.00	0.00
	302.00	1.00	347.00	301.98	2.52	-0.65	2.46	0.33	0.33	2.17
	376.00	0.70	22.30	375.98	3.56	-0.62	3.50	0.80	-0.41	47.70
	463.00	0.10	311.50	462.97	4.10	-0.47	4.05	0.77	-0.69	-81.38
	550.00	0.30	343.70	549.97	4.37	-0.60	4.31	0.26	0.23	37.01
	637.00	0.70	51.90	636.97	4.92	-0.24	4.89	0.75	0.46	78.39
	725.00	0.80	99.90	724.96	5.15	0.79	5.19	0.70	0.11	54.55
	812.00	2.10	102.80	811.93	4.69	2.94	4.90	1.50	1.49	3.33
	899.00	3.30	120.00	898.84	3.08	6.66	3.59	1.65	1.38	19.77
	986.00	4.80	124.30	985.62	-0.22	11.84	0.71	1.76	1.72	4.94

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Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4714.10usft
Well:	GROTHEER 5-61 11B-2-5	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)
1,073.00	7.40	124.90	1,072.12	-5.48	19.44	-3.94	2.99	2.99	0.69
1,160.00	8.50	130.20	1,158.28	-12.83	28.95	-10.53	1.52	1.26	6.09
1,248.00	10.30	135.00	1,245.10	-22.60	39.48	-19.44	2.23	2.05	5.45
1,335.00	10.90	133.10	1,330.61	-33.72	50.99	-29.63	0.80	0.69	-2.18
1,422.00	11.40	129.40	1,415.97	-44.79	63.64	-39.68	1.00	0.57	-4.25
1,509.00	11.20	133.70	1,501.29	-56.09	76.39	-49.95	1.00	-0.23	4.94
1,684.00	11.20	134.30	1,672.95	-79.70	100.84	-71.57	0.07	0.00	0.34
1,771.00	11.40	132.20	1,758.27	-91.38	113.26	-82.25	0.53	0.23	-2.41
1,858.00	11.10	129.60	1,843.60	-102.49	126.08	-92.32	0.68	-0.34	-2.99
1,909.00	10.90	129.30	1,893.66	-108.67	133.59	-97.90	0.41	-0.39	-0.59
1,960.00	10.73	127.46	1,943.75	-114.62	141.09	-103.24	0.75	-0.32	-3.60
SURFACE CSG - 1960' MD, 1944' TVD									
2,150.00	10.22	120.16	2,130.59	-133.85	169.71	-120.18	0.75	-0.27	-3.84
2,245.00	8.81	131.94	2,224.29	-142.95	182.41	-128.25	2.52	-1.48	12.40
2,340.00	8.43	132.32	2,318.22	-152.50	192.97	-136.95	0.40	-0.40	0.40
2,434.00	10.68	137.58	2,410.91	-163.57	203.95	-147.13	2.57	2.39	5.60
2,529.00	10.69	137.20	2,504.26	-176.53	215.87	-159.12	0.07	0.01	-0.40
2,719.00	10.06	135.89	2,691.16	-201.38	239.40	-182.05	0.35	-0.33	-0.69
2,814.00	11.54	137.92	2,784.47	-214.39	251.54	-194.07	1.61	1.56	2.14
2,910.00	10.52	137.40	2,878.70	-227.97	263.91	-206.64	1.07	-1.06	-0.54
3,005.00	9.76	136.10	2,972.21	-240.15	275.36	-217.90	0.84	-0.80	-1.37
3,124.00	11.11	136.04	3,089.24	-255.68	290.31	-232.20	1.13	1.13	-0.05
3,219.00	10.84	134.57	3,182.51	-268.53	303.03	-244.03	0.41	-0.28	-1.55
3,313.00	10.41	135.37	3,274.89	-280.78	315.29	-255.28	0.48	-0.46	0.85
3,408.00	12.49	135.64	3,368.00	-294.23	328.51	-267.66	2.19	2.19	0.28
3,504.00	12.37	135.17	3,461.75	-308.95	343.02	-281.19	0.16	-0.12	-0.49
