



Project: Weld County, Colorado (NAD 83)  
Site: Sec.12-T10N-R58W  
Well: Razor FED #12F-0102B  
Wellbore: OH / Job# 1524094  
Design: Plan 2 08-04-15  
Rig: Unit 409

RKB @ 4957.80usft (Unit 409)  
Ground Level: 4936.80

WELL DETAILS						
	+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
	0.00	0.00	1558613.417	3465207.706	40.854661	-103.818278

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	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	1213.31	18.27	226.35	1197.91	-99.64	-104.45	2.00	226.35	-84.90		Hold 18.27° Inc @ 226.35° Azm
4	4364.19	18.27	226.35	4190.03	-781.36	-819.00	0.00	0.00	-665.70		Begin 2°/100' Drop
5	5277.49	0.00	0.00	5087.94	-881.00	-923.45	2.00	180.00	-750.60		Begin Vertical Hold
6	5679.68	0.00	0.00	5490.13	-881.00	-923.45	0.00	0.00	-750.60		KOP, Begin 11°/100' Build
7	6497.86	90.00	0.00	6011.00	-360.13	-923.45	11.00	0.00	-234.34		LP, Hold 90° Inc @ 0° Azm
8	13751.45	90.00	0.00	6011.00	6893.46	-923.45	0.00	0.00	6955.04	BHL_#12F-0102Bv2	TD at 13751.45' MD

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BHL_#12F-0102Bv2	6011.00	6893.46	-923.45	1565488.126	3464153.696	40.873581	-103.821617

- LEGEND
- Razor FED #12F-1305A, OH / Job# 1524099, Plan 2 08-04-15 V0
  - Razor FED #12F-1308B, Wellbore #1 / Job #1523835, Surveys (Unit 409) 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-1302B, OH / Job# 1524098, Plan 2 08-04-15 V0
  - Razor FED #12F-0104B, Wellbore #1 / Job #1523838, Plan 2 08-04-15 V0
  - Razor FED #12F-0108B, Wellbore #1 / Job #1523841, Plan 2 07-27-15 V0
  - Razor FED #12F-1307A, Wellbore #1 / Job #1523836, Surveys (Unit 409) V0
  - Razor FED #12F-1303A, Wellbore #1 / Job #1523837, Plan 2 08-04-15 V0
  - Razor FED #12F-0107A, Wellbore #1 / Job #1523840, Plan 2 08-04-15 V0
  - Razor FED #12F-1301A, OH / Job# 1524097, Plan 2 08-04-15 V0
  - Razor FED #12F-1304B, Wellbore #1, Surveys V0
  - Razor FED #12F-0101A, OH / Job# 1524093, Plan 2 08-04-15 V0
  - Razor FED #12F-1306B, OH / Job# 1524100, Plan 2 08-04-15 V0
  - Razor FED #12F-0103A, Wellbore #1 / Job #1523839, Plan 2 08-04-15 V0
  - Razor FED #12F-0108B, Wellbore #1 / Job #1523841, Surveys (Unit 409) V0
  - Plan 2 08-04-15

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
1600.00	1636.73	Upper Pierre	0.00	352.37
3500.00	3637.55	Hygiene	0.00	352.37
3650.00	3795.51	Lower Pierre	0.00	352.37
5705.00	5901.17	P200 Marker	0.00	352.37
5734.00	5933.48	P300 Marker	0.00	352.37
5751.00	5952.91	P350 Marker	0.00	352.37
5761.00	5964.54	Sharon Springs	0.00	352.37
5768.00	5972.78	Niobrara	0.00	352.37
5797.00	6007.84	Top A Chalk	0.00	352.37
5832.00	6052.61	Top B Marl	0.00	352.37
5853.00	6081.14	A Marl	0.00	352.37
5862.00	6093.83	Top Upper B	0.00	352.37
5886.00	6129.37	Base Upper B	0.00	352.37
5896.00	6145.04	Top Lower B	0.00	352.37
5925.00	6194.27	Base Lower B	0.00	352.37
5931.00	6205.35	Top B Marl	0.00	352.37
5972.00	6295.03	Top C Chalk	0.00	352.37
5981.00	6320.23	Mid C Chalk	0.00	352.37
5998.00	6381.26	Mid C Marl	0.00	352.37
6011.00	6497.86	Lower C Chalk	0.00	352.37

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-0102B, True North

Latitude: 40.854661  
Longitude: -103.818278

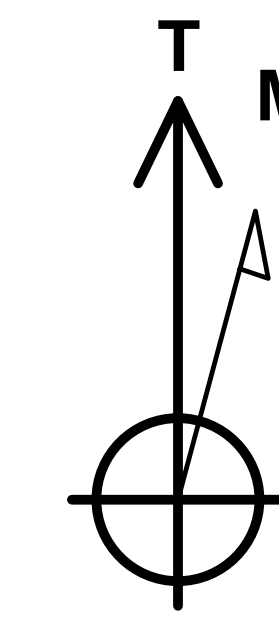
Grid East: 3465207.706  
Grid North: 1558613.417  
Scale Factor: 1.000

Geomagnetic Model: HDGM  
Sample Date: 04-Aug-15  
Magnetic Declination: 7.63°  
Dip Angle from Horizontal: 67.35°  
Magnetic Field Strength: 52976

