



RKB @ 4957.80usft  
Ground Level: 4936.80

Project: Weld County, Colorado (NAD 83)  
Site: Sec.12-T10N-R58W  
Well: Razor FED #12F-1306B  
Wellbore: OH / Job# 1524100  
Design: Plan 2 08-04-15  
Rig:

#### WELL DETAILS

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	1558541.080	4936.80 3465340.570	40.854456	-103.817803

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00		Begin 2°/100' Build
3	625.00	6.50	86.00	624.30	1.28	18.37	2.00	86.00	-0.43		Hold 6.5° Inc @ 86° Azm
4	3675.00	6.50	86.00	3654.70	25.37	362.80	0.00	0.00	-8.57		Begin 2°/100' Drop
5	4000.00	0.00	0.00	3979.00	26.65	381.17	2.00	180.00	-9.00		Begin Vertical Hold
6	5511.13	0.00	0.00	5490.13	26.65	381.17	0.00	0.00	-9.00		KOP, Begin 11°/100' Build
7	6329.31	90.00	180.00	6011.00	-494.22	381.18	11.00	180.00	511.31		LP, Hold 90° Inc @ 180° Azm
8	14074.30	90.00	180.00	6011.00	-8239.21	381.28	0.00	0.00	8248.02	BHL_#12F-1306Bv2	TD at 14074.30' MD

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL_#12F-1306Bv2	6011.00	-8239.21	381.28	1550310.590	3465878.070	40.831842	-103.816425	Point

#### LEGEND

- Razor FED #12F-0101A, OH / Job# 1524093, Plan 2 08-04-15 V0
- Razor FED #12F-0102B, OH / Job# 1524094, Plan 2 08-04-15 V0
- Razor FED #12F-0103A, Wellbore #1 / Job #1523839, Plan 2 08-04-15 V0
- Razor FED #12F-0104B, Wellbore #1 / Job #1523838, Plan 2 08-04-15 V0
- Razor FED #12F-0105A, OH / Job# 1524095, Plan 2 08-04-15 V0
- Razor FED #12F-0106B, OH / Job# 1524096, Plan 2 08-04-15 V0
- Razor FED #12F-0107A, Wellbore #1 / Job #1523840, Plan 2 08-04-15 V0
- Razor FED #12F-0108B, Wellbore #1 / Job #1523841, Surveys (Unit 409) V0
- Razor FED #12F-1301A, OH / Job# 1524097, Plan 2 08-04-15 V0
- Razor FED #12F-1302B, OH / Job# 1524098, Plan 2 08-04-15 V0
- Razor FED #12F-1303A, Wellbore #1 / Job #1523837, Plan 2 08-04-15 V0
- Razor FED #12F-1304B, Wellbore #1, Surveys V0
- Razor FED #12F-1305A, OH / Job# 1524099, Plan 2 08-04-15 V0
- Razor FED #12F-1307A, Wellbore #1 / Job #1523836, Surveys (Unit 409) V0
- Razor FED #12F-1308B, Wellbore #1 / Job #1523835, Surveys (Unit 409) V0
- Plan 2 08-04-15

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1600.00	1607.01	Upper Pierre	0.00	177.35
3500.00	3519.30	Hygiene	0.00	177.35
3650.00	3670.27	Lower Pierre	0.00	177.35
5705.00	5732.61	P200 Marker	0.00	177.35
5734.00	5764.92	P300 Marker	0.00	177.35
5751.00	5784.36	P350 Marker	0.00	177.35
5761.00	5795.99	Sharon Springs	0.00	177.35
5768.00	5804.22	Niobrara	0.00	177.35
5797.00	5839.28	Top A Chalk	0.00	177.35
5832.00	5884.05	Top B Marl	0.00	177.35
5853.00	5912.58	A Marl	0.00	177.35
5862.00	5925.28	Top Upper B	0.00	177.35
5886.00	5960.82	Base Upper B	0.00	177.35
5896.00	5976.48	Top Lower B	0.00	177.35
5925.00	6025.71	Base Lower B	0.00	177.35
5931.00	6036.79	Top B Marl	0.00	177.35
5972.00	6126.46	Top C Chalk	0.00	177.35
5981.00	6151.66	Mid C Chalk	0.00	177.35
5998.00	6212.69	Mid C Marl	0.00	177.35
6011.00	6328.07	Lower C Chalk	0.00	177.35