3,599.00	12.47	132.99	3,554.52	-323.16	357.69	-294.21	0.50	0.11	-2.29
3,694.00	12.13	133.41	3,647.34	-337.01	372.45	-306.87	0.37	-0.36	0.44
3,789.00	11.73	133.06	3,740.29	-350.46	386.75	-319.16	0.43	-0.42	-0.37
3,883.00	10.90	130.90	3,832.46	-362.81	400.45	-330.40	0.99	-0.88	-2.30
3,978.00	10.41	132.32	3,925.83	-374.47	413.59	-340.99	0.59	-0.52	1.49
4,074.00	9.68	133.25	4,020.35	-385.84	425.88	-351.37	0.78	-0.76	0.97
4,169.00	10.67	128.65	4,113.86	-396.80	438.56	-361.31	1.35	1.04	-4.84
4,263.00	9.33	128.16	4,206.43	-406.95	451.35	-370.42	1.43	-1.43	-0.52
4,358.00	11.89	128.79	4,299.80	-417.84	465.04	-380.21	2.70	2.69	0.66
4,452.00	11.03	124.51	4,391.93	-429.00	480.00	-390.17	1.29	-0.91	-4.55
4,547.00	9.72	120.50	4,485.37	-438.22	494.40	-398.23	1.57	-1.38	-4.22
4,642.00	11.29	125.78	4,578.78	-447.73	508.85	-406.58	1.94	1.65	5.56
4,737.00	10.44	119.93	4,672.08	-457.46	523.86	-415.11	1.46	-0.89	-6.16
4,833.00	11.47	127.07	4,766.33	-467.55	539.01	-423.99	1.77	1.07	7.44
4,928.00	9.54	120.19	4,859.74	-477.21	553.35	-432.49	2.42	-2.03	-7.24
5,023.00	9.41	134.90	4,953.46	-486.65	565.66	-440.94	2.55	-0.14	15.48
5,118.00	9.98	139.95	5,047.10	-498.43	576.46	-451.85	1.08	0.60	5.32

Survey Report

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Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4714.10usft
Well:	GROTHEER 5-61 11B-2-5	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)
5,213.00	11.82	135.50	5,140.38	-511.67	588.58	-464.10	2.13	1.94	-4.68
5,308.00	11.73	129.94	5,233.39	-524.81	602.80	-476.09	1.20	-0.09	-5.85
5,403.00	11.28	127.99	5,326.48	-536.73	617.53	-486.82	0.63	-0.47	-2.05
5,497.00	9.86	127.47	5,418.88	-547.29	631.16	-496.28	1.51	-1.51	-0.55
5,592.00	10.40	132.42	5,512.40	-558.02	643.95	-505.98	1.08	0.57	5.21
5,605.00	10.35	122.51	5,525.19	-559.44	645.80	-507.25	13.71	-0.40	-76.20
KOP - 5605' MD, 5525' TVD									
5,687.00	15.66	76.36	5,605.26	-560.79	662.82	-507.27	13.71	6.48	-56.28
5,782.00	19.71	48.40	5,695.91	-547.10	687.31	-491.71	9.78	4.26	-29.43
5,877.00	23.33	20.03	5,784.51	-518.71	705.79	-461.95	11.47	3.81	-29.86
5,971.00	30.12	7.27	5,868.49	-477.74	715.17	-420.38	9.42	7.22	-13.57
6,066.00	39.24	356.36	5,946.61	-423.95	716.28	-366.66	11.58	9.60	-11.48
6,160.00	47.57	356.08	6,014.84	-359.55	712.02	-302.80	8.86	8.86	-0.30
6,255.00	56.01	356.45	6,073.55	-285.13	707.17	-228.98	8.89	8.88	0.39
6,351.00	68.60	1.10	6,118.09	-200.35	705.56	-144.59	13.79	13.11	4.84
6,445.00	78.70	6.25	6,144.54	-110.50	711.43	-54.55	11.96	10.74	5.48
