



Project: Weld County, Colorado (NAD 83)
Site: Sec.12-T10N-R58W
Well: Razor #12F-0105A
Wellbore: OH / Job# 1524095
Design: Plan 3 11-02-15
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	1558615.315	3465307.003	40.854661	-103.817919

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	902.49	12.05	182.12	898.05	-63.08	-2.33	2.00	182.12	-63.07		Begin 2°/100' Build
4	4492.05	12.05	182.12	4408.53	-811.92	-30.03	0.00	0.00	-811.77		Hold 12.05° Inc @ 182.12° Azm
5	5094.53	0.00	0.00	5006.58	-875.00	-32.36	2.00	180.00	-874.84		Begin Vertical Hold
6	5572.08	0.00	0.00	5484.13	-875.00	-32.36	0.00	0.00	-874.84		KOP, Begin 11°/100' Build
7	6390.26	90.00	0.00	6005.00	-354.13	-32.36	11.00	0.00	-353.97		LP, Hold 90° Inc @ 0° Azm
8	13642.56	90.00	0.00	6005.00	6898.17	-32.36	0.00	0.00	6898.24	BHL_#12F-0105Av3	TD at 13642.56' MD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL_#12F-0105Av3	6005.00	6898.17	-32.36	1565511.626	3465143.806	40.873594	-103.818036	Point

LEGEND

- Razor #12F-0105A, OH / Job# 1524095, Surveys (Unit 409) V0
- Razor #12F-0101A, OH / Job# 1524093, Surveys (Unit 409) V0
- Razor #12F-0101A, ST01 / Job #1524093, Surveys (Unit 409) V0
- Razor #12F-0102B, OH / Job# 1524094, Surveys (Unit 409) V0
- Razor #12F-0103A, OH / Job #1523839, Surveys (Unit 409) V0
- Razor #12F-0103A, ST01 / Job #1523839, Surveys (Unit 409) V0
- Razor #12F-0104B, Wellbore #1 / Job #1523838, Surveys (Unit 409) V0
- Razor #12F-0106B, OH / Job# 1524096, Plan 3 11-09-15 V0
- Razor #12F-0107A, Wellbore #1 / Job #1523840, Surveys (Unit 409) V0
- Razor #12F-0107A, Wellbore #2 / Job #1523840, Surveys (Unit 409) V0
- Razor #12F-0108B, Wellbore #1 / Job #1523841, Surveys (Unit 409) V0
- Razor FED #12F-1301A, OH / Job# 1524097, Surveys (Unit 409) V0
- Razor FED #12F-1302B, OH / Job# 1524098, Surveys (Unit 409) V0
- Razor FED #12F-1303A, Wellbore #1 / Job #1523837, Surveys (Unit 409) V0
- Razor FED #12F-1303A, Wellbore #2 / Job #1523837, Surveys (Unit 409) V0
- Razor FED #12F-1303A, Wellbore #3 / Job # 1523837, Surveys (Unit 409) V0
- Razor FED #12F-1304B, Wellbore #1, Surveys V0
- Razor FED #12F-1305A, OH / Job# 1524099, Surveys (Unit 409) V0
- Razor FED #12F-1306B, OH / Job# 1524100, Plan 4 11-16-15 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 3 11-02-15

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1550.00	1569.12	Upper Pierre	0.00	359.73
3500.00	3563.05	Hygiene	0.00	359.73
3650.00	3716.43	Lower Pierre	0.00	359.73
5680.00	5772.89	P200 Marker	0.00	359.73
5711.00	5806.82	P300 Marker	0.00	359.73
5725.00	5822.49	P350 Marker	0.00	359.73
5734.00	5832.69	Sharon Springs	0.00	359.73
5741.00	5840.70	Niobrara	0.00	359.73
5763.00	5866.36	Top A Chalk	0.00	359.73
5802.00	5913.98	Top B Marl	0.00	359.73
5818.00	5934.49	A Marl	0.00	359.73
5829.00	5949.00	Top Upper B	0.00	359.73
5855.00	5984.80	Base Upper B	0.00	359.73
5871.00	6008.13	Top Lower B	0.00	359.73
5903.00	6058.72	Base Lower B	0.00	359.73
5910.00	6070.69	Top B Marl	0.00	359.73
5951.00	6150.98	Top C Chalk	0.00	359.73
5961.00	6174.63	Mid C Chalk	0.00	359.73
5976.00	6215.63	Mid C Marl	0.00	359.73
5998.00	6304.77	Lower C Chalk	0.00	359.73

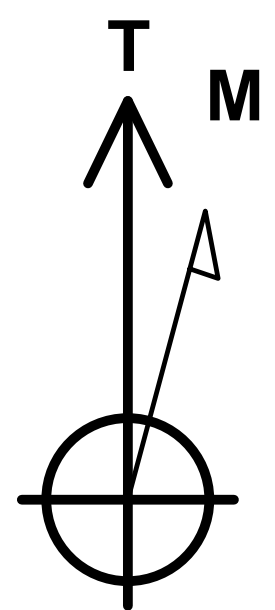
Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: Colorado Northern Zone
Local Origin: Well Razor #12F-0105A, True North

