

ENSIGN

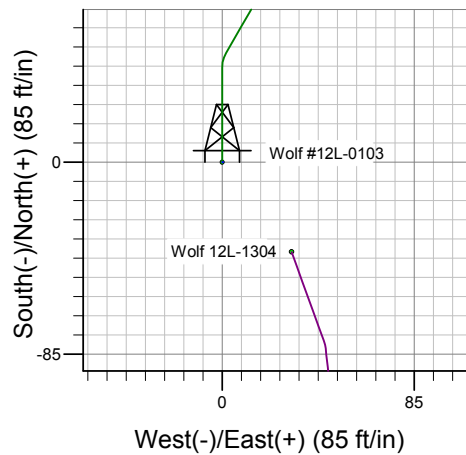
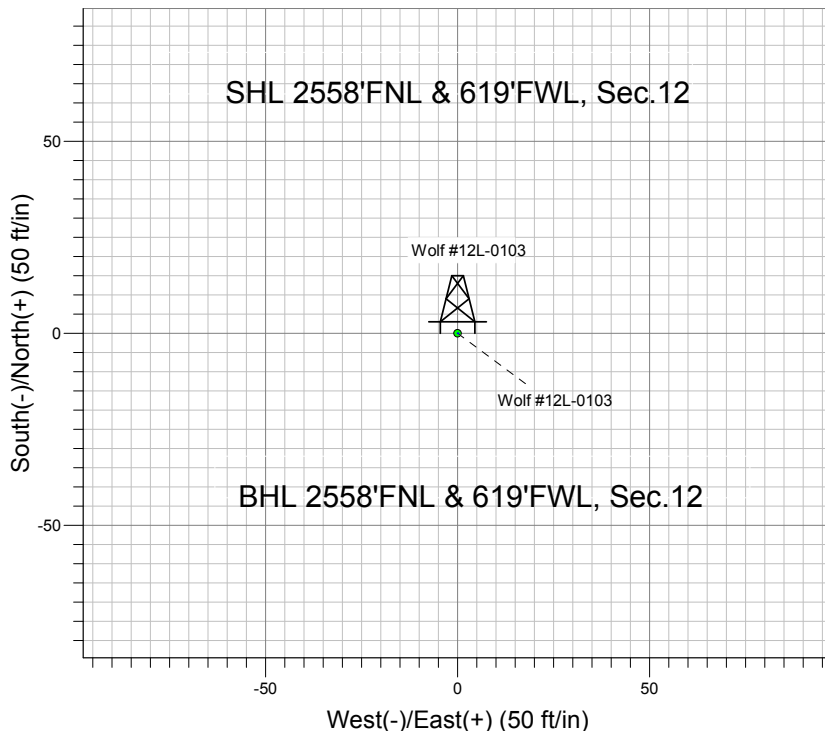
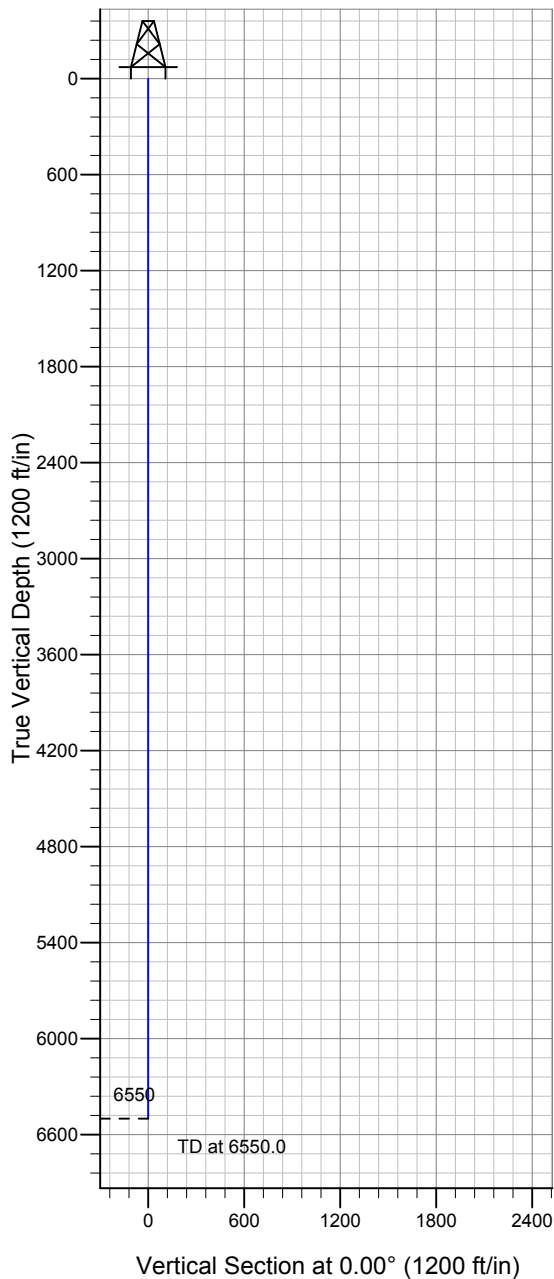
Directional