6,540.00	87.67	1.77	6,155.81	-16.52	717.99	39.66	10.54	9.44	-4.72
HZ LANDING PNT - 6540' MD, 6156' TVD									
6,562.39	87.74	1.63	6,156.70	5.85	718.65	62.00	0.72	0.32	-0.64
-460' X-OVER PNT - 6562.39' MD, 460' FSL, 491' FEL SEC 11									
6,635.00	87.97	1.16	6,159.42	78.38	720.41	134.46	0.72	0.32	-0.64
6,729.00	88.08	0.93	6,162.66	172.31	722.13	228.23	0.27	0.12	-0.24
6,825.00	87.37	359.97	6,166.47	268.23	722.88	323.92	1.24	-0.74	-1.00
6,920.00	89.81	359.71	6,168.81	363.20	722.62	418.57	2.58	2.57	-0.27
7,015.00	89.61	359.04	6,169.29	458.19	721.58	513.19	0.74	-0.21	-0.71
7,110.00	89.65	358.28	6,169.90	553.16	719.36	607.70	0.80	0.04	-0.80
7,204.00	89.84	357.20	6,170.32	647.08	715.65	701.04	1.17	0.20	-1.15
7,299.00	89.76	358.72	6,170.65	742.02	712.27	795.42	1.60	-0.08	1.60
7,394.00	89.98	358.60	6,170.87	836.99	710.05	889.93	0.26	0.23	-0.13
7,489.00	89.65	359.60	6,171.17	931.98	708.56	984.51	1.11	-0.35	1.05
7,584.00	88.90	357.91	6,172.38	1,026.95	706.49	1,079.03	1.95	-0.79	-1.78
7,678.00	89.09	359.56	6,174.02	1,120.91	704.42	1,172.54	1.77	0.20	1.76
7,774.00	88.61	359.09	6,175.95	1,216.88	703.29	1,268.13	0.70	-0.50	-0.49
7,868.00	88.80	1.88	6,178.08	1,310.84	704.08	1,361.87	2.97	0.20	2.97
7,963.00	89.69	1.86	6,179.33	1,405.78	707.18	1,456.76	0.94	0.94	-0.02
8,058.00	91.66	2.99	6,178.21	1,500.68	711.20	1,551.68	2.39	2.07	1.19
8,154.00	89.19	0.65	6,177.50	1,596.62	714.25	1,647.56	3.54	-2.57	-2.44
8,249.00	90.08	2.13	6,178.10	1,691.59	716.55	1,742.42	1.82	0.94	1.56
8,344.00	90.09	2.25	6,177.96	1,786.52	720.18	1,837.34	0.13	0.01	0.13
8,438.00	90.15	2.66	6,177.76	1,880.43	724.21	1,931.28	0.44	0.06	0.44
8,532.00	91.51	1.22	6,176.40	1,974.36	727.39	2,025.18	2.11	1.45	-1.53
8,626.00	92.31	0.48	6,173.27	2,068.30	728.79	2,118.94	1.16	0.85	-0.79
8,721.00	89.86	359.51	6,171.47	2,163.27	728.78	2,213.62	2.77	-2.58	-1.02
8,815.00	89.73	359.00	6,171.81	2,257.26	727.56	2,307.23	0.56	-0.14	-0.54

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Well:	GROTHEER 5-61 11B-2-5	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)
8,909.00	89.09	356.68	6,172.77	2,351.18	724.01	2,400.58	2.56	-0.68	-2.47
9,003.00	89.51	359.58	6,173.92	2,445.12	720.95	2,493.99	3.12	0.45	3.09
9,098.00	90.09	358.83	6,174.25	2,540.11	719.63	2,588.58	1.00	0.61	-0.79
9,192.00	90.12	0.51	6,174.08	2,634.10	719.09	2,682.25	1.79	0.03	1.79
9,287.00	88.93	0.63	6,174.87	2,729.09	720.03	2,777.02	1.26	-1.25	0.13
9,382.00	89.33	359.86	6,176.31	2,824.08	720.44	2,871.75	0.91	0.42	-0.81