Latitude: 40.854661
Longitude: -103.817919

Grid East: 3465307.003
Grid North: 1558615.315
Scale Factor: 1.000
Geomagnetic Model: USER DEFINED
Sample Date: 28-Oct-15
Magnetic Declination: 7.27°
Dip Angle from Horizontal: 67.16°
Magnetic Field Strength: 52978

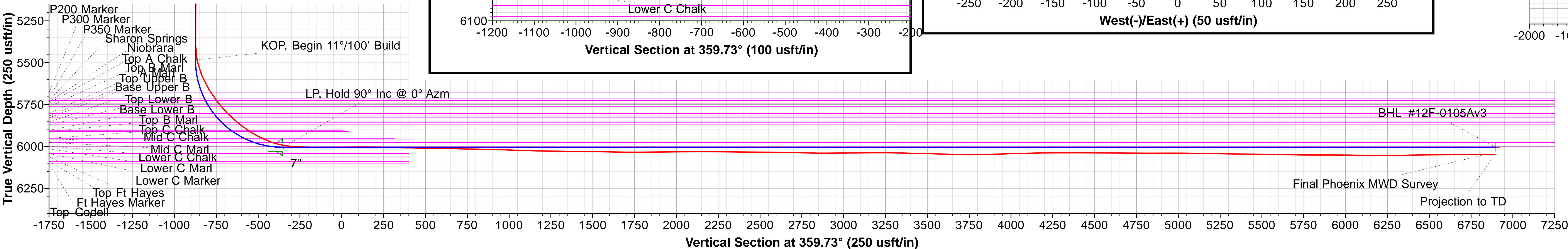
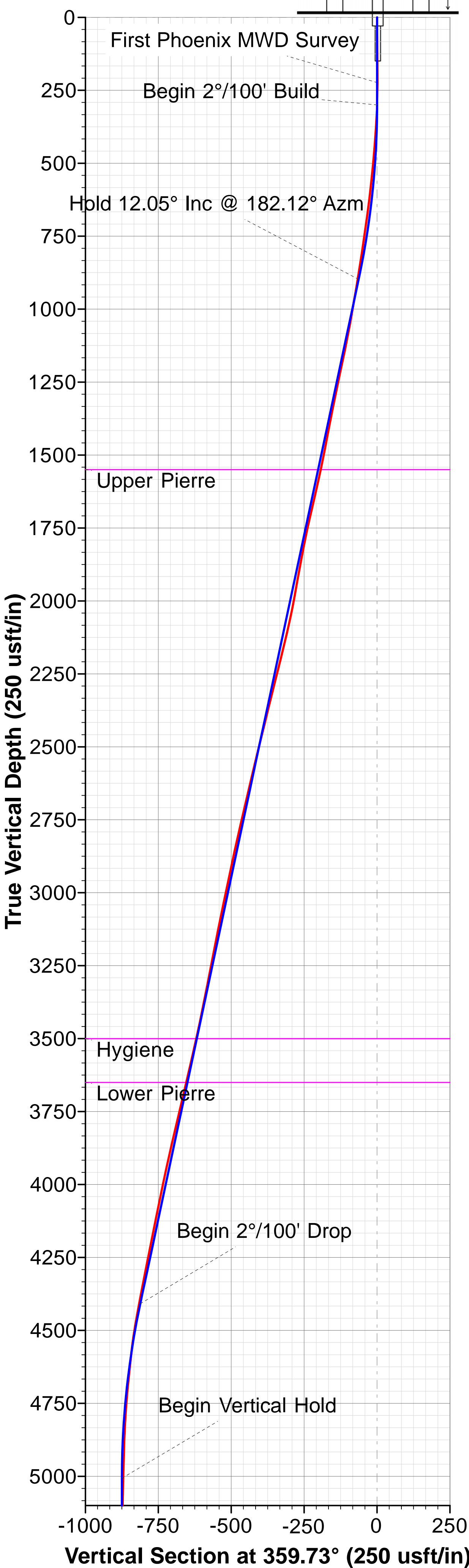
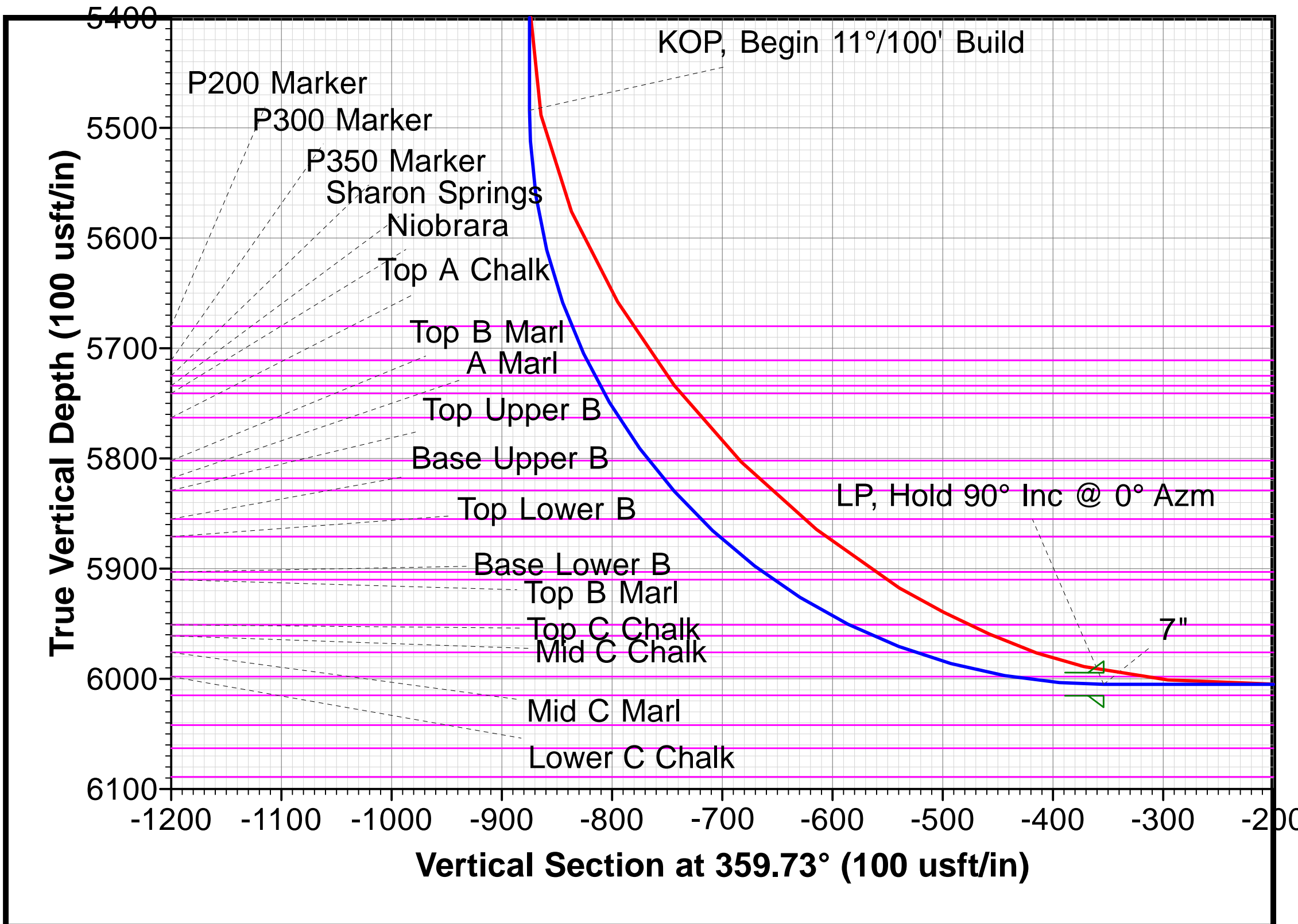
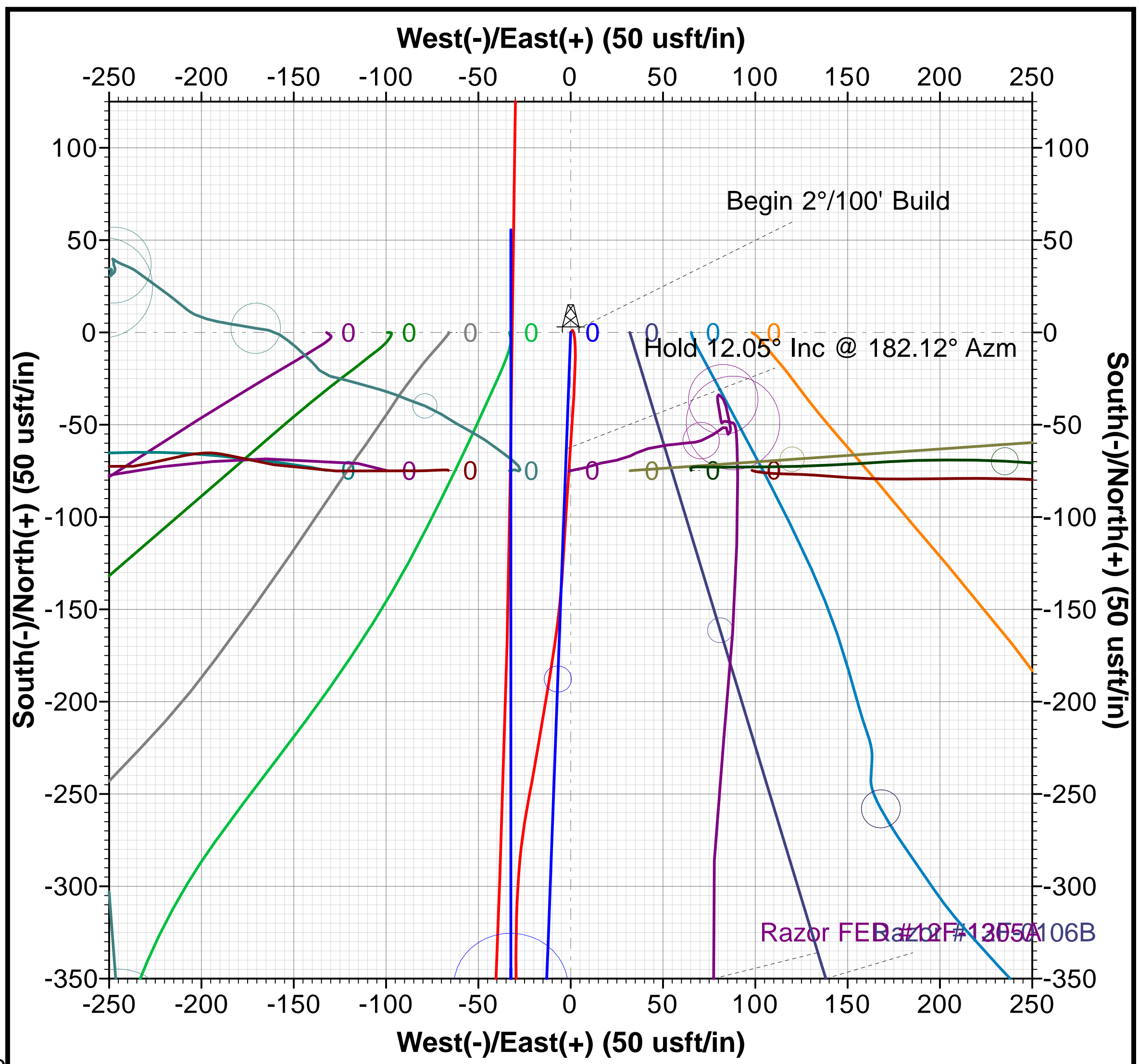
