

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

Project: Weld County, Colorado (NAD 83)
Site: Sec.12-T10N-R58W
Well: Razor FED #12F-1301A
Wellbore: OH / Job# 1524097
Design: Plan 2 08-04-15
Rig: Unit 409

WELL DETAILS

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude
0.00	0.00	1558538.122	3465176.147	40.854456	-103.818397

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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		
3	1048.93	14.98	270.99	1040.43	1.68	-97.33	2.00	270.99	11.25		Begin 2°/100' Build
4	4565.71	14.98	270.99	4437.72	17.32	-1006.13	0.00	0.00	116.32		Hold 14.98° Inc @ 270.99° Azm
5	5314.65	0.00	0.00	5178.15	19.00	-1103.46	2.00	180.00	127.57		Begin Vertical Hold
6	5695.63	0.00	0.00	5559.13	19.00	-1103.46	0.00	0.00	127.57		KOP, Begin 11°/100' Build
7	6513.81	90.00	180.00	6080.00	-501.87	-1103.49	11.00	180.00	643.84		LP, Hold 90° Inc @ 180° Azm
8	14258.36	90.00	180.00	6080.00	-8246.42	-1103.87	0.00	0.00	8319.98	BHL_#12F-1301Av2	TD at 14258.36' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL_#12F-1301Av2	6080.00	-8246.42	-1103.87	1550272.250	3464228.850	40.831822	-103.822386	Point

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-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-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-0102B, OH / Job# 1524094, 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	1628.18	Upper Pierre	0.00	187.62
3500.00	3595.01	Hygiene	0.00	187.62
3650.00	3750.29	Lower Pierre	0.00	187.62
5705.00	5843.47	P200 Marker	0.00	187.62
5734.00	5873.96	P300 Marker	0.00	187.62
5751.00	5892.12	P350 Marker	0.00	187.62
5761.00	5902.93	Sharon Springs	0.00	187.62
5768.00	5910.54	Niobrara	0.00	187.62
5797.00	5942.65	Top A Chalk	0.00	187.62
5832.00	5982.83	Top B Marl	0.00	187.62
5853.00	6007.86	A Marl	0.00	187.62
5862.00	6018.84	Top Upper B	0.00	187.62
5886.00	6048.98	Base Upper B	0.00	187.62
5896.00	6061.96	Top Lower B	0.00	187.62
5925.00	6101.27	Base Lower B	0.00	187.62
5931.00	6109.77	Top B Marl	0.00	187.62
5972.00	6172.30	Top C Chalk	0.00	187.62
5981.00	6187.34	Mid C Chalk	0.00	187.62
5998.00	6217.55	Mid C Marl	0.00	187.62
6011.00	6242.65	Lower C Chalk	0.00	187.62
6030.00	6283.71	Lower C Marl	0.00	187.62
6049.00	6333.19	Lower C Marker	0.00	187.62
6053.00	6345.35	Top Ft Hayes	0.00	187.62
6067.00	6397.18	Ft Hayes Marker	0.00	187.62