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

Local Origin: Well Razor FED #12F-1306B, True North

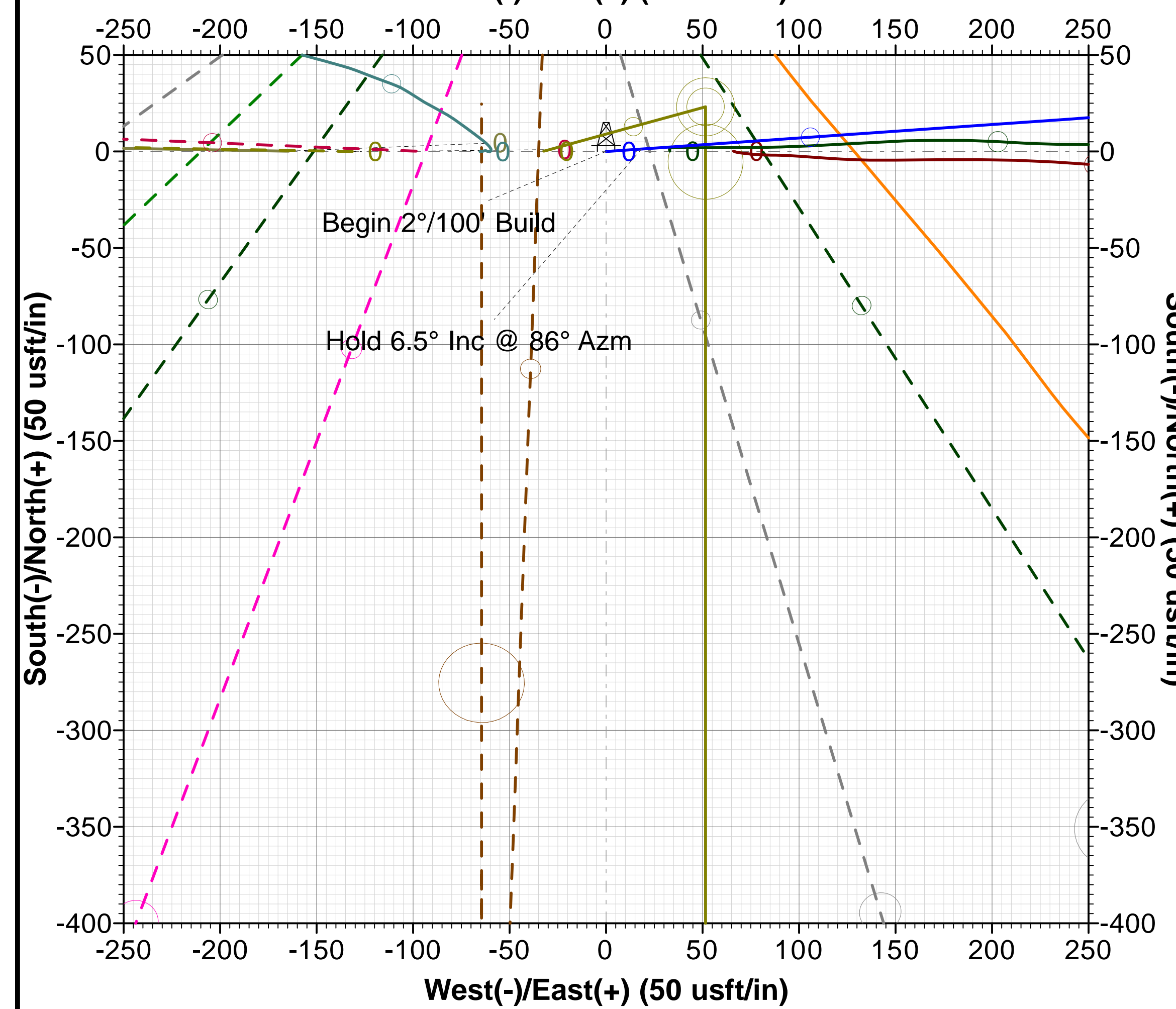
Latitude: 40.854456  
Longitude: -103.817803