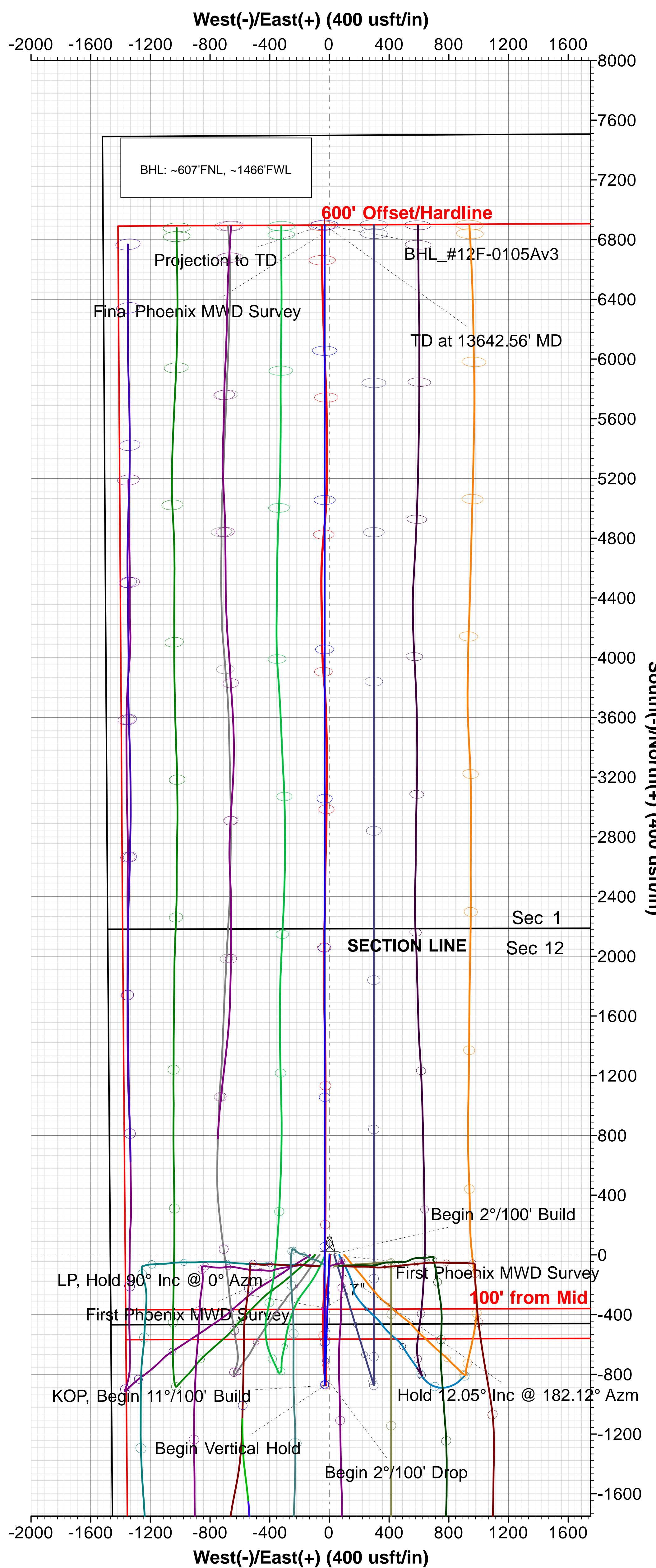
To convert a Magnetic Direction to a Grid Direction, Add 6.18°
To convert a Magnetic Direction to a True Direction, Add 7.27° East
To convert a True Direction to a Grid Direction, Subtract 1.09°