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-1301A, True North

Latitude: 40.854456
Longitude: -103.818397

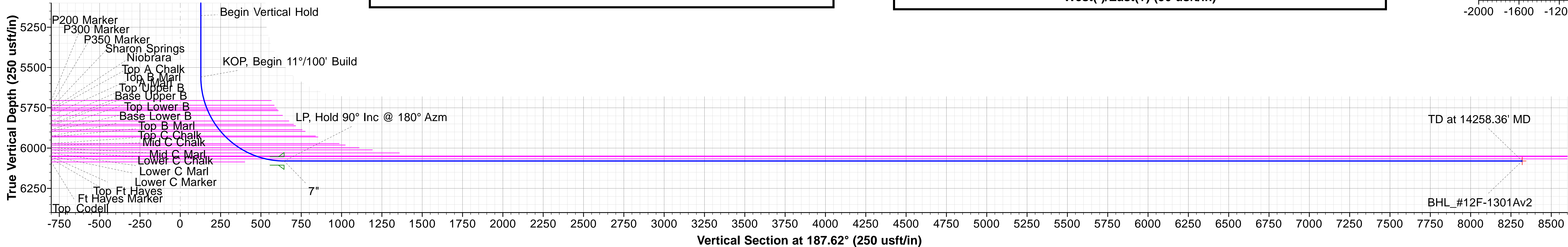
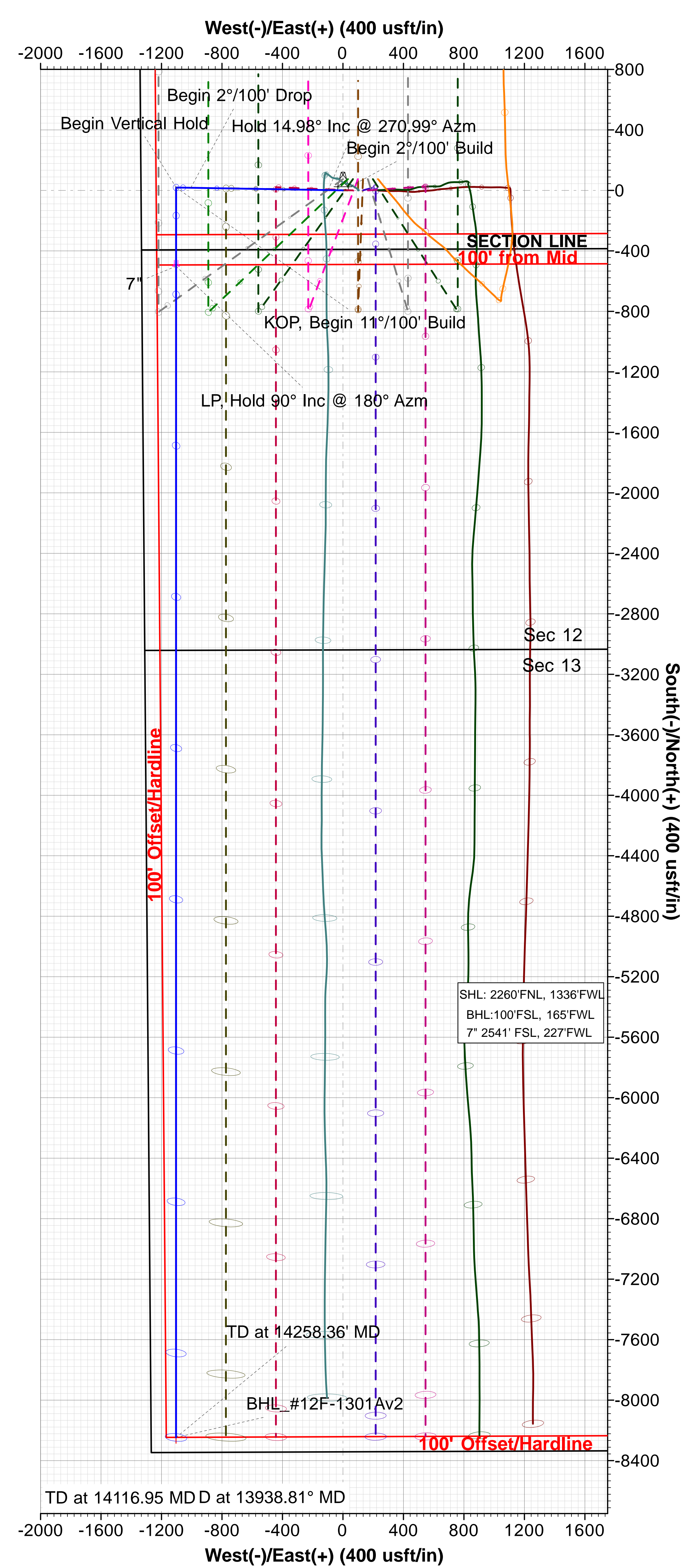