Well Name: **Wolf #12L-0103**

Surface Location: Wolf 12L Pad Sec.12-T10N-R59W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4952.6

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1557393.51	3433013.10	40.852931	-103.934714	
Original Well Elev WELL @ 4969.9ft (Original Well Elev)						

Whiting Oil & Gas



Wolf #12L-0103
Plan #1 Pilot Hole (1-16-14)
13:09, January 17 2014



Azimuths to True North
Magnetic North: 8.09°

Magnetic Field
Strength: 53176.7nT
Dip Angle: 67.46°
Date: 1/16/2014
Model: IGRF2010

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
No wellbore target data is available						

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	6550.0	0.00	0.00	6550.0	0.0	0.0	0.00	0.00	0.0	



Whiting Oil & Gas

Sec.12-T10N-R59W

Wolf 12L Pad Sec.12-T10N-R59W

Wolf #12L-0103

Wellbore #1

Plan: Plan #1 Pilot Hole (1-16-14)

Standard Planning Report

17 January, 2014

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,550.0	0.00	0.00	6,550.0	0.0	0.0	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Wolf #12L-0103
Company:	Whiting Oil & Gas	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Project:	Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site:	Wolf 12L Pad Sec.12-T10N-R59W	North Reference:	True
Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 Pilot Hole (1-16-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,520.0	0.00	0.00	1,520.0	0.0	0.0	0.0	0.00	0.00	0.00
1,560.0	0.00	0.00	1,560.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,640.0	0.00	0.00	1,640.0	0.0	0.0	0.0	0.00	0.00	0.00
1,680.0	0.00	0.00	1,680.0	0.0	0.0	0.0	0.00	0.00	0.00
1,720.0	0.00	0.00	1,720.0	0.0	0.0	0.0	0.00	0.00	0.00
1,760.0	0.00	0.00	1,760.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,840.0	0.00	0.00	1,840.0	0.0	0.0	0.0	0.00	0.00	0.00
1,880.0	0.00	0.00	1,880.0	0.0	0.0	0.0	0.00	0.00	0.00
1,920.0	0.00	0.00	1,920.0	0.0	0.0	0.0	0.00	0.00	0.00
1,960.0	0.00	0.00	1,960.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,040.0	0.00	0.00	2,040.0	0.0	0.0	0.0	0.00	0.00	0.00
2,080.0	0.00	0.00	2,080.0	0.0	0.0	0.0	0.00	0.00	0.00
2,120.0	0.00	0.00	2,120.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Wolf #12L-0103
Company:	Whiting Oil & Gas	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Project:	Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site:	Wolf 12L Pad Sec.12-T10N-R59W	North Reference:	True
Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 Pilot Hole (1-16-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,160.0	0.00	0.00	2,160.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,240.0	0.00	0.00	2,240.0	0.0	0.0	0.0	0.00	0.00	0.00
2,280.0	0.00	0.00	2,280.0	0.0	0.0	0.0	0.00	0.00	0.00
2,320.0	0.00	0.00	2,320.0	0.0	0.0	0.0	0.00	0.00	0.00
2,360.0	0.00	0.00	2,360.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,440.0	0.00	0.00	2,440.0	0.0	0.0	0.0	0.00	0.00	0.00
2,480.0	0.00	0.00	2,480.0	0.0	0.0	0.0	0.00	0.00	0.00
2,520.0	0.00	0.00	2,520.0	0.0	0.0	0.0	0.00	0.00	0.00
2,560.0	0.00	0.00	2,560.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,640.0	0.00	0.00	2,640.0	0.0	0.0	0.0	0.00	0.00	0.00
2,680.0	0.00	0.00	2,680.0	0.0	0.0	0.0	0.00	0.00	0.00
2,720.0	0.00	0.00	2,720.0	0.0	0.0	0.0	0.00	0.00	0.00
2,760.0	0.00	0.00	2,760.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,840.0	0.00	0.00	2,840.0	0.0	0.0	0.0	0.00	0.00	0.00
2,880.0	0.00	0.00	2,880.0	0.0	0.0	0.0	0.00	0.00	0.00
2,920.0	0.00	0.00	2,920.0	0.0	0.0	0.0	0.00	0.00	0.00
2,960.0	0.00	0.00	2,960.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,040.0	0.00	0.00	3,040.0	0.0	0.0	0.0	0.00	0.00	0.00
3,080.0	0.00	0.00	3,080.0	0.0	0.0	0.0	0.00	0.00	0.00
3,120.0	0.00	0.00	3,120.0	0.0	0.0	0.0	0.00	0.00	0.00
3,160.0	0.00	0.00	3,160.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,240.0	0.00	0.00	3,240.0	0.0	0.0	0.0	0.00	0.00	0.00
3,280.0	0.00	0.00	3,280.0	0.0	0.0	0.0	0.00	0.00	0.00
3,320.0	0.00	0.00	3,320.0	0.0	0.0	0.0	0.00	0.00	0.00
3,360.0	0.00	0.00	3,360.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,440.0	0.00	0.00	3,440.0	0.0	0.0	0.0	0.00	0.00	0.00
3,480.0	0.00	0.00	3,480.0	0.0	0.0	0.0	0.00	0.00	0.00
3,520.0	0.00	0.00	3,520.0	0.0	0.0	0.0	0.00	0.00	0.00
3,560.0	0.00	0.00	3,560.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,640.0	0.00	0.00	3,640.0	0.0	0.0	0.0	0.00	0.00	0.00
3,680.0	0.00	0.00	3,680.0	0.0	0.0	0.0	0.00	0.00	0.00