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°

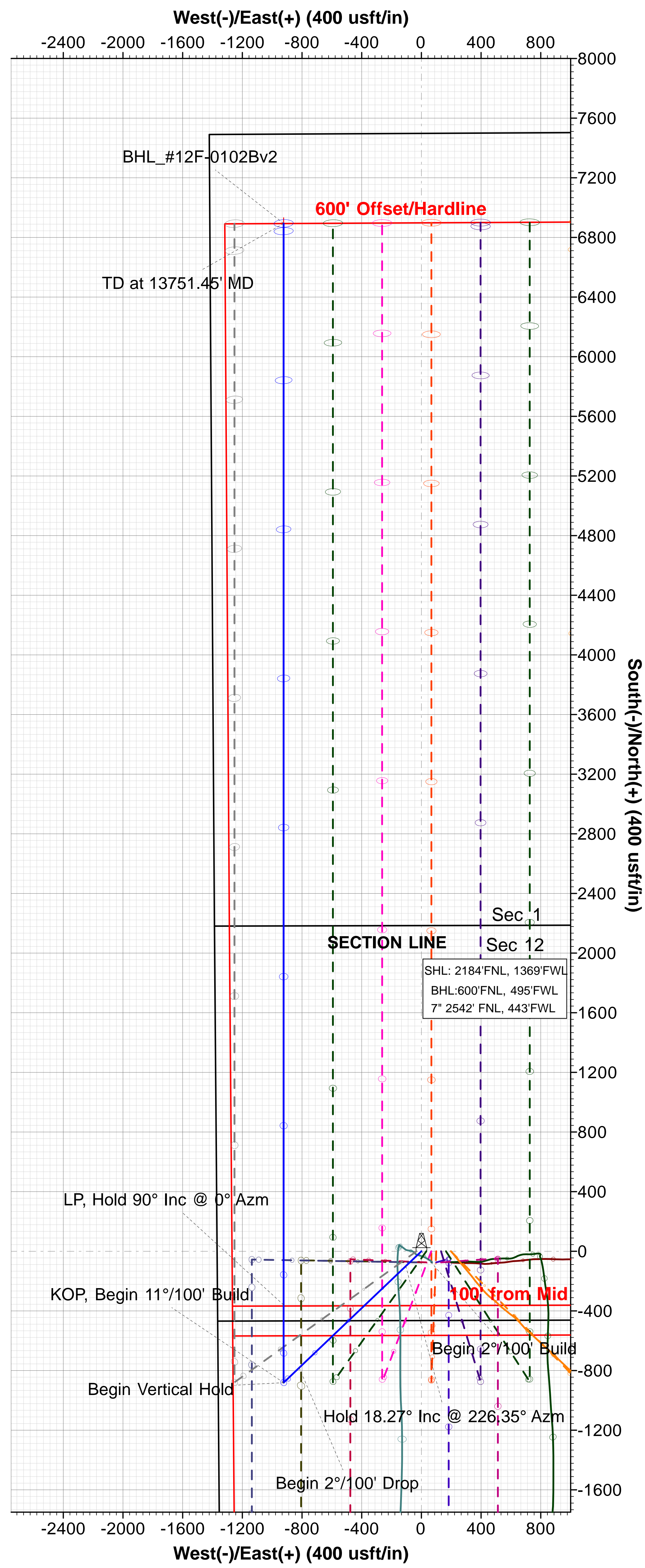
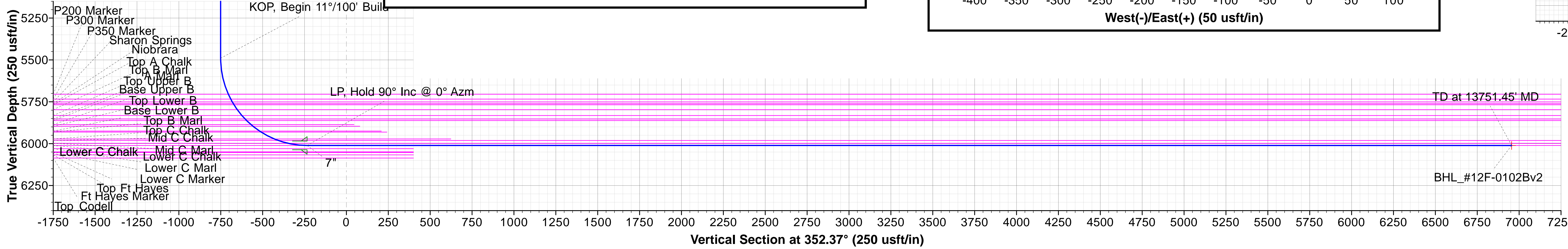