9,477.00	88.61	359.50	6,178.02	2,919.06	719.91	2,966.40	0.85	-0.76	-0.38
9,572.00	89.08	359.57	6,179.94	3,014.04	719.14	3,061.03	0.50	0.49	0.07
9,667.00	89.38	1.33	6,181.21	3,109.02	719.88	3,155.78	1.88	0.32	1.85
9,762.00	90.34	0.51	6,181.44	3,204.01	721.41	3,250.59	1.33	1.01	-0.86
9,857.00	88.31	3.01	6,182.56	3,298.94	724.32	3,345.47	3.39	-2.14	2.63
9,951.00	88.34	2.60	6,185.31	3,392.79	728.92	3,439.39	0.44	0.03	-0.44
10,047.00	89.09	0.35	6,187.46	3,488.73	731.39	3,535.22	2.47	0.78	-2.34
10,142.00	89.48	359.14	6,188.65	3,583.72	730.97	3,629.89	1.34	0.41	-1.27
10,236.00	90.13	358.23	6,188.97	3,677.69	728.81	3,723.41	1.19	0.69	-0.97
10,332.00	89.13	358.47	6,189.59	3,773.65	726.05	3,818.86	1.07	-1.04	0.25
10,426.00	90.42	1.15	6,189.96	3,867.64	725.74	3,912.53	3.16	1.37	2.85
10,520.00	90.49	0.45	6,189.21	3,961.62	727.05	4,006.33	0.75	0.07	-0.74
10,615.00	90.79	359.91	6,188.15	4,056.62	727.35	4,101.06	0.65	0.32	-0.57
10,710.00	89.66	0.81	6,187.78	4,151.61	727.94	4,195.81	1.52	-1.19	0.95
10,805.00	90.05	0.50	6,188.02	4,246.61	729.03	4,290.60	0.52	0.41	-0.33
10,900.00	89.53	358.30	6,188.37	4,341.59	728.04	4,385.22	2.38	-0.55	-2.32
10,996.00	89.83	2.29	6,188.90	4,437.57	728.53	4,480.94	4.17	0.31	4.16
11,091.00	90.42	2.96	6,188.70	4,532.47	732.88	4,575.89	0.94	0.62	0.71
11,186.00	90.09	1.89	6,188.27	4,627.38	736.90	4,670.83	1.18	-0.35	-1.13
11,280.00	90.17	358.53	6,188.06	4,721.37	737.25	4,764.55	3.58	0.09	-3.57
11,375.00	87.99	359.42	6,189.59	4,816.33	735.55	4,859.09	2.48	-2.29	0.94
11,470.00	88.72	1.22	6,192.31	4,911.29	736.08	4,953.80	2.04	0.77	1.89
11,565.00	91.52	1.93	6,192.11	5,006.24	738.69	5,048.67	3.04	2.95	0.75
11,660.00	92.13	1.69	6,189.09	5,101.15	741.69	5,143.51	0.69	0.64	-0.25
11,755.00	90.52	1.33	6,186.89	5,196.09	744.19	5,238.36	1.74	-1.69	-0.38
11,850.00	90.86	0.27	6,185.75	5,291.07	745.52	5,333.15	1.17	0.36	-1.12
11,945.00	91.87	0.12	6,183.48	5,386.04	745.84	5,427.86	1.07	1.06	-0.16
12,040.00	89.71	0.27	6,182.17	5,481.02	746.16	5,522.58	2.28	-2.27	0.16
12,135.00	89.57	359.32	6,182.77	5,576.02	745.82	5,617.26	1.01	-0.15	-1.00
12,230.00	90.60	0.58	6,182.63	5,671.02	745.74	5,711.96	1.71	1.08	1.33
12,325.00	90.40	359.79	6,181.80	5,766.01	746.05	5,806.69	0.86	-0.21	-0.83
12,420.00	90.84	359.94	6,180.77	5,861.01	745.82	5,901.37	0.49	0.46	0.16
12,515.00	88.99	0.80	6,180.91	5,956.00	746.44	5,996.12	2.15	-1.95	0.91
12,610.00	88.04	0.41	6,183.38	6,050.96	747.44	6,090.87	1.08	-1.00	-0.41
12,705.00	88.18	1.99	6,186.51	6,145.88	749.43	6,185.66	1.67	0.15	1.66