3,720.0	0.00	0.00	3,720.0	0.0	0.0	0.0	0.00	0.00	0.00
3,760.0	0.00	0.00	3,760.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,840.0	0.00	0.00	3,840.0	0.0	0.0	0.0	0.00	0.00	0.00
3,880.0	0.00	0.00	3,880.0	0.0	0.0	0.0	0.00	0.00	0.00
3,920.0	0.00	0.00	3,920.0	0.0	0.0	0.0	0.00	0.00	0.00
3,960.0	0.00	0.00	3,960.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,040.0	0.00	0.00	4,040.0	0.0	0.0	0.0	0.00	0.00	0.00
4,080.0	0.00	0.00	4,080.0	0.0	0.0	0.0	0.00	0.00	0.00
4,120.0	0.00	0.00	4,120.0	0.0	0.0	0.0	0.00	0.00	0.00
4,160.0	0.00	0.00	4,160.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,240.0	0.00	0.00	4,240.0	0.0	0.0	0.0	0.00	0.00	0.00
4,280.0	0.00	0.00	4,280.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Wolf #12L-0103
Company:	Whiting Oil & Gas	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Project:	Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site:	Wolf 12L Pad Sec.12-T10N-R59W	North Reference:	True
Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 Pilot Hole (1-16-14)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,320.0	0.00	0.00	4,320.0	0.0	0.0	0.0	0.00	0.00	0.00
4,360.0	0.00	0.00	4,360.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,440.0	0.00	0.00	4,440.0	0.0	0.0	0.0	0.00	0.00	0.00
4,480.0	0.00	0.00	4,480.0	0.0	0.0	0.0	0.00	0.00	0.00
4,520.0	0.00	0.00	4,520.0	0.0	0.0	0.0	0.00	0.00	0.00
4,560.0	0.00	0.00	4,560.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,640.0	0.00	0.00	4,640.0	0.0	0.0	0.0	0.00	0.00	0.00
4,680.0	0.00	0.00	4,680.0	0.0	0.0	0.0	0.00	0.00	0.00
4,720.0	0.00	0.00	4,720.0	0.0	0.0	0.0	0.00	0.00	0.00
4,760.0	0.00	0.00	4,760.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,840.0	0.00	0.00	4,840.0	0.0	0.0	0.0	0.00	0.00	0.00
4,880.0	0.00	0.00	4,880.0	0.0	0.0	0.0	0.00	0.00	0.00
4,920.0	0.00	0.00	4,920.0	0.0	0.0	0.0	0.00	0.00	0.00
4,960.0	0.00	0.00	4,960.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,040.0	0.00	0.00	5,040.0	0.0	0.0	0.0	0.00	0.00	0.00
5,080.0	0.00	0.00	5,080.0	0.0	0.0	0.0	0.00	0.00	0.00
5,120.0	0.00	0.00	5,120.0	0.0	0.0	0.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,160.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,240.0	0.0	0.0	0.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,280.0	0.0	0.0	0.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,320.0	0.0	0.0	0.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,360.0	0.0	0.0	0.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,440.0	0.0	0.0	0.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,480.0	0.0	0.0	0.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,520.0	0.0	0.0	0.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,560.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,640.0	0.0	0.0	0.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,680.0	0.0	0.0	0.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,720.0	0.0	0.0	0.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,760.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,840.0	0.0	0.0	0.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,880.0	0.0	0.0	0.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,920.0	0.0	0.0	0.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,960.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,040.0	0.00	0.00	6,040.0	0.0	0.0	0.0	0.00	0.00	0.00
6,080.0	0.00	0.00	6,080.0	0.0	0.0	0.0	0.00	0.00	0.00
6,120.0	0.00	0.00	6,120.0	0.0	0.0	0.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,160.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,240.0	0.0	0.0	0.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,280.0	0.0	0.0	0.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,320.0	0.0	0.0	0.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,360.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,440.0	0.0	0.0	0.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Wolf #12L-0103
Company:	Whiting Oil & Gas	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Project:	Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site:	Wolf 12L Pad Sec.12-T10N-R59W	North Reference:	True
Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 Pilot Hole (1-16-14)		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,480.0	0.00	0.00	6,480.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,550.0	0.00	0.00	6,550.0	0.0	0.0	0.0	0.00	0.00	0.00	