Grid East: 3465340.570  
Grid North: 1558541.080  
Scale Factor: 1.000

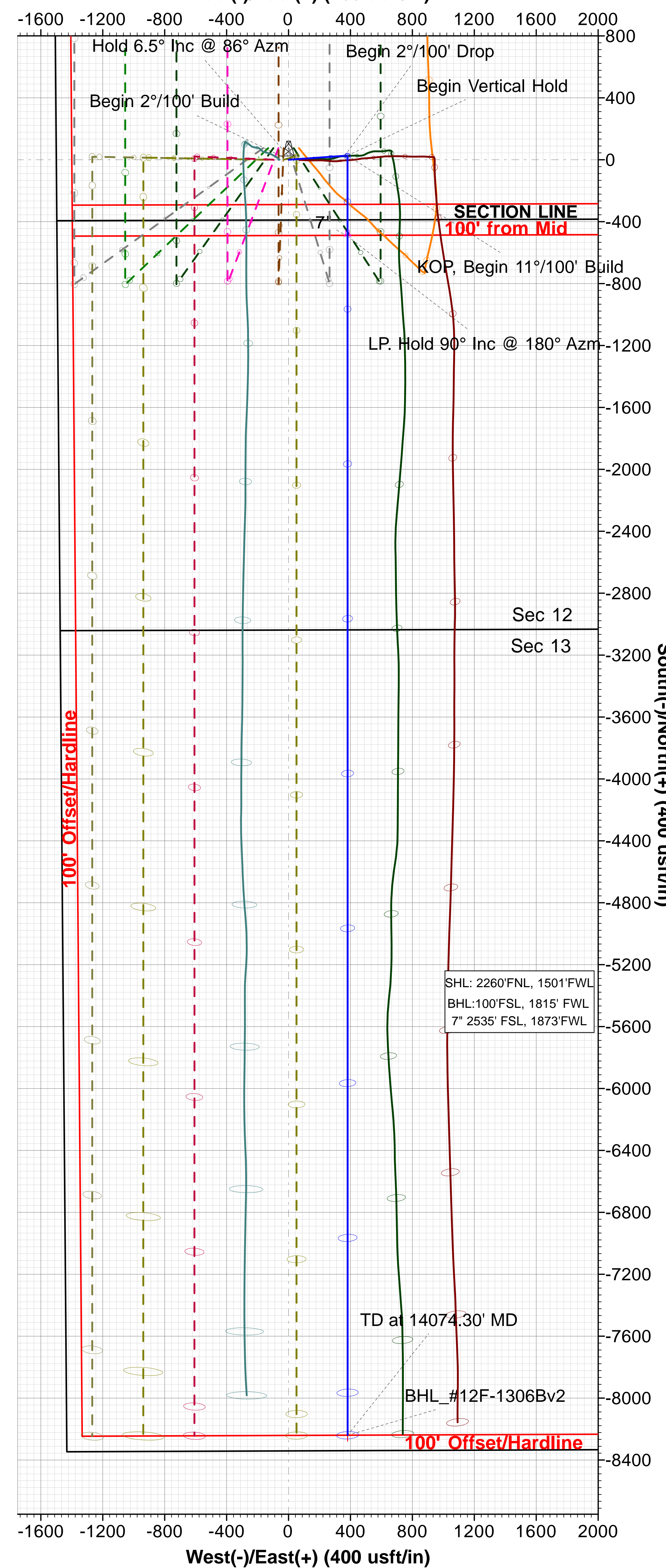
Geomagnetic Model: HDGM  
Sample Date: 04-Aug-15  
Magnetic Declination: 7.63°  
Dip Angle from Horizontal: 67.35°  
Magnetic Field Strength: 52974

To convert a Magnetic Direction to a Grid Direction, Add 6.55°  
To convert a Magnetic Direction to a True Direction, Add 7.63° East  
To convert a True Direction to a Grid Direction, Subtract 1.09°

#### West(-)/East(+) (50 usft/in)



#### West(-)/East(+) (400 usft/in)





# **Whiting Oil & Gas Corporation**

**Weld County, Colorado (NAD 83)**

**Sec.12-T10N-R58W**

**Razor FED #12F-1306B**

**OH / Job# 1524100**

**Plan: Plan 2 08-04-15**

## **Standard Planning Report**

**05 August, 2015**





# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

<b>Project</b>	Weld County, Colorado (NAD 83)		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Sec.12-T10N-R58W			
Site Position:		Northing:	1,558,542.326 usft	Latitude:	40.854456
From:	Lat/Long	Easting:	3,465,406.640 usft	Longitude:	-103.817564
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.09 °