PHOENIX
TECHNOLOGY SERVICES



Azimuths to True North
Magnetic North: 7.27°

Magnetic Field
Strength: 52978.0snT
Dip Angle: 67.16°
Date: 10/28/2015
Model: USER DEFINED





Whiting Oil & Gas Corporation

Weld County, Colorado (NAD 83)

Sec.12-T10N-R58W

Razor #12F-0105A

OH / Job# 1524095

Survey: Phoenix MWD Surveys

Standard Survey Report

11 November, 2015





Phoenix Technology Services LP

Survey Report



Company:	Whiting Oil & Gas Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, Colorado (NAD 83)	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	MD Reference:	RKB @ 4957.80usft (Unit 409)
Well:	Razor #12F-0105A	North Reference:	True
Wellbore:	OH / Job# 1524095	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Unit 409)	Database:	Compass 5000 RMR

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 #12F-0105A				
Well Position	+N/-S	0.00 usft	Northing:	1,558,615.315 usft	Latitude:	40.854661
	+E/-W	0.00 usft	Easting:	3,465,307.003 usft	Longitude:	-103.817919
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,936.80 usft

Wellbore	OH / Job# 1524095				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	10/28/2015	7.27	67.16	52,978

Design	Surveys (Unit 409)				
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	359.73	

Survey Program	Date	11/11/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
224.00	13,582.00	Phoenix MWD Surveys (OH / Job# 152409	PHX+MWD+IFR1+SAG+MS	PHX+OWSG MWD + IFR1 + Sag + Multi-Station Corre	

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
224.00	0.83	37.19	223.99	1.29	0.98	1.29	0.37	0.37	0.00
First Phoenix MWD Survey									
317.00	2.79	169.87	316.96	-0.40	1.79	-0.41	3.66	2.11	142.67
501.00	5.38	179.97	500.48	-13.44	2.58	-13.45	1.46	1.41	5.49
686.00	7.68	183.92	684.27	-34.44	1.74	-34.45	1.27	1.24	2.14
1,056.00	10.46	183.68	1,049.60	-92.64	-2.11	-92.63	0.75	0.75	-0.06
1,240.00	12.43	183.54	1,229.94	-129.08	-4.40	-129.05	1.07	1.07	-0.08
1,425.00	10.58	188.54	1,411.22	-165.75	-8.16	-165.71	1.14	-1.00	2.70
1,701.00	13.60	189.66	1,681.06	-222.81	-17.37	-222.72	1.10	1.09	0.41
1,836.00	11.24	190.83	1,812.90	-251.38	-22.50	-251.27	1.76	-1.75	0.87



Phoenix Technology Services LP

Survey Report



Company:	Whiting Oil & Gas Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, Colorado (NAD 83)	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	MD Reference:	RKB @ 4957.80usft (Unit 409)
Well:	Razor #12F-0105A	North Reference:	True
Wellbore:	OH / Job# 1524095	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Unit 409)	Database:	Compass 5000 RMR