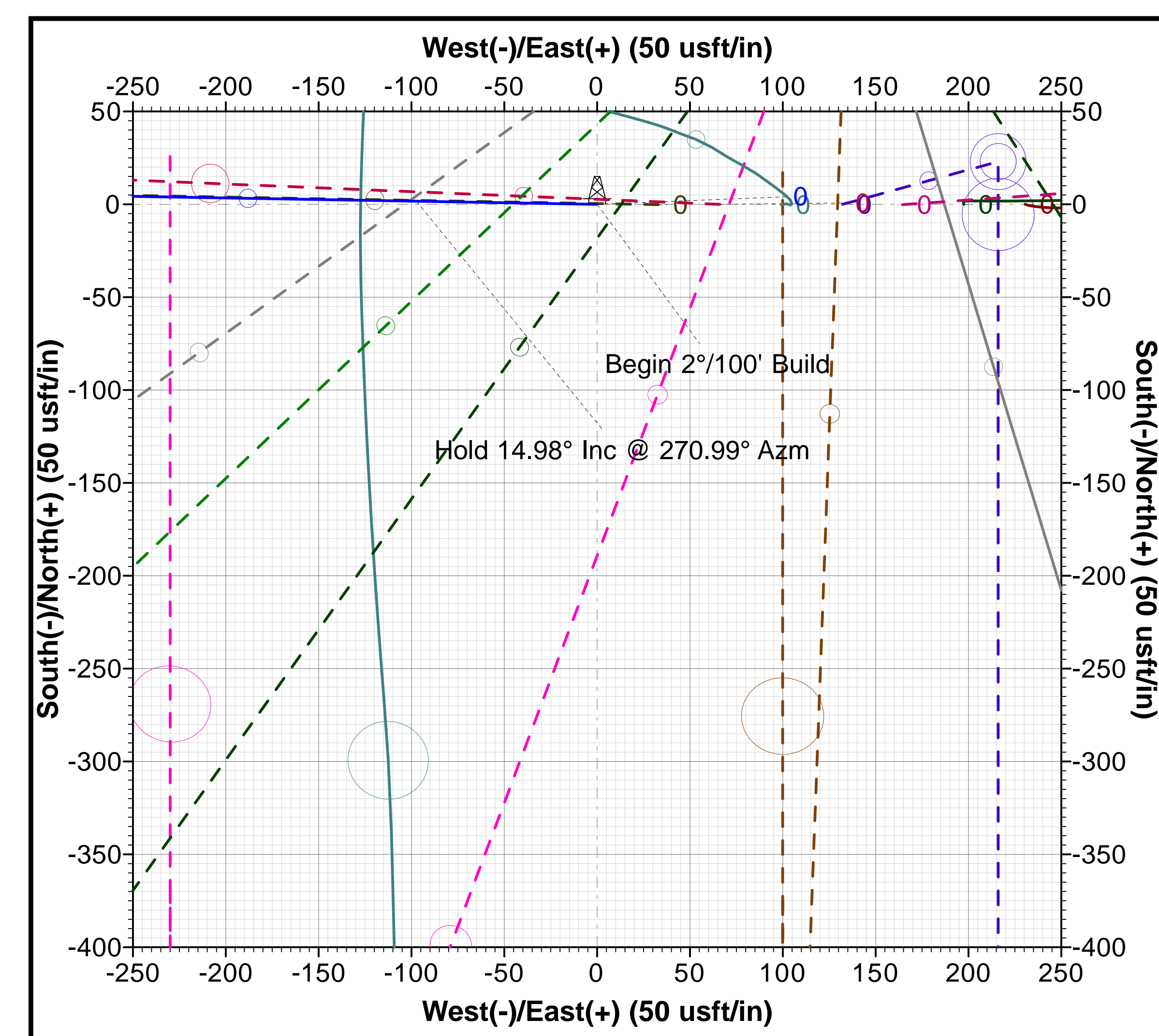
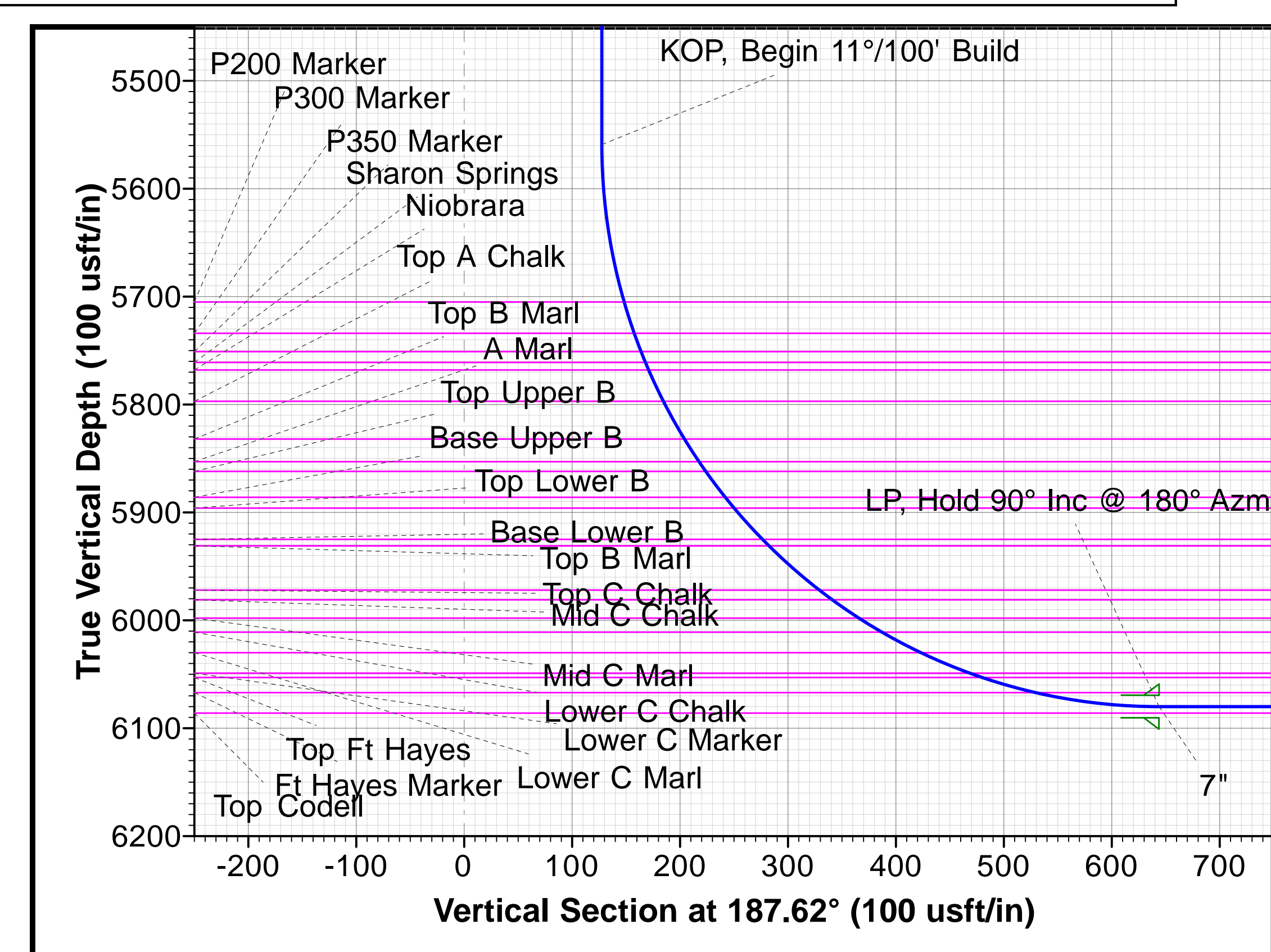
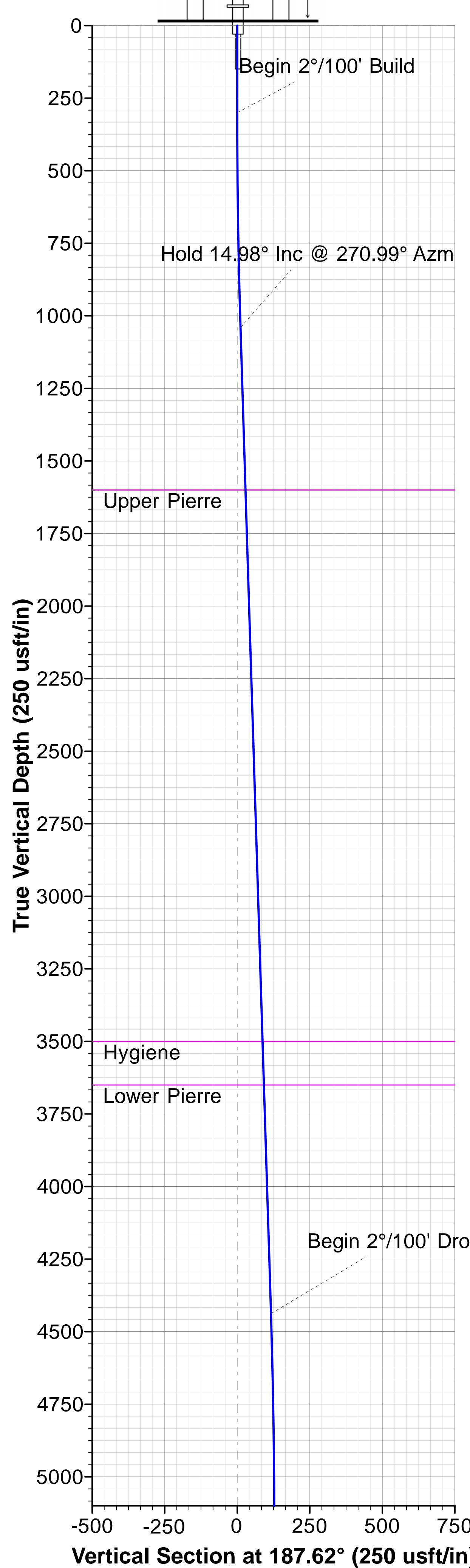
Grid East: 3465176.147
Grid North: 1558538.122
Scale Factor: 1.000