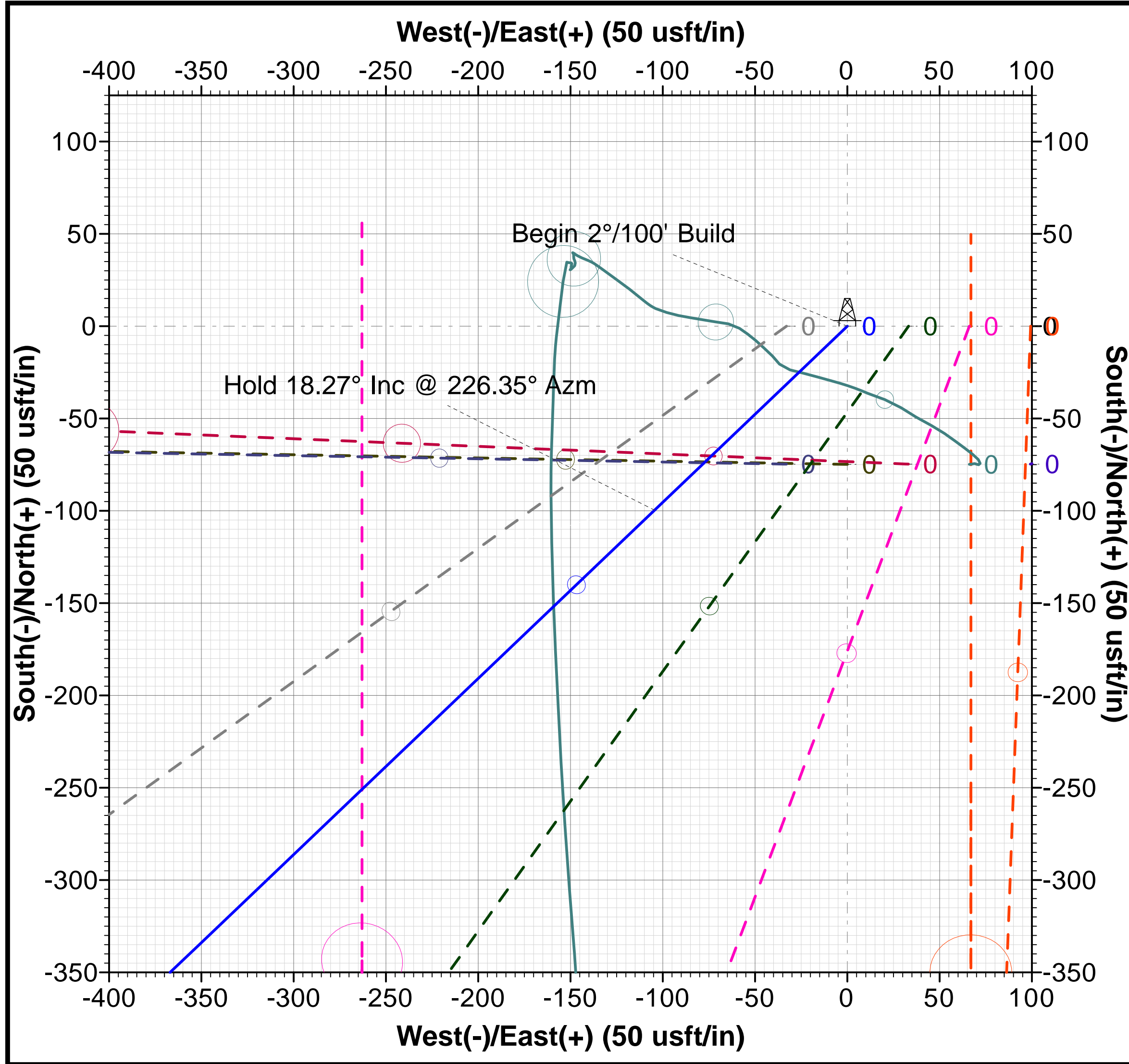
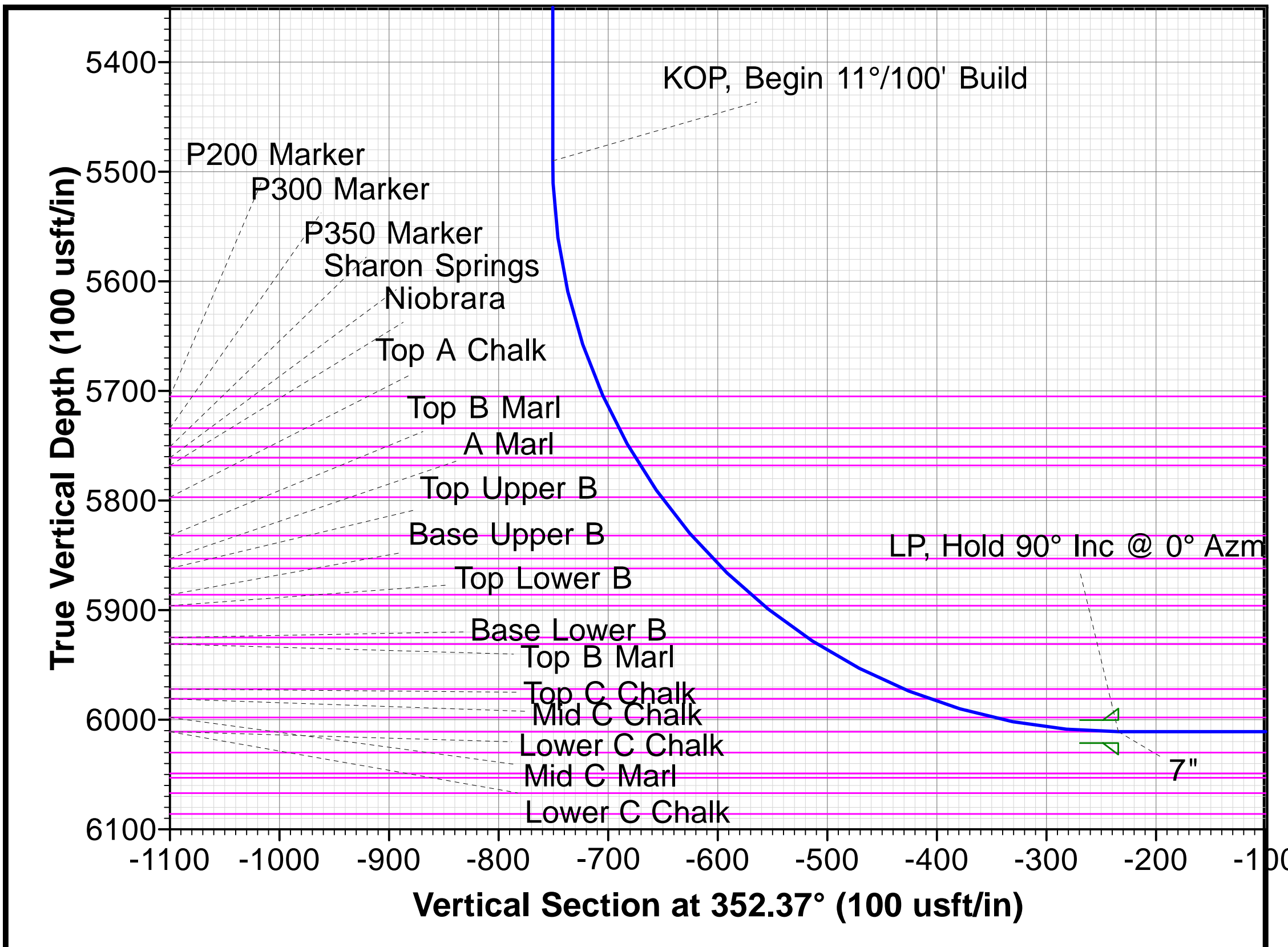
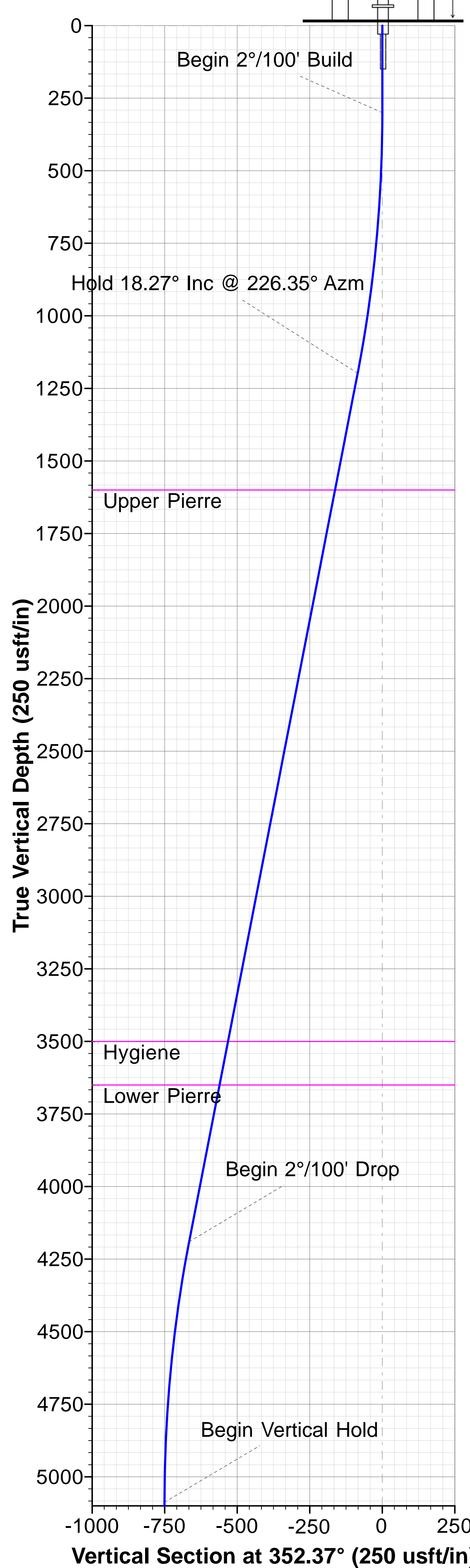