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)
1,985.00	9.91	186.64	1,959.36	-278.38	-26.71	-278.25	1.03	-0.89	-2.81
2,170.00	13.87	182.04	2,140.36	-316.37	-29.34	-316.23	2.20	2.14	-2.49
2,262.00	13.94	179.36	2,229.67	-338.47	-29.61	-338.33	0.70	0.08	-2.91
2,354.00	13.93	180.11	2,318.96	-360.63	-29.51	-360.48	0.20	-0.01	0.82
2,446.00	13.69	178.97	2,408.30	-382.58	-29.34	-382.44	0.39	-0.26	-1.24
2,538.00	13.89	178.90	2,497.65	-404.51	-28.93	-404.37	0.22	0.22	-0.08
2,630.00	13.44	177.94	2,587.04	-426.24	-28.33	-426.10	0.55	-0.49	-1.04
2,815.00	12.87	176.02	2,767.19	-468.28	-26.13	-468.15	0.39	-0.31	-1.04
2,907.00	12.46	175.07	2,856.95	-488.39	-24.57	-488.26	0.50	-0.45	-1.03
3,091.00	11.69	185.88	3,036.90	-526.71	-24.77	-526.59	1.30	-0.42	5.88
3,183.00	11.58	185.78	3,127.01	-545.17	-26.65	-545.04	0.12	-0.12	-0.11
3,275.00	10.75	185.15	3,217.27	-562.90	-28.35	-562.76	0.91	-0.90	-0.68
3,367.00	11.52	183.04	3,307.54	-580.62	-29.61	-580.47	0.95	0.84	-2.29
3,459.00	10.99	180.89	3,397.77	-598.56	-30.23	-598.41	0.73	-0.58	-2.34
3,551.00	12.38	177.02	3,487.86	-617.18	-29.86	-617.03	1.73	1.51	-4.21
3,643.00	13.10	177.46	3,577.60	-637.45	-28.88	-637.30	0.79	0.78	0.48
3,735.00	13.24	176.11	3,667.18	-658.37	-27.71	-658.23	0.37	0.15	-1.47
3,827.00	13.38	176.00	3,756.70	-679.50	-26.25	-679.37	0.15	0.15	-0.12
3,919.00	13.00	175.06	3,846.28	-700.43	-24.62	-700.31	0.47	-0.41	-1.02
4,011.00	12.45	181.94	3,936.02	-720.65	-24.06	-720.53	1.75	-0.60	7.48
4,103.00	11.47	181.36	4,026.02	-739.71	-24.61	-739.59	1.07	-1.07	-0.63
4,195.00	11.66	178.46	4,116.16	-758.15	-24.58	-758.02	0.66	0.21	-3.15
4,380.00	11.07	179.32	4,297.53	-794.60	-23.87	-794.47	0.33	-0.32	0.46
4,472.00	10.85	177.86	4,387.85	-812.08	-23.44	-811.96	0.38	-0.24	-1.59
4,564.00	9.79	183.39	4,478.36	-828.54	-23.58	-828.42	1.58	-1.15	6.01
4,656.00	6.70	189.62	4,569.40	-841.64	-24.94	-841.52	3.49	-3.36	6.77
4,840.00	4.72	182.41	4,752.48	-859.79	-27.05	-859.66	1.14	-1.08	-3.92
4,932.00	2.58	192.00	4,844.29	-865.60	-27.64	-865.46	2.41	-2.33	10.42
5,024.00	1.47	144.19	4,936.24	-868.58	-27.38	-868.45	2.10	-1.21	-51.97
5,116.00	2.16	141.75	5,028.19	-870.90	-25.62	-870.77	0.75	0.75	-2.65
5,208.00	0.55	182.11	5,120.17	-872.71	-24.56	-872.58	1.93	-1.75	43.87
5,300.00	0.34	241.13	5,212.16	-873.28	-24.81	-873.15	0.52	-0.23	64.15
5,392.00	0.15	208.44	5,304.16	-873.52	-25.11	-873.39	0.25	-0.21	-35.53
5,485.00	0.48	166.74	5,397.16	-874.00	-25.08	-873.87	0.41	0.35	-44.84
5,577.00	12.40	352.96	5,488.47	-864.53	-26.21	-864.40	14.00	12.96	-188.89
5,669.00	22.82	354.41	5,576.04	-836.90	-29.16	-836.75	11.34	11.33	1.58
5,761.00	31.51	354.08	5,657.81	-795.15	-33.39	-794.98	9.45	9.45	-0.36
5,853.00	36.93	356.66	5,733.86	-743.60	-37.48	-743.42	6.10	5.89	2.80
5,945.00	45.37	359.83	5,803.08	-683.16	-39.19	-682.97	9.45	9.17	3.45
6,037.00	50.84	358.82	5,864.49	-614.71	-40.02	-614.51	6.00	5.95	-1.10
6,129.00	58.67	358.47	5,917.54	-539.65	-41.81	-539.45	8.52	8.51	-0.38
6,175.00	63.92	359.21	5,939.63	-499.33	-42.62	-499.12	11.50	11.41	1.61
6,221.00	65.02	359.83	5,959.46	-457.82	-42.97	-457.62	2.68	2.39	1.35



Phoenix Technology Services LP

Survey Report



Company:	Whiting Oil & Gas Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, Colorado (NAD 83)	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	MD Reference:	RKB @ 4957.80usft (Unit 409)
Well:	Razor #12F-0105A	North Reference:	True
Wellbore:	OH / Job# 1524095	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Unit 409)	Database:	Compass 5000 RMR