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°

Azimuths to True North
Magnetic North: 7.63°

Magnetic Field
Strength: 52974.4snT
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-1301A

OH / Job# 1524097

Plan: Plan 2 08-04-15

Standard Planning Report

05 August, 2015





Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	Plan 2 08-04-15		

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		

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-1301A					
Well Position	+N/-S	0.17 usft	Northing:	1,558,538.122 usft	Latitude:	40.854456
	+E/-W	-230.53 usft	Easting:	3,465,176.148 usft	Longitude:	-103.818397
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,936.80 usft

Wellbore	OH / Job# 1524097				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	8/4/2015	7.63	67.35	52,974

Design	Plan 2 08-04-15			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	187.62

Plan Sections										
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	
1,048.93	14.98	270.99	1,040.43	1.68	-97.33	2.00	2.00	0.00	270.99	
4,565.71	14.98	270.99	4,437.72	17.32	-1,006.14	0.00	0.00	0.00	0.00	
5,314.65	0.00	0.00	5,178.15	19.00	-1,103.46	2.00	-2.00	0.00	180.00	
5,695.63	0.00	0.00	5,559.13	19.00	-1,103.46	0.00	0.00	0.00	0.00	
6,513.81	90.00	180.00	6,080.00	-501.87	-1,103.49	11.00	11.00	-22.00	180.00	
14,258.36	90.00	180.00	6,080.00	-8,246.42	-1,103.87	0.00	0.00	0.00	0.00	BHL_#12F-1301Av2