12,800.00	88.20	1.57	6,189.51	6,240.79	752.38	6,280.51	0.44	0.02	-0.44
12,895.00	90.18	1.19	6,190.85	6,335.75	754.66	6,375.35	2.12	2.08	-0.40

Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-5
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4714.10usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4714.10usft
Well:	GROTHEER 5-61 11B-2-5	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)	
12,990.00	90.45	0.93	6,190.33	6,430.73	756.42	6,470.18	0.39	0.28	-0.27	
13,085.00	91.12	1.03	6,189.03	6,525.71	758.05	6,565.00	0.71	0.71	0.11	
13,179.00	89.27	0.72	6,188.71	6,619.69	759.48	6,658.80	2.00	-1.97	-0.33	
13,273.00	88.75	0.63	6,190.33	6,713.67	760.59	6,752.58	0.56	-0.55	-0.10	
13,368.00	88.47	0.27	6,192.64	6,808.64	761.33	6,847.32	0.48	-0.29	-0.38	
13,463.00	88.28	0.10	6,195.33	6,903.60	761.64	6,942.01	0.27	-0.20	-0.18	
13,558.00	89.46	0.57	6,197.21	6,998.58	762.20	7,036.74	1.34	1.24	0.49	
13,653.00	89.73	0.72	6,197.88	7,093.57	763.27	7,131.53	0.33	0.28	0.16	
13,748.00	89.95	0.27	6,198.14	7,188.57	764.09	7,226.30	0.53	0.23	-0.47	
13,843.00	91.06	359.88	6,197.31	7,283.56	764.21	7,321.01	1.24	1.17	-0.41	
13,937.00	89.49	0.05	6,196.85	7,377.56	764.15	7,414.72	1.68	-1.67	0.18	
14,032.00	89.12	359.90	6,198.01	7,472.55	764.11	7,509.41	0.42	-0.39	-0.16	
14,127.00	89.90	359.98	6,198.82	7,567.55	764.01	7,604.11	0.83	0.82	0.08	
14,222.00	90.17	359.38	6,198.76	7,662.54	763.48	7,698.78	0.69	0.28	-0.63	
14,317.00	91.38	359.29	6,197.48	7,757.53	762.38	7,793.38	1.28	1.27	-0.09	
14,412.00	89.96	1.71	6,196.36	7,852.51	763.21	7,888.14	2.95	-1.49	2.55	
14,508.00	90.54	1.84	6,195.95	7,948.46	766.18	7,984.03	0.62	0.60	0.14	
14,603.00	90.22	359.45	6,195.32	8,043.44	767.25	8,078.81	2.54	-0.34	-2.52	
14,698.00	89.93	357.94	6,195.19	8,138.42	765.09	8,173.32	1.62	-0.31	-1.59	
14,793.00	89.65	0.10	6,195.54	8,233.40	763.46	8,267.88	2.29	-0.29	2.27	
14,889.00	89.88	358.57	6,195.93	8,329.39	762.35	8,363.49	1.61	0.24	-1.59	
14,983.00	88.32	0.07	6,197.41	8,423.36	761.23	8,457.09	2.30	-1.66	1.60	
15,079.00	88.94	2.92	6,199.71	8,519.29	763.74	8,552.92	3.04	0.65	2.97	
15,174.00	89.76	3.05	6,200.78	8,614.16	768.68	8,647.89	0.87	0.86	0.14	
15,269.00	91.14	3.12	6,200.04	8,709.01	773.80	8,742.85	1.45	1.45	0.07	
15,364.00	90.15	0.56	6,198.97	8,803.95	776.85	8,837.74	2.89	-1.04	-2.69	
15,459.00	89.19	0.16	6,199.51	8,898.95	777.44	8,932.49	1.09	-1.01	-0.42	
15,553.00	90.35	359.70	6,199.89	8,992.94	777.33	9,026.19	1.33	1.23	-0.49	
15,648.00	88.61	359.99	6,200.75	9,087.93	777.07	9,120.87	1.86	-1.83	0.31	