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)
6,267.00	71.23	1.39	5,976.59	-415.16	-42.50	-414.96	13.86	13.50	3.39
6,312.00	76.82	1.97	5,988.97	-371.94	-41.23	-371.74	12.48	12.42	1.29
6,389.00	85.18	2.31	6,001.00	-296.00	-38.39	-295.82	10.87	10.86	0.44
6,517.00	90.31	1.23	6,006.04	-168.21	-34.44	-168.04	4.10	4.01	-0.84
6,610.00	90.36	0.98	6,005.49	-75.23	-32.65	-75.07	0.27	0.05	-0.27
6,703.00	90.78	0.54	6,004.57	17.76	-31.42	17.91	0.65	0.45	-0.47
6,796.00	90.17	1.06	6,003.80	110.75	-30.12	110.89	0.86	-0.66	0.56
6,888.00	89.05	0.80	6,004.42	202.73	-28.62	202.86	1.25	-1.22	-0.28
6,981.00	88.74	0.12	6,006.22	295.71	-27.88	295.84	0.80	-0.33	-0.73
7,074.00	88.99	0.30	6,008.06	388.69	-27.54	388.82	0.33	0.27	0.19
7,167.00	88.80	359.77	6,009.85	481.67	-27.48	481.80	0.61	-0.20	-0.57
7,261.00	88.94	359.84	6,011.71	575.65	-27.80	575.78	0.17	0.15	0.07
7,353.00	88.93	359.80	6,013.42	667.64	-28.09	667.76	0.04	-0.01	-0.04
7,446.00	88.80	359.93	6,015.26	760.62	-28.31	760.74	0.20	-0.14	0.14
7,539.00	88.99	0.76	6,017.05	853.60	-27.75	853.72	0.92	0.20	0.89
7,632.00	88.29	0.07	6,019.26	946.57	-27.07	946.69	1.06	-0.75	-0.74
7,725.00	87.98	0.02	6,022.29	1,039.52	-27.00	1,039.64	0.34	-0.33	-0.05
7,818.00	87.90	0.09	6,025.63	1,132.46	-26.91	1,132.57	0.11	-0.09	0.08
7,910.00	89.72	359.68	6,027.54	1,224.44	-27.10	1,224.55	2.03	1.98	-0.45
8,004.00	89.14	358.83	6,028.47	1,318.42	-28.32	1,318.54	1.09	-0.62	-0.90
8,097.00	89.27	359.23	6,029.76	1,411.40	-29.89	1,411.52	0.45	0.14	0.43
8,189.00	89.19	358.83	6,031.00	1,503.38	-31.45	1,503.51	0.44	-0.09	-0.43
8,282.00	89.02	359.10	6,032.45	1,596.35	-33.13	1,596.49	0.34	-0.18	0.29
8,375.00	88.99	359.00	6,034.07	1,689.32	-34.67	1,689.47	0.11	-0.03	-0.11
8,468.00	90.53	359.85	6,034.46	1,782.32	-35.61	1,782.46	1.89	1.66	0.91
8,561.00	90.59	359.36	6,033.55	1,875.31	-36.25	1,875.46	0.53	0.06	-0.53
8,653.00	90.95	359.99	6,032.31	1,967.30	-36.77	1,967.45	0.79	0.39	0.68
8,746.00	89.78	0.74	6,031.72	2,060.29	-36.18	2,060.44	1.49	-1.26	0.81
8,838.00	90.00	1.46	6,031.90	2,152.27	-34.41	2,152.41	0.82	0.24	0.78
8,931.00	89.75	1.23	6,032.10	2,245.25	-32.23	2,245.38	0.37	-0.27	-0.25
9,022.00	89.58	0.49	6,032.63	2,336.24	-30.86	2,336.36	0.83	-0.19	-0.81
9,115.00	89.55	0.56	6,033.34	2,429.23	-30.01	2,429.34	0.08	-0.03	0.08
9,207.00	89.36	0.90	6,034.21	2,521.22	-28.84	2,521.33	0.42	-0.21	0.37
9,299.00	89.19	1.21	6,035.38	2,613.19	-27.14	2,613.29	0.38	-0.18	0.34
9,392.00	88.88	1.43	6,036.94	2,706.16	-25.00	2,706.24	0.41	-0.33	0.24
9,485.00	88.60	1.51	6,038.99	2,799.10	-22.62	2,799.18	0.31	-0.30	0.09
9,577.00	90.34	0.63	6,039.84	2,891.08	-20.90	2,891.14	2.12	1.89	-0.96
9,670.00	90.36	0.45	6,039.27	2,984.07	-20.02	2,984.13	0.19	0.02	-0.19
9,762.00	90.42	0.62	6,038.64	3,076.07	-19.16	3,076.12	0.20	0.07	0.18
9,855.00	90.73	0.92	6,037.71	3,169.05	-17.91	3,169.10	0.46	0.33	0.32
9,947.00	89.30	359.85	6,037.69	3,261.05	-17.29	3,261.09	1.94	-1.55	-1.16
10,039.00	88.60	359.60	6,039.37	3,353.03	-17.74	3,353.08	0.81	-0.76	-0.27
10,131.00	88.60	359.12	6,041.62	3,445.00	-18.76	3,445.05	0.52	0.00	-0.52



Phoenix Technology Services LP

Survey Report



Company:	Whiting Oil & Gas Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, Colorado (NAD 83)	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	MD Reference:	RKB @ 4957.80usft (Unit 409)
Well:	Razor #12F-0105A	North Reference:	True
Wellbore:	OH / Job# 1524095	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Unit 409)	Database:	Compass 5000 RMR