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	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
Begin 2°/100' Build									
400.00	2.00	270.99	399.98	0.03	-1.74	0.20	2.00	2.00	0.00
500.00	4.00	270.99	499.84	0.12	-6.98	0.81	2.00	2.00	0.00
600.00	6.00	270.99	599.45	0.27	-15.69	1.81	2.00	2.00	0.00
700.00	8.00	270.99	698.70	0.48	-27.88	3.22	2.00	2.00	0.00
800.00	10.00	270.99	797.47	0.75	-43.52	5.03	2.00	2.00	0.00
900.00	12.00	270.99	895.62	1.08	-62.59	7.24	2.00	2.00	0.00
1,000.00	14.00	270.99	993.06	1.47	-85.08	9.84	2.00	2.00	0.00
1,048.93	14.98	270.99	1,040.43	1.68	-97.33	11.25	2.00	2.00	0.00
Hold 14.98° Inc @ 270.99° Azm									
1,100.00	14.98	270.99	1,089.76	1.90	-110.52	12.78	0.00	0.00	0.00
1,200.00	14.98	270.99	1,186.37	2.35	-136.36	15.77	0.00	0.00	0.00
1,300.00	14.98	270.99	1,282.97	2.79	-162.21	18.75	0.00	0.00	0.00
1,400.00	14.98	270.99	1,379.57	3.24	-188.05	21.74	0.00	0.00	0.00
1,500.00	14.98	270.99	1,476.17	3.68	-213.89	24.73	0.00	0.00	0.00
1,600.00	14.98	270.99	1,572.77	4.13	-239.73	27.72	0.00	0.00	0.00
1,628.18	14.98	270.99	1,600.00	4.25	-247.02	28.56	0.00	0.00	0.00
Upper Pierre									
1,700.00	14.98	270.99	1,669.38	4.57	-265.57	30.70	0.00	0.00	0.00
1,800.00	14.98	270.99	1,765.98	5.02	-291.42	33.69	0.00	0.00	0.00
1,900.00	14.98	270.99	1,862.58	5.46	-317.26	36.68	0.00	0.00	0.00
2,000.00	14.98	270.99	1,959.18	5.91	-343.10	39.67	0.00	0.00	0.00
2,100.00	14.98	270.99	2,055.79	6.35	-368.94	42.65	0.00	0.00	0.00
2,200.00	14.98	270.99	2,152.39	6.80	-394.78	45.64	0.00	0.00	0.00
2,300.00	14.98	270.99	2,248.99	7.24	-420.63	48.63	0.00	0.00	0.00
2,400.00	14.98	270.99	2,345.59	7.69	-446.47	51.62	0.00	0.00	0.00
2,500.00	14.98	270.99	2,442.19	8.13	-472.31	54.60	0.00	0.00	0.00
2,600.00	14.98	270.99	2,538.80	8.58	-498.15	57.59	0.00	0.00	0.00
2,700.00	14.98	270.99	2,635.40	9.02	-524.00	60.58	0.00	0.00	0.00
2,800.00	14.98	270.99	2,732.00	9.47	-549.84	63.57	0.00	0.00	0.00
2,900.00	14.98	270.99	2,828.60	9.91	-575.68	66.55	0.00	0.00	0.00
3,000.00	14.98	270.99	2,925.21	10.36	-601.52	69.54	0.00	0.00	0.00
3,100.00	14.98	270.99	3,021.81	10.80	-627.36	72.53	0.00	0.00	0.00
3,200.00	14.98	270.99	3,118.41	11.25	-653.21	75.52	0.00	0.00	0.00
3,300.00	14.98	270.99	3,215.01	11.69	-679.05	78.51	0.00	0.00	0.00
3,400.00	14.98	270.99	3,311.61	12.14	-704.89	81.49	0.00	0.00	0.00
3,500.00	14.98	270.99	3,408.22	12.58	-730.73	84.48	0.00	0.00	0.00
3,595.01	14.98	270.99	3,500.00	13.00	-755.29	87.32	0.00	0.00	0.00
Hygiene									
3,600.00	14.98	270.99	3,504.82	13.03	-756.57	87.47	0.00	0.00	0.00
3,700.00	14.98	270.99	3,601.42	13.47	-782.42	90.46	0.00	0.00	0.00
3,750.29	14.98	270.99	3,650.00	13.70	-795.41	91.96	0.00	0.00	0.00
Lower Pierre									
3,800.00	14.98	270.99	3,698.02	13.92	-808.26	93.44	0.00	0.00	0.00
3,900.00	14.98	270.99	3,794.63	14.36	-834.10	96.43	0.00	0.00	0.00
4,000.00	14.98	270.99	3,891.23	14.81	-859.94	99.42	0.00	0.00	0.00
4,100.00	14.98	270.99	3,987.83	15.25	-885.78	102.41	0.00	0.00	0.00
4,200.00	14.98	270.99	4,084.43	15.70	-911.63	105.39	0.00	0.00	0.00
4,300.00	14.98	270.99	4,181.03	16.14	-937.47	108.38	0.00	0.00	0.00
4,400.00	14.98	270.99	4,277.64	16.59	-963.31	111.37	0.00	0.00	0.00
4,500.00	14.98	270.99	4,374.24	17.03	-989.15	114.36	0.00	0.00	0.00
4,565.71	14.98	270.99	4,437.72	17.32	-1,006.14	116.32	0.00	0.00	0.00



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	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)
Begin 2°/100' Drop									
4,600.00	14.29	270.99	4,470.89	17.47	-1,014.80	117.32	2.00	-2.00	0.00
4,700.00	12.29	270.99	4,568.21	17.87	-1,037.79	119.98	2.00	-2.00	0.00
4,800.00	10.29	270.99	4,666.27	18.21	-1,057.36	122.24	2.00	-2.00	0.00
4,900.00	8.29	270.99	4,764.95	18.48	-1,073.51	124.11	2.00	-2.00	0.00
5,000.00	6.29	270.99	4,864.14	18.70	-1,086.20	125.58	2.00	-2.00	0.00
5,100.00	4.29	270.99	4,963.70	18.86	-1,095.42	126.64	2.00	-2.00	0.00
5,200.00	2.29	270.99	5,063.53	18.96	-1,101.17	127.31	2.00	-2.00	0.00
5,300.00	0.29	270.99	5,163.50	19.00	-1,103.42	127.57	2.00	-2.00	0.00
5,314.65	0.00	0.00	5,178.15	19.00	-1,103.46	127.57	2.00	-2.00	0.00
Begin Vertical Hold									
5,695.63	0.00	0.00	5,559.13	19.00	-1,103.46	127.57	0.00	0.00	0.00
KOP, Begin 11°/100' Build									
5,700.00	0.48	180.00	5,563.50	18.98	-1,103.46	127.59	11.00	11.00	0.00
5,800.00	11.48	180.00	5,662.81	8.58	-1,103.46	137.90	11.00	11.00	0.00
5,843.47	16.26	180.00	5,705.00	-1.84	-1,103.46	148.23	11.00	11.00	0.00
P200 Marker									
5,873.96	19.62	180.00	5,734.00	-11.23	-1,103.46	157.53	11.00	11.00	0.00
P300 Marker									
5,892.12	21.61	180.00	5,751.00	-17.63	-1,103.46	163.87	11.00	11.00	0.00
P350 Marker									
5,900.00	22.48	180.00	5,758.30	-20.58	-1,103.46	166.80	11.00	11.00	0.00
5,902.93	22.80	180.00	5,761.00	-21.71	-1,103.46	167.92	11.00	11.00	0.00
Sharon Springs									
5,910.54	23.64	180.00	5,768.00	-24.71	-1,103.46	170.90	11.00	11.00	0.00
Niobrara									
5,942.65	27.17	180.00	5,797.00	-38.49	-1,103.46	184.55	11.00	11.00	0.00
Top A Chalk									
5,982.83	31.59	180.00	5,832.00	-58.19	-1,103.46	204.08	11.00	11.00	0.00
Top B Marl									
6,000.00	33.48	180.00	5,846.48	-67.43	-1,103.46	213.24	11.00	11.00	0.00
6,007.86	34.35	180.00	5,853.00	-71.81	-1,103.46	217.58	11.00	11.00	0.00
A Marl									
6,018.84	35.55	180.00	5,862.00	-78.10	-1,103.46	223.82	11.00	11.00	0.00
Top Upper B									
6,048.98	38.87	180.00	5,886.00	-96.33	-1,103.47	241.88	11.00	11.00	0.00
Base Upper B									
6,061.96	40.30	180.00	5,896.00	-104.60	-1,103.47	250.08	11.00	11.00	0.00
Top Lower B									
6,100.00	44.48	180.00	5,924.09	-130.24	-1,103.47	275.49	11.00	11.00	0.00
6,101.27	44.62	180.00	5,925.00	-131.13	-1,103.47	276.38	11.00	11.00	0.00
Base Lower B									
6,109.77	45.56	180.00	5,931.00	-137.15	-1,103.47	282.34	11.00	11.00	0.00
Top B Marl									
6,172.30	52.43	180.00	5,972.00	-184.31	-1,103.47	329.08	11.00	11.00	0.00
Top C Chalk									
6,187.34	54.09	180.00	5,981.00	-196.36	-1,103.47	341.03	11.00	11.00	0.00
Mid C Chalk									
6,200.00	55.48	180.00	5,988.30	-206.70	-1,103.47	351.28	11.00	11.00	0.00
6,217.56	57.41	180.00	5,998.00	-221.33	-1,103.47	365.78	11.00	11.00	0.00
Mid C Marl									