Whiting Oil & Gas

Sec.12-T10N-R59W

Wolf 12L Pad Sec.12-T10N-R59W

Wolf #12L-0103

Wellbore #1

Plan #1 Pilot Hole (1-16-14)

Anticollision Report

17 January, 2014

Company:	Whiting Oil & Gas	Local Co-ordinate Reference:	Well Wolf #12L-0103
Project:	Sec.12-T10N-R59W	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Reference Site:	Wolf 12L Pad Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 Pilot Hole (1-16-14)	Offset TVD Reference:	Offset Datum

Offset Design Wolf 12L Pad Sec.12-T10N-R59W - Wolf #12L-0103 - Wellbore #2 - Plan #1 Sidetrack (1-16-14)													Offset Site Error: 0.0 ft
Survey Program: 0-MWD, 1200-MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
2,800.0	2,800.0	2,796.9	2,793.5	3.6	3.8	16.74	94.8	28.5	99.2	92.1	7.15	13.886	
2,900.0	2,900.0	2,896.7	2,893.0	3.8	4.0	17.58	100.6	31.9	105.8	98.2	7.59	13.933	
3,000.0	3,000.0	2,996.4	2,992.6	4.0	4.3	18.32	106.5	35.2	112.4	104.4	8.04	13.977	
3,100.0	3,100.0	3,096.2	3,092.1	4.3	4.5	18.97	112.3	38.6	119.0	110.5	8.49	14.018	
3,200.0	3,200.0	3,196.0	3,191.7	4.5	4.8	19.56	118.1	42.0	125.6	116.7	8.94	14.055	
3,300.0	3,300.0	3,295.8	3,291.2	4.7	5.0	20.09	124.0	45.3	132.3	122.9	9.39	14.090	
3,400.0	3,400.0	3,395.5	3,390.8	4.9	5.3	20.57	129.8	48.7	138.9	129.1	9.84	14.122	
3,500.0	3,500.0	3,495.3	3,490.3	5.2	5.5	21.00	135.6	52.1	145.6	135.3	10.29	14.152	
3,600.0	3,600.0	3,595.1	3,589.8	5.4	5.8	21.40	141.4	55.4	152.3	141.5	10.74	14.180	
3,700.0	3,700.0	3,694.9	3,689.4	5.6	6.0	21.76	147.3	58.8	158.9	147.7	11.19	14.206	
3,800.0	3,800.0	3,794.6	3,788.9	5.8	6.3	22.10	153.1	62.2	165.6	154.0	11.64	14.230	
3,900.0	3,900.0	3,894.4	3,888.5	6.1	6.5	22.41	158.9	65.5	172.3	160.2	12.09	14.253	
4,000.0	4,000.0	3,994.2	3,988.0	6.3	6.8	22.69	164.8	68.9	179.0	166.4	12.54	14.274	
4,100.0	4,100.0	4,093.9	4,087.6	6.5	7.0	22.96	170.6	72.3	185.7	172.7	12.99	14.294	
4,200.0	4,200.0	4,193.7	4,187.1	6.7	7.3	23.20	176.4	75.6	192.4	178.9	13.44	14.313	