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)
10,223.00	88.52	358.24	6,043.93	3,536.94	-20.88	3,537.00	0.96	-0.09	-0.96
10,315.00	87.98	358.45	6,046.74	3,628.86	-23.54	3,628.93	0.63	-0.59	0.23
10,407.00	89.30	356.67	6,048.93	3,720.75	-27.45	3,720.83	2.41	1.43	-1.93
10,499.00	91.34	355.91	6,048.41	3,812.55	-33.41	3,812.66	2.37	2.22	-0.83
10,592.00	91.34	355.22	6,046.24	3,905.24	-40.60	3,905.39	0.74	0.00	-0.74
10,683.00	92.12	357.56	6,043.49	3,996.01	-46.32	3,996.19	2.71	0.86	2.57
10,776.00	91.31	359.42	6,040.71	4,088.93	-48.77	4,089.12	2.18	-0.87	2.00
10,868.00	90.86	359.88	6,038.96	4,180.91	-49.33	4,181.10	0.70	-0.49	0.50
10,960.00	90.06	358.78	6,038.23	4,272.90	-50.41	4,273.09	1.48	-0.87	-1.20
11,052.00	89.91	358.73	6,038.25	4,364.88	-52.41	4,365.08	0.17	-0.16	-0.05
11,144.00	90.19	358.92	6,038.17	4,456.86	-54.30	4,457.07	0.37	0.30	0.21
11,236.00	89.24	0.94	6,038.63	4,548.86	-54.41	4,549.06	2.43	-1.03	2.20
11,328.00	89.94	3.26	6,039.29	4,640.78	-51.04	4,640.97	2.63	0.76	2.52
11,420.00	89.52	3.41	6,039.72	4,732.63	-45.68	4,732.79	0.48	-0.46	0.16
11,512.00	90.09	5.36	6,040.03	4,824.35	-38.65	4,824.48	2.21	0.62	2.12
11,604.00	90.06	5.26	6,039.91	4,915.96	-30.14	4,916.05	0.11	-0.03	-0.11
11,696.00	90.03	3.40	6,039.84	5,007.69	-23.19	5,007.74	2.02	-0.03	-2.02
11,788.00	88.74	1.90	6,040.83	5,099.58	-18.94	5,099.62	2.15	-1.40	-1.63
11,880.00	89.16	0.28	6,042.51	5,191.55	-17.19	5,191.57	1.82	0.46	-1.76
11,971.00	88.88	0.54	6,044.07	5,282.53	-16.54	5,282.55	0.42	-0.31	0.29
12,063.00	89.27	359.06	6,045.55	5,374.52	-16.86	5,374.54	1.66	0.42	-1.61
12,155.00	89.66	359.97	6,046.41	5,466.51	-17.64	5,466.53	1.08	0.42	0.99
12,247.00	89.27	359.47	6,047.27	5,558.50	-18.09	5,558.53	0.69	-0.42	-0.54
12,339.00	88.49	359.28	6,049.07	5,650.48	-19.09	5,650.51	0.87	-0.85	-0.21
12,431.00	89.39	358.19	6,050.77	5,742.44	-21.12	5,742.47	1.54	0.98	-1.18
12,522.00	90.17	357.21	6,051.12	5,833.36	-24.77	5,833.41	1.38	0.86	-1.08
12,614.00	89.97	357.37	6,051.01	5,925.26	-29.12	5,925.33	0.28	-0.22	0.17
12,706.00	89.36	358.90	6,051.55	6,017.21	-32.12	6,017.29	1.79	-0.66	1.66
12,799.00	89.02	357.54	6,052.86	6,110.15	-35.00	6,110.25	1.51	-0.37	-1.46
12,890.00	89.47	357.64	6,054.06	6,201.06	-38.83	6,201.17	0.51	0.49	0.11
12,983.00	91.15	358.31	6,053.56	6,294.00	-42.12	6,294.13	1.94	1.81	0.72
13,075.00	91.04	358.78	6,051.80	6,385.95	-44.45	6,386.09	0.52	-0.12	0.51
13,167.00	90.45	358.30	6,050.60	6,477.91	-46.80	6,478.06	0.83	-0.64	-0.52
13,259.00	90.86	359.63	6,049.55	6,569.89	-48.46	6,570.04	1.51	0.45	1.45
13,351.00	90.73	359.94	6,048.28	6,661.88	-48.80	6,662.04	0.37	-0.14	0.34
13,444.00	90.14	359.72	6,047.57	6,754.88	-49.08	6,755.03	0.68	-0.63	-0.24
13,524.00	89.91	359.36	6,047.54	6,834.87	-49.72	6,835.03	0.53	-0.29	-0.45
Final Phoenix MWD Survey									
13,582.00	89.91	359.36	6,047.63	6,892.87	-50.37	6,893.03	0.00	0.00	0.00
Projection to TD									



Phoenix Technology Services LP

Survey Report



Company:	Whiting Oil & Gas Corporation	Local Co-ordinate Reference:	Well Razor #12F-0105A
Project:	Weld County, Colorado (NAD 83)	TVD Reference:	RKB @ 4957.80usft (Unit 409)
Site:	Sec.12-T10N-R58W	MD Reference:	RKB @ 4957.80usft (Unit 409)
Well:	Razor #12F-0105A	North Reference:	True
Wellbore:	OH / Job# 1524095	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Unit 409)	Database:	Compass 5000 RMR

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
224.00	223.99	1.29	0.98	First Phoenix MWD Survey
13,524.00	6,047.54	6,834.87	-49.72	Final Phoenix MWD Survey
13,582.00	6,047.63	6,892.87	-50.37	Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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