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	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)	
6,242.65	60.17	180.00	6,011.00	-242.79	-1,103.47	387.05	11.00	11.00	0.00	
Lower C Chalk										
6,283.71	64.69	180.00	6,030.00	-279.18	-1,103.47	423.12	11.00	11.00	0.00	
Lower C Marl										
6,300.00	66.48	180.00	6,036.73	-294.01	-1,103.48	437.82	11.00	11.00	0.00	
6,333.19	70.13	180.00	6,049.00	-324.85	-1,103.48	468.38	11.00	11.00	0.00	
Lower C Marker										
6,345.35	71.47	180.00	6,053.00	-336.33	-1,103.48	479.77	11.00	11.00	0.00	
Top Ft Hayes										
6,397.18	77.17	180.00	6,067.00	-386.21	-1,103.48	529.20	11.00	11.00	0.00	
Ft Hayes Marker										
6,400.00	77.48	180.00	6,067.62	-388.96	-1,103.48	531.93	11.00	11.00	0.00	
6,500.00	88.48	180.00	6,079.82	-488.06	-1,103.49	630.15	11.00	11.00	0.00	
6,513.81	90.00	180.00	6,080.00	-501.87	-1,103.49	643.84	11.00	11.00	0.00	
LP, Hold 90° Inc @ 180° Azm - 7"										
6,600.00	90.00	180.00	6,080.00	-588.06	-1,103.49	729.27	0.00	0.00	0.00	
6,700.00	90.00	180.00	6,080.00	-688.06	-1,103.50	828.38	0.00	0.00	0.00	
6,800.00	90.00	180.00	6,080.00	-788.06	-1,103.50	927.50	0.00	0.00	0.00	
6,900.00	90.00	180.00	6,080.00	-888.06	-1,103.50	1,026.62	0.00	0.00	0.00	
7,000.00	90.00	180.00	6,080.00	-988.06	-1,103.51	1,125.73	0.00	0.00	0.00	
7,100.00	90.00	180.00	6,080.00	-1,088.06	-1,103.51	1,224.85	0.00	0.00	0.00	
7,200.00	90.00	180.00	6,080.00	-1,188.06	-1,103.52	1,323.97	0.00	0.00	0.00	
7,300.00	90.00	180.00	6,080.00	-1,288.06	-1,103.52	1,423.08	0.00	0.00	0.00	
7,400.00	90.00	180.00	6,080.00	-1,388.06	-1,103.53	1,522.20	0.00	0.00	0.00	
7,500.00	90.00	180.00	6,080.00	-1,488.06	-1,103.53	1,621.32	0.00	0.00	0.00	
7,600.00	90.00	180.00	6,080.00	-1,588.06	-1,103.54	1,720.43	0.00	0.00	0.00	
7,700.00	90.00	180.00	6,080.00	-1,688.06	-1,103.54	1,819.55	0.00	0.00	0.00	
7,800.00	90.00	180.00	6,080.00	-1,788.06	-1,103.55	1,918.67	0.00	0.00	0.00	
7,900.00	90.00	180.00	6,080.00	-1,888.06	-1,103.55	2,017.78	0.00	0.00	0.00	
8,000.00	90.00	180.00	6,080.00	-1,988.06	-1,103.56	2,116.90	0.00	0.00	0.00	
8,100.00	90.00	180.00	6,080.00	-2,088.06	-1,103.56	2,216.02	0.00	0.00	0.00	
8,200.00	90.00	180.00	6,080.00	-2,188.06	-1,103.57	2,315.13	0.00	0.00	0.00	
8,300.00	90.00	180.00	6,080.00	-2,288.06	-1,103.57	2,414.25	0.00	0.00	0.00	
8,400.00	90.00	180.00	6,080.00	-2,388.06	-1,103.58	2,513.37	0.00	0.00	0.00	
8,500.00	90.00	180.00	6,080.00	-2,488.06	-1,103.58	2,612.48	0.00	0.00	0.00	
8,600.00	90.00	180.00	6,080.00	-2,588.06	-1,103.59	2,711.60	0.00	0.00	0.00	
8,700.00	90.00	180.00	6,080.00	-2,688.06	-1,103.59	2,810.72	0.00	0.00	0.00	
8,800.00	90.00	180.00	6,080.00	-2,788.06	-1,103.60	2,909.83	0.00	0.00	0.00	
8,900.00	90.00	180.00	6,080.00	-2,888.06	-1,103.60	3,008.95	0.00	0.00	0.00	
9,000.00	90.00	180.00	6,080.00	-2,988.06	-1,103.61	3,108.07	0.00	0.00	0.00	
9,100.00	90.00	180.00	6,080.00	-3,088.06	-1,103.61	3,207.18	0.00	0.00	0.00	
9,200.00	90.00	180.00	6,080.00	-3,188.06	-1,103.62	3,306.30	0.00	0.00	0.00	
9,300.00	90.00	180.00	6,080.00	-3,288.06	-1,103.62	3,405.42	0.00	0.00	0.00	
9,400.00	90.00	180.00	6,080.00	-3,388.06	-1,103.63	3,504.53	0.00	0.00	0.00	
9,500.00	90.00	180.00	6,080.00	-3,488.06	-1,103.63	3,603.65	0.00	0.00	0.00	
9,600.00	90.00	180.00	6,080.00	-3,588.06	-1,103.64	3,702.77	0.00	0.00	0.00	
9,700.00	90.00	180.00	6,080.00	-3,688.06	-1,103.64	3,801.88	0.00	0.00	0.00	
9,800.00	90.00	180.00	6,080.00	-3,788.06	-1,103.65	3,901.00	0.00	0.00	0.00	
9,900.00	90.00	180.00	6,080.00	-3,888.06	-1,103.65	4,000.12	0.00	0.00	0.00	
10,000.00	90.00	180.00	6,080.00	-3,988.06	-1,103.66	4,099.23	0.00	0.00	0.00	
10,100.00	90.00	180.00	6,080.00	-4,088.06	-1,103.66	4,198.35	0.00	0.00	0.00	
10,200.00	90.00	180.00	6,080.00	-4,188.06	-1,103.67	4,297.47	0.00	0.00	0.00	
10,300.00	90.00	180.00	6,080.00	-4,288.06	-1,103.67	4,396.58	0.00	0.00	0.00	