Well	Razor FED #12F-1306B					
Well Position	+N/-S	0.01 usft	Northing:	1,558,541.080 usft	Latitude:	40.854456
	+E/-W	-66.08 usft	Easting:	3,465,340.570 usft	Longitude:	-103.817803
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,936.80 usft

<b>Wellbore</b>	OH / Job# 1524100				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	8/4/2015	7.63	67.35	52,974

<b>Design</b>	Plan 2 08-04-15			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	177.35

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (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	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
625.00	6.50	86.00	624.30	1.28	18.37	2.00	2.00	0.00	86.00	
3,675.00	6.50	86.00	3,654.70	25.37	362.80	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	3,979.00	26.65	381.17	2.00	-2.00	0.00	180.00	
5,511.13	0.00	0.00	5,490.13	26.65	381.17	0.00	0.00	0.00	0.00	
6,329.31	90.00	180.00	6,011.00	-494.22	381.18	11.00	11.00	22.00	180.00	
14,074.30	90.00	180.00	6,011.00	-8,239.21	381.28	0.00	0.00	0.00	0.00	BHL_#12F-1306Bv2



## Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin 2°/100' Build</b>									
400.00	2.00	86.00	399.98	0.12	1.74	-0.04	2.00	2.00	0.00
500.00	4.00	86.00	499.84	0.49	6.96	-0.16	2.00	2.00	0.00
600.00	6.00	86.00	599.45	1.09	15.66	-0.37	2.00	2.00	0.00
625.00	6.50	86.00	624.30	1.28	18.37	-0.43	2.00	2.00	0.00
<b>Hold 6.5° Inc @ 86° Azm</b>									
700.00	6.50	86.00	698.82	1.88	26.84	-0.63	0.00	0.00	0.00
800.00	6.50	86.00	798.18	2.67	38.13	-0.90	0.00	0.00	0.00
900.00	6.50	86.00	897.54	3.46	49.43	-1.17	0.00	0.00	0.00
1,000.00	6.50	86.00	996.89	4.25	60.72	-1.43	0.00	0.00	0.00
1,100.00	6.50	86.00	1,096.25	5.03	72.01	-1.70	0.00	0.00	0.00
1,200.00	6.50	86.00	1,195.61	5.82	83.30	-1.97	0.00	0.00	0.00
1,300.00	6.50	86.00	1,294.96	6.61	94.60	-2.23	0.00	0.00	0.00
1,400.00	6.50	86.00	1,394.32	7.40	105.89	-2.50	0.00	0.00	0.00
1,500.00	6.50	86.00	1,493.68	8.19	117.18	-2.77	0.00	0.00	0.00
1,600.00	6.50	86.00	1,593.04	8.98	128.47	-3.03	0.00	0.00	0.00
1,607.01	6.50	86.00	1,600.00	9.04	129.27	-3.05	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,700.00	6.50	86.00	1,692.39	9.77	139.77	-3.30	0.00	0.00	0.00
1,800.00	6.50	86.00	1,791.75	10.56	151.06	-3.57	0.00	0.00	0.00
1,900.00	6.50	86.00	1,891.11	11.35	162.35	-3.83	0.00	0.00	0.00
2,000.00	6.50	86.00	1,990.46	12.14	173.65	-4.10	0.00	0.00	0.00
2,100.00	6.50	86.00	2,089.82	12.93	184.94	-4.37	0.00	0.00	0.00
2,200.00	6.50	86.00	2,189.18	13.72	196.23	-4.63	0.00	0.00	0.00
2,300.00	6.50	86.00	2,288.54	14.51	207.52	-4.90	0.00	0.00	0.00
2,400.00	6.50	86.00	2,387.89	15.30	218.82	-5.17	0.00	0.00	0.00
2,500.00	6.50	86.00	2,487.25	16.09	230.11	-5.43	0.00	0.00	0.00
2,600.00	6.50	86.00	2,586.61	16.88	241.40	-5.70	0.00	0.00	0.00
2,700.00	6.50	86.00	2,685.96	17.67	252.70	-5.97	0.00	0.00	0.00
2,800.00	6.50	86.00	2,785.32	18.46	263.99	-6.23	0.00	0.00	0.00
2,900.00	6.50	86.00	2,884.68	19.25	275.28	-6.50	0.00	0.00	0.00
3,000.00	6.50	86.00	2,984.04	20.04	286.57	-6.77	0.00	0.00	0.00
3,100.00	6.50	86.00	3,083.39	20.83	297.87	-7.03	0.00	0.00	0.00
3,200.00	6.50	86.00	3,182.75	21.62	309.16	-7.30	0.00	0.00	0.00
3,300.00	6.50	86.00	3,282.11	22.40	320.45	-7.57	0.00	0.00	0.00
3,400.00	6.50	86.00	3,381.47	23.19	331.74	-7.83	0.00	0.00	0.00
3,500.00	6.50	86.00	3,480.82	23.98	343.04	-8.10	0.00	0.00	0.00
3,519.30	6.50	86.00	3,500.00	24.14	345.22	-8.15	0.00	0.00	0.00
<b>Hygiene</b>									
3,600.00	6.50	86.00	3,580.18	24.77	354.33	-8.37	0.00	0.00	0.00
3,670.27	6.50	86.00	3,650.00	25.33	362.27	-8.55	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,675.00	6.50	86.00	3,654.70	25.37	362.80	-8.57	0.00	0.00	0.00
<b>Begin 2°/100' Drop</b>									
3,700.00	6.00	86.00	3,679.55	25.56	365.51	-8.63	2.00	-2.00	0.00
3,800.00	4.00	86.00	3,779.16	26.16	374.21	-8.84	2.00	-2.00	0.00
3,900.00	2.00	86.00	3,879.02	26.53	379.43	-8.96	2.00	-2.00	0.00
4,000.00	0.00	0.00	3,979.00	26.65	381.17	-9.00	2.00	-2.00	0.00
<b>Begin Vertical Hold</b>									
5,511.13	0.00	0.00	5,490.13	26.65	381.17	-9.00	0.00	0.00	0.00
<b>KOP, Begin 11°/100' Build</b>									



# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,600.00	9.78	180.00	5,578.57	19.09	381.17	-1.45	11.00	11.00	0.00	
5,700.00	20.78	180.00	5,674.89	-7.22	381.17	24.83	11.00	11.00	0.00	
5,732.61	24.36	180.00	5,705.00	-19.73	381.17	37.33	11.00	11.00	0.00	
<b>P200 Marker</b>										
5,764.92	27.92	180.00	5,734.00	-33.97	381.17	51.55	11.00	11.00	0.00	
<b>P300 Marker</b>										
5,784.36	30.06	180.00	5,751.00	-43.38	381.17	60.96	11.00	11.00	0.00	
<b>P350 Marker</b>										
5,795.99	31.33	180.00	5,761.00	-49.32	381.17	66.89	11.00	11.00	0.00	
<b>Sharon Springs</b>										
5,800.00	31.78	180.00	5,764.42	-51.42	381.17	68.99	11.00	11.00	0.00	
5,804.22	32.24	180.00	5,768.00	-53.66	381.17	71.22	11.00	11.00	0.00	
<b>Niobrara</b>										
5,839.28	36.10	180.00	5,797.00	-73.34	381.17	90.89	11.00	11.00	0.00	
<b>Top A Chalk</b>										
5,884.05	41.02	180.00	5,832.00	-101.24	381.17	118.75	11.00	11.00	0.00	
<b>Top B Marl</b>										
5,900.00	42.78	180.00	5,843.87	-111.89	381.17	129.39	11.00	11.00	0.00	
5,912.58	44.16	180.00	5,853.00	-120.55	381.17	138.04	11.00	11.00	0.00	
<b>A Marl</b>										
5,925.28	45.56	180.00	5,862.00	-129.50	381.17	146.98	11.00	11.00	0.00	
<b>Top Upper B</b>										
5,960.82	49.47	180.00	5,886.00	-155.70	381.17	173.16	11.00	11.00	0.00	
<b>Base Upper B</b>										
5,976.48	51.19	180.00	5,896.00	-167.76	381.17	185.20	11.00	11.00	0.00	
<b>Top Lower B</b>										
6,000.00	53.78	180.00	5,910.32	-186.41	381.17	203.83	11.00	11.00	0.00	
6,025.71	56.60	180.00	5,925.00	-207.52	381.17	224.92	11.00	11.00	0.00	
<b>Base Lower B</b>										
6,036.79	57.82	180.00	5,931.00	-216.84	381.17	234.23	11.00	11.00	0.00	
<b>Top B Marl</b>										
6,100.00	64.78	180.00	5,961.33	-272.24	381.17	289.57	11.00	11.00	0.00	
6,126.47	67.69	180.00	5,972.00	-296.46	381.17	313.77	11.00	11.00	0.00	
<b>Top C Chalk</b>										
6,151.66	70.46	180.00	5,981.00	-320.00	381.17	337.28	11.00	11.00	0.00	
<b>Mid C Chalk</b>										
6,200.00	75.78	180.00	5,995.03	-366.23	381.18	383.46	11.00	11.00	0.00	
6,212.69	77.17	180.00	5,998.00	-378.57	381.18	395.79	11.00	11.00	0.00	
<b>Mid C Marl</b>										
6,300.00	86.78	180.00	6,010.18	-464.92	381.18	482.05	11.00	11.00	0.00	
6,328.07	89.86	180.00	6,011.00	-492.98	381.18	510.07	11.00	11.00	0.00	
<b>Lower C Chalk</b>										
6,329.31	90.00	180.00	6,011.00	-494.22	381.18	511.31	11.00	11.00	0.00	
<b>LP. Hold 90° Inc @ 180° Azm - 7"</b>										
6,400.00	90.00	180.00	6,011.00	-564.91	381.18	581.93	0.00	0.00	0.00	
6,500.00	90.00	180.00	6,011.00	-664.91	381.18	681.82	0.00	0.00	0.00	
6,600.00	90.00	180.00	6,011.00	-764.91	381.18	781.71	0.00	0.00	0.00	
6,700.00	90.00	180.00	6,011.00	-864.91	381.18	881.61	0.00	0.00	0.00	
6,800.00	90.00	180.00	6,011.00	-964.91	381.18	981.50	0.00	0.00	0.00	
6,900.00	90.00	180.00	6,011.00	-1,064.91	381.18	1,081.39	0.00	0.00	0.00	
7,000.00	90.00	180.00	6,011.00	-1,164.91	381.19	1,181.28	0.00	0.00	0.00	
7,100.00	90.00	180.00	6,011.00	-1,264.91	381.19	1,281.18	0.00	0.00	0.00	



## Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,200.00	90.00	180.00	6,011.00	-1,364.91	381.19	1,381.07	0.00	0.00	0.00
7,300.00	90.00	180.00	6,011.00	-1,464.91	381.19	1,480.96	0.00	0.00	0.00
7,400.00	90.00	180.00	6,011.00	-1,564.91	381.19	1,580.86	0.00	0.00	0.00
7,500.00	90.00	180.00	6,011.00	-1,664.91	381.19	1,680.75	0.00	0.00	0.00
7,600.00	90.00	180.00	6,011.00	-1,764.91	381.19	1,780.64	0.00	0.00	0.00
7,700.00	90.00	180.00	6,011.00	-1,864.91	381.19	1,880.54	0.00	0.00	0.00
7,800.00	90.00	180.00	6,011.00	-1,964.91	381.20	1,980.43	0.00	0.00	0.00
7,900.00	90.00	180.00	6,011.00	-2,064.91	381.20	2,080.32	0.00	0.00	0.00
8,000.00	90.00	180.00	6,011.00	-2,164.91	381.20	2,180.22	0.00	0.00	0.00
8,100.00	90.00	180.00	6,011.00	-2,264.91	381.20	2,280.11	0.00	0.00	0.00
8,200.00	90.00	180.00	6,011.00	-2,364.91	381.20	2,380.00	0.00	0.00	0.00
8,300.00	90.00	180.00	6,011.00	-2,464.91	381.20	2,479.90	0.00	0.00	0.00
8,400.00	90.00	180.00	6,011.00	-2,564.91	381.20	2,579.79	0.00	0.00	0.00
8,500.00	90.00	180.00	6,011.00	-2,664.91	381.20	2,679.68	0.00	0.00	0.00
8,600.00	90.00	180.00	6,011.00	-2,764.91	381.21	2,779.58	0.00	0.00	0.00
8,700.00	90.00	180.00	6,011.00	-2,864.91	381.21	2,879.47	0.00	0.00	0.00
8,800.00	90.00	180.00	6,011.00	-2,964.91	381.21	2,979.36	0.00	0.00	0.00
8,900.00	90.00	180.00	6,011.00	-3,064.91	381.21	3,079.25	0.00	0.00	0.00
9,000.00	90.00	180.00	6,011.00	-3,164.91	381.21	3,179.15	0.00	0.00	0.00
9,100.00	90.00	180.00	6,011.00	-3,264.91	381.21	3,279.04	0.00	0.00	0.00
9,200.00	90.00	180.00	6,011.00	-3,364.91	381.21	3,378.93	0.00	0.00	0.00
9,300.00	90.00	180.00	6,011.00	-3,464.91	381.22	3,478.83	0.00	0.00	0.00
9,400.00	90.00	180.00	6,011.00	-3,564.91	381.22	3,578.72	0.00	0.00	0.00
9,500.00	90.00	180.00	6,011.00	-3,664.91	381.22	3,678.61	0.00	0.00	0.00
9,600.00	90.00	180.00	6,011.00	-3,764.91	381.22	3,778.51	0.00	0.00	0.00
9,700.00	90.00	180.00	6,011.00	-3,864.91	381.22	3,878.40	0.00	0.00	0.00
9,800.00	90.00	180.00	6,011.00	-3,964.91	381.22	3,978.29	0.00	0.00	0.00
9,900.00	90.00	180.00	6,011.00	-4,064.91	381.22	4,078.19	0.00	0.00	0.00
10,000.00	90.00	180.00	6,011.00	-4,164.91	381.22	4,178.08	0.00	0.00	0.00
10,100.00	90.00	180.00	6,011.00	-4,264.91	381.23	4,277.97	0.00	0.00	0.00
10,200.00	90.00	180.00	6,011.00	-4,364.91	381.23	4,377.87	0.00	0.00	0.00
10,300.00	90.00	180.00	6,011.00	-4,464.91	381.23	4,477.76	0.00	0.00	0.00
10,400.00	90.00	180.00	6,011.00	-4,564.91	381.23	4,577.65	0.00	0.00	0.00
10,500.00	90.00	180.00	6,011.00	-4,664.91	381.23	4,677.55	0.00	0.00	0.00
10,600.00	90.00	180.00	6,011.00	-4,764.91	381.23	4,777.44	0.00	0.00	0.00
10,700.00	90.00	180.00	6,011.00	-4,864.91	381.23	4,877.33	0.00	0.00	0.00
10,800.00	90.00	180.00	6,011.00	-4,964.91	381.23	4,977.22	0.00	0.00	0.00
10,900.00	90.00	180.00	6,011.00	-5,064.91	381.24	5,077.12	0.00	0.00	0.00
11,000.00	90.00	180.00	6,011.00	-5,164.91	381.24	5,177.01	0.00	0.00	0.00
11,100.00	90.00	180.00	6,011.00	-5,264.91	381.24	5,276.90	0.00	0.00	0.00
11,200.00	90.00	180.00	6,011.00	-5,364.91	381.24	5,376.80	0.00	0.00	0.00
11,300.00	90.00	180.00	6,011.00	-5,464.91	381.24	5,476.69	0.00	0.00	0.00
11,400.00	90.00	180.00	6,011.00	-5,564.91	381.24	5,576.58	0.00	0.00	0.00
11,500.00	90.00	180.00	6,011.00	-5,664.91	381.24	5,676.48	0.00	0.00	0.00
11,600.00	90.00	180.00	6,011.00	-5,764.91	381.24	5,776.37	0.00	0.00	0.00
11,700.00	90.00	180.00	6,011.00	-5,864.91	381.25	5,876.26	0.00	0.00	0.00
11,800.00	90.00	180.00	6,011.00	-5,964.91	381.25	5,976.16	0.00	0.00	0.00
11,900.00	90.00	180.00	6,011.00	-6,064.91	381.25	6,076.05	0.00	0.00	0.00
12,000.00	90.00	180.00	6,011.00	-6,164.91	381.25	6,175.94	0.00	0.00	0.00
12,100.00	90.00	180.00	6,011.00	-6,264.91	381.25	6,275.84	0.00	0.00	0.00
12,200.00	90.00	180.00	6,011.00	-6,364.91	381.25	6,375.73	0.00	0.00	0.00
12,300.00	90.00	180.00	6,011.00	-6,464.91	381.25	6,475.62	0.00	0.00	0.00
12,400.00	90.00	180.00	6,011.00	-6,564.91	381.26	6,575.52	0.00	0.00	0.00
12,500.00	90.00	180.00	6,011.00	-6,664.91	381.26	6,675.41	0.00	0.00	0.00



# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,600.00	90.00	180.00	6,011.00	-6,764.91	381.26	6,775.30	0.00	0.00	0.00
12,700.00	90.00	180.00	6,011.00	-6,864.91	381.26	6,875.19	0.00	0.00	0.00
12,800.00	90.00	180.00	6,011.00	-6,964.91	381.26	6,975.09	0.00	0.00	0.00
12,900.00	90.00	180.00	6,011.00	-7,064.91	381.26	7,074.98	0.00	0.00	0.00
13,000.00	90.00	180.00	6,011.00	-7,164.91	381.26	7,174.87	0.00	0.00	0.00
13,100.00	90.00	180.00	6,011.00	-7,264.91	381.26	7,274.77	0.00	0.00	0.00
13,200.00	90.00	180.00	6,011.00	-7,364.91	381.27	7,374.66	0.00	0.00	0.00
13,300.00	90.00	180.00	6,011.00	-7,464.91	381.27	7,474.55	0.00	0.00	0.00
13,400.00	90.00	180.00	6,011.00	-7,564.91	381.27	7,574.45	0.00	0.00	0.00
13,500.00	90.00	180.00	6,011.00	-7,664.91	381.27	7,674.34	0.00	0.00	0.00
13,600.00	90.00	180.00	6,011.00	-7,764.91	381.27	7,774.23	0.00	0.00	0.00
13,700.00	90.00	180.00	6,011.00	-7,864.91	381.27	7,874.13	0.00	0.00	0.00
13,800.00	90.00	180.00	6,011.00	-7,964.91	381.27	7,974.02	0.00	0.00	0.00
13,900.00	90.00	180.00	6,011.00	-8,064.91	381.27	8,073.91	0.00	0.00	0.00
14,000.00	90.00	180.00	6,011.00	-8,164.91	381.28	8,173.81	0.00	0.00	0.00
14,074.30	90.00	180.00	6,011.00	-8,239.21	381.28	8,248.02	0.00	0.00	0.00
TD at 14074.30' MD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL_#12F-1306Bv2	0.00	0.00	6,011.00	-8,239.21	381.28	1,550,310.590	3,465,878.070	40.831842	-103.816425
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,329.31	6,011.00	7"	7	7-1/2	



# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-1306B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-1306B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524100		
<b>Design:</b>	Plan 2 08-04-15		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,607.01	1,600.00	Upper Pierre		0.00	177.35	
3,519.30	3,500.00	Hygiene		0.00	177.35	
3,670.27	3,650.00	Lower Pierre		0.00	177.35	
5,732.61	5,705.00	P200 Marker		0.00	177.35	
5,764.92	5,734.00	P300 Marker		0.00	177.35	
5,784.36	5,751.00	P350 Marker		0.00	177.35	
5,795.99	5,761.00	Sharon Springs		0.00	177.35	
5,804.22	5,768.00	Niobrara		0.00	177.35	
5,839.28	5,797.00	Top A Chalk		0.00	177.35	
5,884.05	5,832.00	Top B Marl		0.00	177.35	
5,912.58	5,853.00	A Marl		0.00	177.35	
5,925.28	5,862.00	Top Upper B		0.00	177.35	
5,960.82	5,886.00	Base Upper B		0.00	177.35	
5,976.48	5,896.00	Top Lower B		0.00	177.35	
6,025.71	5,925.00	Base Lower B		0.00	177.35	
6,036.79	5,931.00	Top B Marl		0.00	177.35	
6,126.47	5,972.00	Top C Chalk		0.00	177.35	
6,151.66	5,981.00	Mid C Chalk		0.00	177.35	
6,212.69	5,998.00	Mid C Marl		0.00	177.35	
6,328.07	6,011.00	Lower C Chalk		0.00	177.35	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.00	300.00	0.00	0.00	Begin 2°/100' Build	
625.00	624.30	1.28	18.37	Hold 6.5° Inc @ 86° Azm	
3,675.00	3,654.70	25.37	362.80	Begin 2°/100' Drop	
4,000.00	3,979.00	26.65	381.17	Begin Vertical Hold	
5,511.13	5,490.13	26.65	381.17	KOP, Begin 11°/100' Build	
6,329.31	6,011.00	-494.22	381.18	LP. Hold 90° Inc @ 180° Azm	
14,074.30	6,011.00	-8,239.21	381.28	TD at 14074.30' MD	