4,300.0	4,300.0	4,293.5	4,286.7	7.0	7.5	23.43	182.2	79.0	199.1	185.2	13.89	14.330	
4,400.0	4,400.0	4,393.3	4,386.2	7.2	7.8	23.65	188.1	82.3	205.8	191.4	14.34	14.347	
4,500.0	4,500.0	4,493.0	4,485.8	7.4	8.0	23.85	193.9	85.7	212.5	197.7	14.79	14.362	
4,600.0	4,600.0	4,592.8	4,585.3	7.6	8.3	24.04	199.7	89.1	219.2	203.9	15.24	14.377	
4,700.0	4,700.0	4,692.6	4,684.8	7.9	8.5	24.21	205.5	92.4	225.9	210.2	15.70	14.391	
4,800.0	4,800.0	4,792.4	4,784.4	8.1	8.8	24.38	211.4	95.8	232.6	216.4	16.15	14.404	
4,900.0	4,900.0	4,892.1	4,883.9	8.3	9.1	24.54	217.2	99.2	239.3	222.7	16.60	14.417	
5,000.0	5,000.0	4,991.9	4,983.5	8.5	9.3	24.69	223.0	102.5	246.0	229.0	17.05	14.429	
5,100.0	5,100.0	5,091.7	5,083.0	8.8	9.6	24.83	228.9	105.9	252.7	235.2	17.50	14.440	
5,200.0	5,200.0	5,191.4	5,182.6	9.0	9.8	24.96	234.7	109.3	259.5	241.5	17.95	14.451	
5,300.0	5,300.0	5,291.2	5,282.1	9.2	10.1	25.09	240.5	112.6	266.2	247.8	18.41	14.461	
5,400.0	5,400.0	5,391.0	5,381.7	9.4	10.3	25.21	246.3	116.0	272.9	254.0	18.86	14.470	
5,500.0	5,500.0	5,490.8	5,481.2	9.7	10.6	25.33	252.2	119.3	279.6	260.3	19.31	14.480	
5,600.0	5,600.0	5,590.5	5,580.8	9.9	10.8	25.44	258.0	122.7	286.3	266.6	19.76	14.489	
5,700.0	5,700.0	5,680.6	5,670.5	10.1	11.1	25.54	263.5	125.9	293.5	273.3	20.19	14.535	
5,800.0	5,800.0	5,750.0	5,739.0	10.3	11.3	25.71	273.5	131.7	309.6	289.1	20.59	15.042	
5,900.0	5,900.0	5,800.0	5,787.0	10.6	11.5	25.89	285.6	138.6	337.0	316.0	20.93	16.096	
6,000.0	6,000.0	5,850.0	5,833.4	10.8	11.7	26.12	301.5	147.9	374.9	353.6	21.28	17.614	
6,100.0	6,100.0	5,900.0	5,877.9	11.0	12.0	26.37	321.3	159.3	421.8	400.2	21.63	19.503	
6,200.0	6,200.0	5,950.0	5,920.0	11.2	12.3	26.62	344.7	172.8	476.5	454.5	21.97	21.691	
6,300.0	6,300.0	6,000.0	5,959.3	11.5	12.7	26.87	371.4	188.2	538.0	515.7	22.30	24.127	
6,400.0	6,400.0	6,028.1	5,980.0	11.7	13.0	27.01	387.9	197.7	604.9	582.3	22.58	26.791	
6,550.0	6,500.0	6,550.0	5,995.4	11.9	13.1	27.11	401.3	205.4	676.6	653.8	22.84	29.621	