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	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)
10,400.00	90.00	180.00	6,080.00	-4,388.06	-1,103.68	4,495.70	0.00	0.00	0.00
10,500.00	90.00	180.00	6,080.00	-4,488.06	-1,103.68	4,594.81	0.00	0.00	0.00
10,600.00	90.00	180.00	6,080.00	-4,588.06	-1,103.69	4,693.93	0.00	0.00	0.00
10,700.00	90.00	180.00	6,080.00	-4,688.06	-1,103.69	4,793.05	0.00	0.00	0.00
10,800.00	90.00	180.00	6,080.00	-4,788.06	-1,103.70	4,892.16	0.00	0.00	0.00
10,900.00	90.00	180.00	6,080.00	-4,888.06	-1,103.70	4,991.28	0.00	0.00	0.00
11,000.00	90.00	180.00	6,080.00	-4,988.06	-1,103.71	5,090.40	0.00	0.00	0.00
11,100.00	90.00	180.00	6,080.00	-5,088.06	-1,103.71	5,189.51	0.00	0.00	0.00
11,200.00	90.00	180.00	6,080.00	-5,188.06	-1,103.72	5,288.63	0.00	0.00	0.00
11,300.00	90.00	180.00	6,080.00	-5,288.06	-1,103.72	5,387.75	0.00	0.00	0.00
11,400.00	90.00	180.00	6,080.00	-5,388.06	-1,103.73	5,486.86	0.00	0.00	0.00
11,500.00	90.00	180.00	6,080.00	-5,488.06	-1,103.73	5,585.98	0.00	0.00	0.00
11,600.00	90.00	180.00	6,080.00	-5,588.06	-1,103.74	5,685.10	0.00	0.00	0.00
11,700.00	90.00	180.00	6,080.00	-5,688.06	-1,103.74	5,784.21	0.00	0.00	0.00
11,800.00	90.00	180.00	6,080.00	-5,788.06	-1,103.75	5,883.33	0.00	0.00	0.00
11,900.00	90.00	180.00	6,080.00	-5,888.06	-1,103.75	5,982.45	0.00	0.00	0.00
12,000.00	90.00	180.00	6,080.00	-5,988.06	-1,103.76	6,081.56	0.00	0.00	0.00
12,100.00	90.00	180.00	6,080.00	-6,088.06	-1,103.76	6,180.68	0.00	0.00	0.00
12,200.00	90.00	180.00	6,080.00	-6,188.06	-1,103.77	6,279.80	0.00	0.00	0.00
12,300.00	90.00	180.00	6,080.00	-6,288.06	-1,103.77	6,378.91	0.00	0.00	0.00
12,400.00	90.00	180.00	6,080.00	-6,388.06	-1,103.78	6,478.03	0.00	0.00	0.00
12,500.00	90.00	180.00	6,080.00	-6,488.06	-1,103.78	6,577.15	0.00	0.00	0.00
12,600.00	90.00	180.00	6,080.00	-6,588.06	-1,103.79	6,676.26	0.00	0.00	0.00
12,700.00	90.00	180.00	6,080.00	-6,688.06	-1,103.79	6,775.38	0.00	0.00	0.00
12,800.00	90.00	180.00	6,080.00	-6,788.06	-1,103.80	6,874.50	0.00	0.00	0.00
12,900.00	90.00	180.00	6,080.00	-6,888.06	-1,103.80	6,973.61	0.00	0.00	0.00
13,000.00	90.00	180.00	6,080.00	-6,988.06	-1,103.81	7,072.73	0.00	0.00	0.00
13,100.00	90.00	180.00	6,080.00	-7,088.06	-1,103.81	7,171.85	0.00	0.00	0.00
13,200.00	90.00	180.00	6,080.00	-7,188.06	-1,103.82	7,270.96	0.00	0.00	0.00
13,300.00	90.00	180.00	6,080.00	-7,288.06	-1,103.82	7,370.08	0.00	0.00	0.00
13,400.00	90.00	180.00	6,080.00	-7,388.06	-1,103.83	7,469.20	0.00	0.00	0.00
13,500.00	90.00	180.00	6,080.00	-7,488.06	-1,103.83	7,568.31	0.00	0.00	0.00
13,600.00	90.00	180.00	6,080.00	-7,588.06	-1,103.84	7,667.43	0.00	0.00	0.00
13,700.00	90.00	180.00	6,080.00	-7,688.06	-1,103.84	7,766.55	0.00	0.00	0.00
13,800.00	90.00	180.00	6,080.00	-7,788.06	-1,103.85	7,865.66	0.00	0.00	0.00
13,900.00	90.00	180.00	6,080.00	-7,888.06	-1,103.85	7,964.78	0.00	0.00	0.00
14,000.00	90.00	180.00	6,080.00	-7,988.06	-1,103.86	8,063.90	0.00	0.00	0.00
14,100.00	90.00	180.00	6,080.00	-8,088.06	-1,103.86	8,163.01	0.00	0.00	0.00
14,200.00	90.00	180.00	6,080.00	-8,188.06	-1,103.87	8,262.13	0.00	0.00	0.00
14,258.36	90.00	180.00	6,080.00	-8,246.42	-1,103.87	8,319.98	0.00	0.00	0.00
TD at 14258.36' 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-1301Av2	0.00	0.00	6,080.00	-8,246.42	-1,103.87	1,550,272.250	3,464,228.850	40.831822	-103.822386
- plan hits target center									
- Point									