PHOENIX  
TECHNOLOGY SERVICES



Azimuths to True North  
Magnetic North: 7.63°

Magnetic Field  
Strength: 52975.8snT  
Dip Angle: 67.35°  
Date: 8/4/2015  
Model: HDGM







# **Whiting Oil & Gas Corporation**

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

**Sec.12-T10N-R58W**

**Razor FED #12F-0102B**

**OH / Job# 1524094**

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

## **Standard Planning Report**

**04 August, 2015**





# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<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		

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

Well	Razor FED #12F-0102B					
Well Position	+N/-S	74.85 usft	Northing:	1,558,613.417 usft	Latitude:	40.854661
	+E/-W	-197.55 usft	Easting:	3,465,207.707 usft	Longitude:	-103.818278
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,936.80 usft

<b>Wellbore</b>	OH / Job# 1524094				
<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	52,976

<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	352.37

<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	
1,213.31	18.27	226.35	1,197.91	-99.64	-104.45	2.00	2.00	0.00	226.35	
4,364.19	18.27	226.35	4,190.03	-781.36	-819.00	0.00	0.00	0.00	0.00	
5,277.49	0.00	0.00	5,087.94	-881.00	-923.45	2.00	-2.00	0.00	180.00	
5,679.68	0.00	0.00	5,490.13	-881.00	-923.45	0.00	0.00	0.00	0.00	
6,497.86	90.00	0.00	6,011.00	-360.13	-923.45	11.00	11.00	0.00	0.00	
13,751.45	90.00	0.00	6,011.00	6,893.46	-923.45	0.00	0.00	0.00	0.00	BHL_#12F-0102Bv2



## Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<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	226.35	399.98	-1.20	-1.26	-1.03	2.00	2.00	0.00
500.00	4.00	226.35	499.84	-4.82	-5.05	-4.10	2.00	2.00	0.00
600.00	6.00	226.35	599.45	-10.83	-11.35	-9.23	2.00	2.00	0.00
700.00	8.00	226.35	698.70	-19.24	-20.17	-16.40	2.00	2.00	0.00
800.00	10.00	226.35	797.47	-30.04	-31.49	-25.60	2.00	2.00	0.00
900.00	12.00	226.35	895.62	-43.21	-45.30	-36.82	2.00	2.00	0.00
1,000.00	14.00	226.35	993.06	-58.74	-61.57	-50.05	2.00	2.00	0.00
1,100.00	16.00	226.35	1,089.64	-76.61	-80.30	-65.27	2.00	2.00	0.00
1,200.00	18.00	226.35	1,185.27	-96.79	-101.45	-82.46	2.00	2.00	0.00
1,213.31	18.27	226.35	1,197.91	-99.64	-104.45	-84.90	2.00	2.00	0.00
<b>Hold 18.27° Inc @ 226.35° Azm</b>									
1,300.00	18.27	226.35	1,280.24	-118.40	-124.11	-100.88	0.00	0.00	0.00
1,400.00	18.27	226.35	1,375.20	-140.04	-146.78	-119.31	0.00	0.00	0.00
1,500.00	18.27	226.35	1,470.16	-161.67	-169.46	-137.74	0.00	0.00	0.00
1,600.00	18.27	226.35	1,565.12	-183.31	-192.14	-156.18	0.00	0.00	0.00
1,636.73	18.27	226.35	1,600.00	-191.25	-200.47	-162.95	0.00	0.00	0.00
<b>Upper Pierre</b>									
1,700.00	18.27	226.35	1,660.08	-204.94	-214.82	-174.61	0.00	0.00	0.00
1,800.00	18.27	226.35	1,755.04	-226.58	-237.50	-193.04	0.00	0.00	0.00
1,900.00	18.27	226.35	1,850.01	-248.21	-260.17	-211.47	0.00	0.00	0.00
2,000.00	18.27	226.35	1,944.97	-269.85	-282.85	-229.91	0.00	0.00	0.00
2,100.00	18.27	226.35	2,039.93	-291.49	-305.53	-248.34	0.00	0.00	0.00
2,200.00	18.27	226.35	2,134.89	-313.12	-328.21	-266.77	0.00	0.00	0.00
2,300.00	18.27	226.35	2,229.85	-334.76	-350.89	-285.21	0.00	0.00	0.00
2,400.00	18.27	226.35	2,324.81	-356.39	-373.56	-303.64	0.00	0.00	0.00
2,500.00	18.27	226.35	2,419.77	-378.03	-396.24	-322.07	0.00	0.00	0.00
2,600.00	18.27	226.35	2,514.73	-399.66	-418.92	-340.51	0.00	0.00	0.00
2,700.00	18.27	226.35	2,609.69	-421.30	-441.60	-358.94	0.00	0.00	0.00
2,800.00	18.27	226.35	2,704.66	-442.93	-464.28	-377.37	0.00	0.00	0.00
2,900.00	18.27	226.35	2,799.62	-464.57	-486.95	-395.81	0.00	0.00	0.00
3,000.00	18.27	226.35	2,894.58	-486.21	-509.63	-414.24	0.00	0.00	0.00
3,100.00	18.27	226.35	2,989.54	-507.84	-532.31	-432.67	0.00	0.00	0.00
3,200.00	18.27	226.35	3,084.50	-529.48	-554.99	-451.10	0.00	0.00	0.00
3,300.00	18.27	226.35	3,179.46	-551.11	-577.67	-469.54	0.00	0.00	0.00
3,400.00	18.27	226.35	3,274.42	-572.75	-600.35	-487.97	0.00	0.00	0.00
3,500.00	18.27	226.35	3,369.38	-594.38	-623.02	-506.40	0.00	0.00	0.00
3,600.00	18.27	226.35	3,464.34	-616.02	-645.70	-524.84	0.00	0.00	0.00
3,637.55	18.27	226.35	3,500.00	-624.14	-654.22	-531.76	0.00	0.00	0.00
<b>Hygiene</b>									
3,700.00	18.27	226.35	3,559.31	-637.65	-668.38	-543.27	0.00	0.00	0.00
3,795.51	18.27	226.35	3,650.00	-658.32	-690.04	-560.87	0.00	0.00	0.00
<b>Lower Pierre</b>									
3,800.00	18.27	226.35	3,654.27	-659.29	-691.06	-561.70	0.00	0.00	0.00
3,900.00	18.27	226.35	3,749.23	-680.93	-713.74	-580.14	0.00	0.00	0.00
4,000.00	18.27	226.35	3,844.19	-702.56	-736.41	-598.57	0.00	0.00	0.00
4,100.00	18.27	226.35	3,939.15	-724.20	-759.09	-617.00	0.00	0.00	0.00
4,200.00	18.27	226.35	4,034.11	-745.83	-781.77	-635.44	0.00	0.00	0.00
4,300.00	18.27	226.35	4,129.07	-767.47	-804.45	-653.87	0.00	0.00	0.00
4,364.19	18.27	226.35	4,190.03	-781.36	-819.00	-665.70	0.00	0.00	0.00
<b>Begin 2°/100' Drop</b>									



## Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<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)
4,400.00	17.55	226.35	4,224.10	-788.96	-826.97	-672.18	2.00	-2.00	0.00
4,500.00	15.55	226.35	4,319.95	-808.62	-847.58	-688.93	2.00	-2.00	0.00
4,600.00	13.55	226.35	4,416.74	-825.96	-865.76	-703.70	2.00	-2.00	0.00
4,700.00	11.55	226.35	4,514.35	-840.96	-881.48	-716.48	2.00	-2.00	0.00
4,800.00	9.55	226.35	4,612.65	-853.59	-894.72	-727.25	2.00	-2.00	0.00
4,900.00	7.55	226.35	4,711.54	-863.86	-905.48	-735.99	2.00	-2.00	0.00
5,000.00	5.55	226.35	4,810.88	-871.73	-913.73	-742.70	2.00	-2.00	0.00
5,100.00	3.55	226.35	4,910.56	-877.21	-919.47	-747.36	2.00	-2.00	0.00
5,200.00	1.55	226.35	5,010.45	-880.28	-922.69	-749.98	2.00	-2.00	0.00
5,277.49	0.00	0.00	5,087.94	-881.00	-923.45	-750.60	2.00	-2.00	0.00
<b>Begin Vertical Hold</b>									
5,679.68	0.00	0.00	5,490.13	-881.00	-923.45	-750.60	0.00	0.00	0.00
<b>KOP, Begin 11°/100' Build</b>									
5,700.00	2.24	0.00	5,510.44	-880.60	-923.45	-750.20	11.00	11.00	0.00
5,800.00	13.24	0.00	5,609.38	-867.16	-923.45	-736.88	11.00	11.00	0.00
5,900.00	24.24	0.00	5,703.93	-835.09	-923.45	-705.10	11.00	11.00	0.00
5,901.17	24.36	0.00	5,705.00	-834.61	-923.45	-704.62	11.00	11.00	0.00
<b>P200 Marker</b>									
5,933.48	27.92	0.00	5,734.00	-820.38	-923.45	-690.51	11.00	11.00	0.00
<b>P300 Marker</b>									
5,952.91	30.06	0.00	5,751.00	-810.96	-923.45	-681.18	11.00	11.00	0.00
<b>P350 Marker</b>									
5,964.54	31.34	0.00	5,761.00	-805.03	-923.45	-675.29	11.00	11.00	0.00
<b>Sharon Springs</b>									
5,972.78	32.24	0.00	5,768.00	-800.69	-923.45	-670.99	11.00	11.00	0.00
<b>Niobrara</b>									
6,000.00	35.24	0.00	5,790.63	-785.57	-923.45	-656.01	11.00	11.00	0.00
6,007.84	36.10	0.00	5,797.00	-781.00	-923.45	-651.48	11.00	11.00	0.00
<b>Top A Chalk</b>									
6,052.61	41.02	0.00	5,832.00	-753.10	-923.45	-623.83	11.00	11.00	0.00
<b>Top B Marl</b>									
6,081.14	44.16	0.00	5,853.00	-733.80	-923.45	-604.70	11.00	11.00	0.00
<b>A Marl</b>									
6,093.84	45.56	0.00	5,862.00	-724.84	-923.45	-595.82	11.00	11.00	0.00
<b>Top Upper B</b>									
6,100.00	46.24	0.00	5,866.29	-720.42	-923.45	-591.43	11.00	11.00	0.00
6,129.37	49.47	0.00	5,886.00	-698.64	-923.45	-569.85	11.00	11.00	0.00
<b>Base Upper B</b>									
6,145.04	51.19	0.00	5,896.00	-686.58	-923.45	-557.90	11.00	11.00	0.00
<b>Top Lower B</b>									
6,194.27	56.61	0.00	5,925.00	-646.82	-923.45	-518.49	11.00	11.00	0.00
<b>Base Lower B</b>									
6,200.00	57.24	0.00	5,928.13	-642.02	-923.45	-513.73	11.00	11.00	0.00
6,205.35	57.82	0.00	5,931.00	-637.50	-923.45	-509.25	11.00	11.00	0.00
<b>Top B Marl</b>									
6,295.03	67.69	0.00	5,972.00	-557.87	-923.45	-430.33	11.00	11.00	0.00
<b>Top C Chalk</b>									
6,300.00	68.24	0.00	5,973.87	-553.27	-923.45	-425.76	11.00	11.00	0.00
6,320.23	70.46	0.00	5,981.00	-534.34	-923.45	-407.00	11.00	11.00	0.00
<b>Mid C Chalk</b>									
6,381.26	77.17	0.00	5,998.00	-475.76	-923.45	-348.94	11.00	11.00	0.00
<b>Mid C Marl</b>									