15,742.00	88.60	359.00	6,203.04	9,181.90	776.24	9,214.48	1.05	-0.01	-1.05	
15,838.00	88.84	357.81	6,205.19	9,277.84	773.57	9,309.92	1.26	0.25	-1.24	
15,933.00	88.11	1.28	6,207.72	9,372.79	772.82	9,404.52	3.73	-0.77	3.65	
16,028.00	88.27	0.12	6,210.72	9,467.73	773.98	9,499.26	1.23	0.17	-1.22	
16,123.00	89.32	359.69	6,212.71	9,562.71	773.82	9,593.94	1.19	1.11	-0.45	
16,219.00	89.84	359.38	6,213.42	9,658.70	773.04	9,689.58	0.63	0.54	-0.32	
16,281.66	90.54	358.96	6,213.21	9,721.35	772.13	9,751.97	1.30	1.12	-0.67	
~460' X-OVER PNT - 16281.66' MD, 460' FNL, 517' FEL SEC 2										
16,318.00	90.95	358.72	6,212.74	9,757.68	771.40	9,788.13	1.30	1.12	-0.67	
LAST SURVEY - 16318' MD, 6213' TVD										
16,381.00	90.95	358.72	6,211.69	9,820.66	769.99	9,850.80	0.00	0.00	0.00	
EXTRAPOLATION TO TD - 16381' MD, 361' FNL, 519' FEL SEC 2										

Survey Report

Company:	BISON OIL & GAS II	Local Co-ordinate Reference:	Well GROTHEER 5-61 11B-2-5
Project:	WELD COUNTY	TVD Reference:	KBE 24' @ 4714.10usft
Site:	SEC 11-T5N-61W	MD Reference:	KBE 24' @ 4714.10usft
Well:	GROTHEER 5-61 11B-2-5	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
LP- GROTHEER 5-61 1' - actual wellpath misses target center by 10.32usft at 6562.85usft MD (6156.72 TVD, 6.31 N, 718.66 E) - Point	0.00	0.00	6,165.00	5.85	724.81	1,394,938.94	3,370,984.66	40.409859°N	104.167725°W
PBHL- GROTHEER 5-6' - actual wellpath misses target center by 45.36usft at 16381.00usft MD (6211.69 TVD, 9820.66 N, 769.99 E) - Point	0.00	0.00	6,182.00	9,821.18	804.28	1,404,753.97	3,370,916.95	40.436801°N	104.167438°W
EPI- GROTHEER 5-61 1 - actual wellpath misses target center by 44.60usft at 16281.30usft MD (6213.21 TVD, 9720.99 N, 772.14 E) - Point	0.00	0.00	6,182.00	9,721.35	804.00	1,404,654.15	3,370,918.17	40.436527°N	104.167439°W

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,960.00	1,943.75	-114.62	141.09	SURFACE CSG - 1960' MD, 1944' TVD
5,605.00	5,525.19	-559.44	645.80	KOP - 5605' MD, 5525' TVD
6,540.00	6,155.81	-16.52	717.99	HZ LANDING PNT - 6540' MD, 6156' TVD
6,562.39	6,156.70	5.85	718.65	~460' X-OVER PNT - 6562.39' MD, 460' FSL, 491' FEL SEC 11
16,281.66	6,213.21	9,721.35	772.13	~460' X-OVER PNT - 16281.66' MD, 460' FNL, 517' FEL SEC 2
16,318.00	6,212.74	9,757.68	771.40	LAST SURVEY - 16318' MD, 6213' TVD
16,381.00	6,211.69	9,820.66	769.99	EXTRAPOLATION TO TD - 16381' MD, 361' FNL, 519' FEL SEC 2

Checked By: _____	Approved By: _____	Date: _____
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