Phoenix Technology Services LP

Planning Report



Database:	Compass 5000 RMR	Local Co-ordinate Reference:	Well Razor FED #12F-1301A
Company:	Whiting Oil & Gas Corporation	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Project:	Weld County, Colorado (NAD 83)	MD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	North Reference:	True
Well:	Razor FED #12F-1301A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH / Job# 1524097		
Design:	Plan 2 08-04-15		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
6,513.81	6,080.00	7"	7	7-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,628.18	1,600.00	Upper Pierre		0.00	187.62	
3,595.01	3,500.00	Hygiene		0.00	187.62	
3,750.29	3,650.00	Lower Pierre		0.00	187.62	
5,843.47	5,705.00	P200 Marker		0.00	187.62	
5,873.96	5,734.00	P300 Marker		0.00	187.62	
5,892.12	5,751.00	P350 Marker		0.00	187.62	
5,902.93	5,761.00	Sharon Springs		0.00	187.62	
5,910.54	5,768.00	Niobrara		0.00	187.62	
5,942.65	5,797.00	Top A Chalk		0.00	187.62	
5,982.83	5,832.00	Top B Marl		0.00	187.62	
6,007.86	5,853.00	A Marl		0.00	187.62	
6,018.84	5,862.00	Top Upper B		0.00	187.62	
6,048.98	5,886.00	Base Upper B		0.00	187.62	
6,061.96	5,896.00	Top Lower B		0.00	187.62	
6,101.27	5,925.00	Base Lower B		0.00	187.62	
6,109.77	5,931.00	Top B Marl		0.00	187.62	
6,172.30	5,972.00	Top C Chalk		0.00	187.62	
6,187.34	5,981.00	Mid C Chalk		0.00	187.62	
6,217.56	5,998.00	Mid C Marl		0.00	187.62	
6,242.65	6,011.00	Lower C Chalk		0.00	187.62	
6,283.71	6,030.00	Lower C Marl		0.00	187.62	
6,333.19	6,049.00	Lower C Marker		0.00	187.62	
6,345.35	6,053.00	Top Ft Hayes		0.00	187.62	
6,397.18	6,067.00	Ft Hayes Marker		0.00	187.62	

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	
1,048.93	1,040.43	1.68	-97.33	Hold 14.98° Inc @ 270.99° Azm	
4,565.71	4,437.72	17.32	-1,006.14	Begin 2"/100' Drop	
5,314.65	5,178.15	19.00	-1,103.46	Begin Vertical Hold	
5,695.63	5,559.13	19.00	-1,103.46	KOP, Begin 11"/100' Build	
6,513.81	6,080.00	-501.87	-1,103.49	LP, Hold 90° Inc @ 180° Azm	
14,258.36	6,080.00	-8,246.42	-1,103.87	TD at 14258.36' MD	