# Phoenix Technology Services LP

## Planning Report



<b>Database:</b>	Compass 5000 RMR	<b>Local Co-ordinate Reference:</b>	Well Razor FED #12F-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<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)
6,400.00	79.24	0.00	6,001.83	-457.42	-923.45	-330.76	11.00	11.00	0.00
6,497.86	90.00	0.00	6,011.00	-360.13	-923.45	-234.34	11.00	11.00	0.00
LP, Hold 90° Inc @ 0° Azm - Lower C Chalk - 7"									
6,500.00	90.00	0.00	6,011.00	-357.99	-923.45	-232.22	0.01	0.01	0.00
6,600.00	90.00	0.00	6,011.00	-257.99	-923.45	-133.10	0.00	0.00	0.00
6,700.00	90.00	0.00	6,011.00	-157.99	-923.45	-33.99	0.00	0.00	0.00
6,800.00	90.00	0.00	6,011.00	-57.99	-923.45	65.13	0.00	0.00	0.00
6,900.00	90.00	0.00	6,011.00	42.01	-923.45	164.24	0.00	0.00	0.00
7,000.00	90.00	0.00	6,011.00	142.01	-923.45	263.36	0.00	0.00	0.00
7,100.00	90.00	0.00	6,011.00	242.01	-923.45	362.47	0.00	0.00	0.00
7,200.00	90.00	0.00	6,011.00	342.01	-923.45	461.59	0.00	0.00	0.00
7,300.00	90.00	0.00	6,011.00	442.01	-923.45	560.70	0.00	0.00	0.00
7,400.00	90.00	0.00	6,011.00	542.01	-923.45	659.82	0.00	0.00	0.00
7,500.00	90.00	0.00	6,011.00	642.01	-923.45	758.93	0.00	0.00	0.00
7,600.00	90.00	0.00	6,011.00	742.01	-923.45	858.04	0.00	0.00	0.00
7,700.00	90.00	0.00	6,011.00	842.01	-923.45	957.16	0.00	0.00	0.00
7,800.00	90.00	0.00	6,011.00	942.01	-923.45	1,056.27	0.00	0.00	0.00
7,900.00	90.00	0.00	6,011.00	1,042.01	-923.45	1,155.39	0.00	0.00	0.00
8,000.00	90.00	0.00	6,011.00	1,142.01	-923.45	1,254.50	0.00	0.00	0.00
8,100.00	90.00	0.00	6,011.00	1,242.01	-923.45	1,353.62	0.00	0.00	0.00
8,200.00	90.00	0.00	6,011.00	1,342.01	-923.45	1,452.73	0.00	0.00	0.00
8,300.00	90.00	0.00	6,011.00	1,442.01	-923.45	1,551.85	0.00	0.00	0.00
8,400.00	90.00	0.00	6,011.00	1,542.01	-923.45	1,650.96	0.00	0.00	0.00
8,500.00	90.00	0.00	6,011.00	1,642.01	-923.45	1,750.08	0.00	0.00	0.00
8,600.00	90.00	0.00	6,011.00	1,742.01	-923.45	1,849.19	0.00	0.00	0.00
8,700.00	90.00	0.00	6,011.00	1,842.01	-923.45	1,948.31	0.00	0.00	0.00
8,800.00	90.00	0.00	6,011.00	1,942.01	-923.45	2,047.42	0.00	0.00	0.00
8,900.00	90.00	0.00	6,011.00	2,042.01	-923.45	2,146.54	0.00	0.00	0.00
9,000.00	90.00	0.00	6,011.00	2,142.01	-923.45	2,245.65	0.00	0.00	0.00
9,100.00	90.00	0.00	6,011.00	2,242.01	-923.45	2,344.77	0.00	0.00	0.00
9,200.00	90.00	0.00	6,011.00	2,342.01	-923.45	2,443.88	0.00	0.00	0.00
9,300.00	90.00	0.00	6,011.00	2,442.01	-923.45	2,542.99	0.00	0.00	0.00
9,400.00	90.00	0.00	6,011.00	2,542.01	-923.45	2,642.11	0.00	0.00	0.00
9,500.00	90.00	0.00	6,011.00	2,642.01	-923.45	2,741.22	0.00	0.00	0.00
9,600.00	90.00	0.00	6,011.00	2,742.01	-923.45	2,840.34	0.00	0.00	0.00
9,700.00	90.00	0.00	6,011.00	2,842.01	-923.45	2,939.45	0.00	0.00	0.00
9,800.00	90.00	0.00	6,011.00	2,942.01	-923.45	3,038.57	0.00	0.00	0.00
9,900.00	90.00	0.00	6,011.00	3,042.01	-923.45	3,137.68	0.00	0.00	0.00
10,000.00	90.00	0.00	6,011.00	3,142.01	-923.45	3,236.80	0.00	0.00	0.00
10,100.00	90.00	0.00	6,011.00	3,242.01	-923.45	3,335.91	0.00	0.00	0.00
10,200.00	90.00	0.00	6,011.00	3,342.01	-923.45	3,435.03	0.00	0.00	0.00
10,300.00	90.00	0.00	6,011.00	3,442.01	-923.45	3,534.14	0.00	0.00	0.00
10,400.00	90.00	0.00	6,011.00	3,542.01	-923.45	3,633.26	0.00	0.00	0.00
10,500.00	90.00	0.00	6,011.00	3,642.01	-923.45	3,732.37	0.00	0.00	0.00
10,600.00	90.00	0.00	6,011.00	3,742.01	-923.45	3,831.49	0.00	0.00	0.00
10,700.00	90.00	0.00	6,011.00	3,842.01	-923.45	3,930.60	0.00	0.00	0.00
10,800.00	90.00	0.00	6,011.00	3,942.01	-923.45	4,029.72	0.00	0.00	0.00
10,900.00	90.00	0.00	6,011.00	4,042.01	-923.45	4,128.83	0.00	0.00	0.00
11,000.00	90.00	0.00	6,011.00	4,142.01	-923.45	4,227.94	0.00	0.00	0.00
11,100.00	90.00	0.00	6,011.00	4,242.01	-923.45	4,327.06	0.00	0.00	0.00
11,200.00	90.00	0.00	6,011.00	4,342.01	-923.45	4,426.17	0.00	0.00	0.00
11,300.00	90.00	0.00	6,011.00	4,442.01	-923.45	4,525.29	0.00	0.00	0.00
11,400.00	90.00	0.00	6,011.00	4,542.01	-923.45	4,624.40	0.00	0.00	0.00
11,500.00	90.00	0.00	6,011.00	4,642.01	-923.45	4,723.52	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-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<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)	
11,600.00	90.00	0.00	6,011.00	4,742.01	-923.45	4,822.63	0.00	0.00	0.00	
11,700.00	90.00	0.00	6,011.00	4,842.01	-923.45	4,921.75	0.00	0.00	0.00	
11,800.00	90.00	0.00	6,011.00	4,942.01	-923.45	5,020.86	0.00	0.00	0.00	
11,900.00	90.00	0.00	6,011.00	5,042.01	-923.45	5,119.98	0.00	0.00	0.00	
12,000.00	90.00	0.00	6,011.00	5,142.01	-923.45	5,219.09	0.00	0.00	0.00	
12,100.00	90.00	0.00	6,011.00	5,242.01	-923.45	5,318.21	0.00	0.00	0.00	
12,200.00	90.00	0.00	6,011.00	5,342.01	-923.45	5,417.32	0.00	0.00	0.00	
12,300.00	90.00	0.00	6,011.00	5,442.01	-923.45	5,516.44	0.00	0.00	0.00	
12,400.00	90.00	0.00	6,011.00	5,542.01	-923.45	5,615.55	0.00	0.00	0.00	
12,500.00	90.00	0.00	6,011.00	5,642.01	-923.45	5,714.67	0.00	0.00	0.00	
12,600.00	90.00	0.00	6,011.00	5,742.01	-923.45	5,813.78	0.00	0.00	0.00	
12,700.00	90.00	0.00	6,011.00	5,842.01	-923.45	5,912.90	0.00	0.00	0.00	
12,800.00	90.00	0.00	6,011.00	5,942.01	-923.45	6,012.01	0.00	0.00	0.00	
12,900.00	90.00	0.00	6,011.00	6,042.01	-923.45	6,111.12	0.00	0.00	0.00	
13,000.00	90.00	0.00	6,011.00	6,142.01	-923.45	6,210.24	0.00	0.00	0.00	
13,100.00	90.00	0.00	6,011.00	6,242.01	-923.45	6,309.35	0.00	0.00	0.00	
13,200.00	90.00	0.00	6,011.00	6,342.01	-923.45	6,408.47	0.00	0.00	0.00	
13,300.00	90.00	0.00	6,011.00	6,442.01	-923.45	6,507.58	0.00	0.00	0.00	
13,400.00	90.00	0.00	6,011.00	6,542.01	-923.45	6,606.70	0.00	0.00	0.00	
13,500.00	90.00	0.00	6,011.00	6,642.01	-923.45	6,705.81	0.00	0.00	0.00	
13,600.00	90.00	0.00	6,011.00	6,742.01	-923.45	6,804.93	0.00	0.00	0.00	
13,700.00	90.00	0.00	6,011.00	6,842.01	-923.45	6,904.04	0.00	0.00	0.00	
13,751.45	90.00	0.00	6,011.00	6,893.46	-923.45	6,955.04	0.00	0.00	0.00	
TD at 13751.45' 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-0102Bv2	0.00	0.00	6,011.00	6,893.46	-923.45	1,565,488.126	3,464,153.696	40.873581	-103.821617	
- plan hits target center										
- Point										