Wolf 12L Pad Sec.12-T10N-R59W - Wolf 12L-1304 - Wellbore #1 - Plan #1 (1-16-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	142.28	-39.7	30.7	50.2					
100.0	100.0	100.0	100.0	0.1	0.1	142.28	-39.7	30.7	50.2	50.0	0.22	223.332		
200.0	200.0	200.0	200.0	0.3	0.3	142.28	-39.7	30.7	50.2	49.5	0.67	74.444		
300.0	300.0	300.0	300.0	0.6	0.6	142.28	-39.7	30.7	50.2	49.1	1.12	44.666		
400.0	400.0	400.0	400.0	0.8	0.8	142.28	-39.7	30.7	50.2	48.6	1.57	31.905		
500.0	500.0	500.0	500.0	1.0	1.0	142.28	-39.7	30.7	50.2	48.2	2.02	24.815		
600.0	600.0	600.0	600.0	1.2	1.2	142.28	-39.7	30.7	50.2	47.7	2.47	20.303		
700.0	700.0	700.0	700.0	1.5	1.5	142.28	-39.7	30.7	50.2	47.3	2.92	17.179		
800.0	800.0	800.0	800.0	1.7	1.7	142.28	-39.7	30.7	50.2	46.8	3.37	14.889		
900.0	900.0	900.0	900.0	1.9	1.9	142.28	-39.7	30.7	50.2	46.4	3.82	13.137		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	142.28	-39.7	30.7	50.2	45.9	4.27	11.754		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	142.28	-39.7	30.7	50.2	45.5	4.72	10.635		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	142.28	-39.7	30.7	50.2	45.0	5.17	9.710		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	142.28	-39.7	30.7	50.2	44.6	5.62	8.933		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	142.28	-39.7	30.7	50.2	44.1	6.07	8.272		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	142.28	-39.7	30.7	50.2	43.7	6.52	7.701		
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	142.28	-39.7	30.7	50.2	43.2	6.97	7.204		
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	142.28	-39.7	30.7	50.2	42.8	7.42	6.768		
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	142.28	-39.7	30.7	50.2	42.3	7.87	6.381		
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	142.28	-39.7	30.7	50.2	41.9	8.32	6.036		
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	142.28	-39.7	30.7	50.2	41.4	8.77	5.726 CC, ES		
2,100.0	2,100.0	2,098.3	2,098.3	4.6	4.6	142.85	-41.3	31.3	51.8	42.7	9.18	5.644 SF		
2,200.0	2,200.0	2,196.4	2,196.3	4.8	4.7	144.36	-46.0	33.0	56.8	47.2	9.58	5.927		
2,300.0	2,300.0	2,296.1	2,295.7	5.1	4.9	146.05	-52.6	35.4	63.5	53.5	9.98	6.364		
2,400.0	2,400.0	2,395.9	2,395.2	5.3	5.1	147.42	-59.1	37.8	70.3	59.9	10.38	6.770		
2,500.0	2,500.0	2,495.6	2,494.7	5.5	5.3	148.55	-65.6	40.1	77.1	66.3	10.79	7.146		