Casing Points										
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")						
6,497.86	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-0102B
<b>Company:</b>	Whiting Oil & Gas Corporation	<b>TVD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Project:</b>	Weld County, Colorado (NAD 83)	<b>MD Reference:</b>	RKB @ 4957.80usft (Unit 409)
<b>Site:</b>	Sec.12-T10N-R58W	<b>North Reference:</b>	True
<b>Well:</b>	Razor FED #12F-0102B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH / Job# 1524094		
<b>Design:</b>	Plan 2 08-04-15		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,636.73	1,600.00	Upper Pierre		0.00	352.37	
3,637.55	3,500.00	Hygiene		0.00	352.37	
3,795.51	3,650.00	Lower Pierre		0.00	352.37	
5,901.17	5,705.00	P200 Marker		0.00	352.37	
5,933.48	5,734.00	P300 Marker		0.00	352.37	
5,952.91	5,751.00	P350 Marker		0.00	352.37	
5,964.54	5,761.00	Sharon Springs		0.00	352.37	
5,972.78	5,768.00	Niobrara		0.00	352.37	
6,007.84	5,797.00	Top A Chalk		0.00	352.37	
6,052.61	5,832.00	Top B Marl		0.00	352.37	
6,081.14	5,853.00	A Marl		0.00	352.37	
6,093.84	5,862.00	Top Upper B		0.00	352.37	
6,129.37	5,886.00	Base Upper B		0.00	352.37	
6,145.04	5,896.00	Top Lower B		0.00	352.37	
6,194.27	5,925.00	Base Lower B		0.00	352.37	
6,205.35	5,931.00	Top B Marl		0.00	352.37	
6,295.03	5,972.00	Top C Chalk		0.00	352.37	
6,320.23	5,981.00	Mid C Chalk		0.00	352.37	
6,381.26	5,998.00	Mid C Marl		0.00	352.37	
6,497.86	6,011.00	Lower C Chalk		0.00	352.37	

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	
1,213.31	1,197.91	-99.64	-104.45	Hold 18.27° Inc @ 226.35° Azm	
4,364.19	4,190.03	-781.36	-819.00	Begin 2°/100' Drop	
5,277.49	5,087.94	-881.00	-923.45	Begin Vertical Hold	
5,679.68	5,490.13	-881.00	-923.45	KOP, Begin 11°/100' Build	
6,497.86	6,011.00	-360.13	-923.45	LP, Hold 90° Inc @ 0° Azm	
13,751.45	6,011.00	6,893.46	-923.45	TD at 13751.45' MD	