2,600.0	2,600.0	2,595.4	2,594.2	5.7	5.5	149.50	-72.2	42.5	84.0	72.8	11.20	7.495		
2,700.0	2,700.0	2,695.1	2,693.8	6.0	5.7	150.30	-78.7	44.9	90.8	79.2	11.62	7.818		
2,800.0	2,800.0	2,796.3	2,794.8	6.2	5.9	151.48	-84.9	46.1	96.7	84.7	12.05	8.027		
2,900.0	2,900.0	2,896.2	2,894.4	6.4	6.1	152.74	-90.7	46.7	102.1	89.7	12.47	8.194		
3,000.0	3,000.0	2,996.0	2,994.1	6.6	6.3	153.87	-96.5	47.3	107.6	94.7	12.89	8.352		
3,100.0	3,100.0	3,095.8	3,093.7	6.9	6.5	154.89	-102.3	47.9	113.1	99.8	13.31	8.501		
3,200.0	3,200.0	3,195.6	3,193.4	7.1	6.8	155.82	-108.1	48.5	118.7	105.0	13.73	8.643		
3,300.0	3,300.0	3,295.5	3,293.1	7.3	7.0	156.66	-113.9	49.2	124.3	110.1	14.16	8.777		
3,400.0	3,400.0	3,395.3	3,392.7	7.5	7.2	157.43	-119.7	49.8	129.9	115.3	14.59	8.904		
3,500.0	3,500.0	3,495.1	3,492.4	7.8	7.4	158.14	-125.6	50.4	135.5	120.5	15.02	9.024		
3,600.0	3,600.0	3,595.0	3,592.0	8.0	7.6	158.79	-131.4	51.0	141.1	125.7	15.45	9.137		
3,700.0	3,700.0	3,694.8	3,691.7	8.2	7.9	159.39	-137.2	51.6	146.8	130.9	15.88	9.245		
3,800.0	3,800.0	3,794.6	3,791.3	8.4	8.1	159.94	-143.0	52.2	152.5	136.2	16.31	9.348		
3,900.0	3,900.0	3,894.4	3,891.0	8.7	8.3	160.46	-148.8	52.8	158.2	141.4	16.75	9.445		
4,000.0	4,000.0	3,994.3	3,990.6	8.9	8.6	160.94	-154.6	53.4	163.9	146.7	17.18	9.538		
4,100.0	4,100.0	4,094.1	4,090.3	9.1	8.8	161.38	-160.4	54.1	169.6	152.0	17.62	9.626		
4,200.0	4,200.0	4,193.9	4,190.0	9.3	9.0	161.80	-166.3	54.7	175.3	157.3	18.05	9.710		
4,300.0	4,300.0	4,293.8	4,289.6	9.6	9.3	162.19	-172.1	55.3	181.0	162.5	18.49	9.790		
4,400.0	4,400.0	4,393.6	4,389.3	9.8	9.5	162.56	-177.9	55.9	186.8	167.8	18.93	9.867		
4,500.0	4,500.0	4,493.4	4,488.9	10.0	9.7	162.90	-183.7	56.5	192.5	173.2	19.37	9.940		
4,600.0	4,600.0	4,593.2	4,588.6	10.2	10.0	163.23	-189.5	57.1	198.3	178.5	19.81	10.009		
4,700.0	4,700.0	4,693.1	4,688.2	10.5	10.2	163.54	-195.3	57.7	204.0	183.8	20.25	10.076		
4,800.0	4,800.0	4,792.9	4,787.9	10.7	10.4	163.83	-201.2	58.3	209.8	189.1	20.69	10.140		
4,900.0	4,900.0	4,892.7	4,887.6	10.9	10.7	164.10	-207.0	58.9	215.6	194.4	21.13	10.201		
5,000.0	5,000.0	4,992.6	4,987.2	11.1	10.9	164.36	-212.8	59.6	221.3	199.8	21.57	10.260		
5,100.0	5,100.0	5,092.4	5,086.9	11.4	11.2	164.61	-218.6	60.2	227.1	205.1	22.01	10.316		

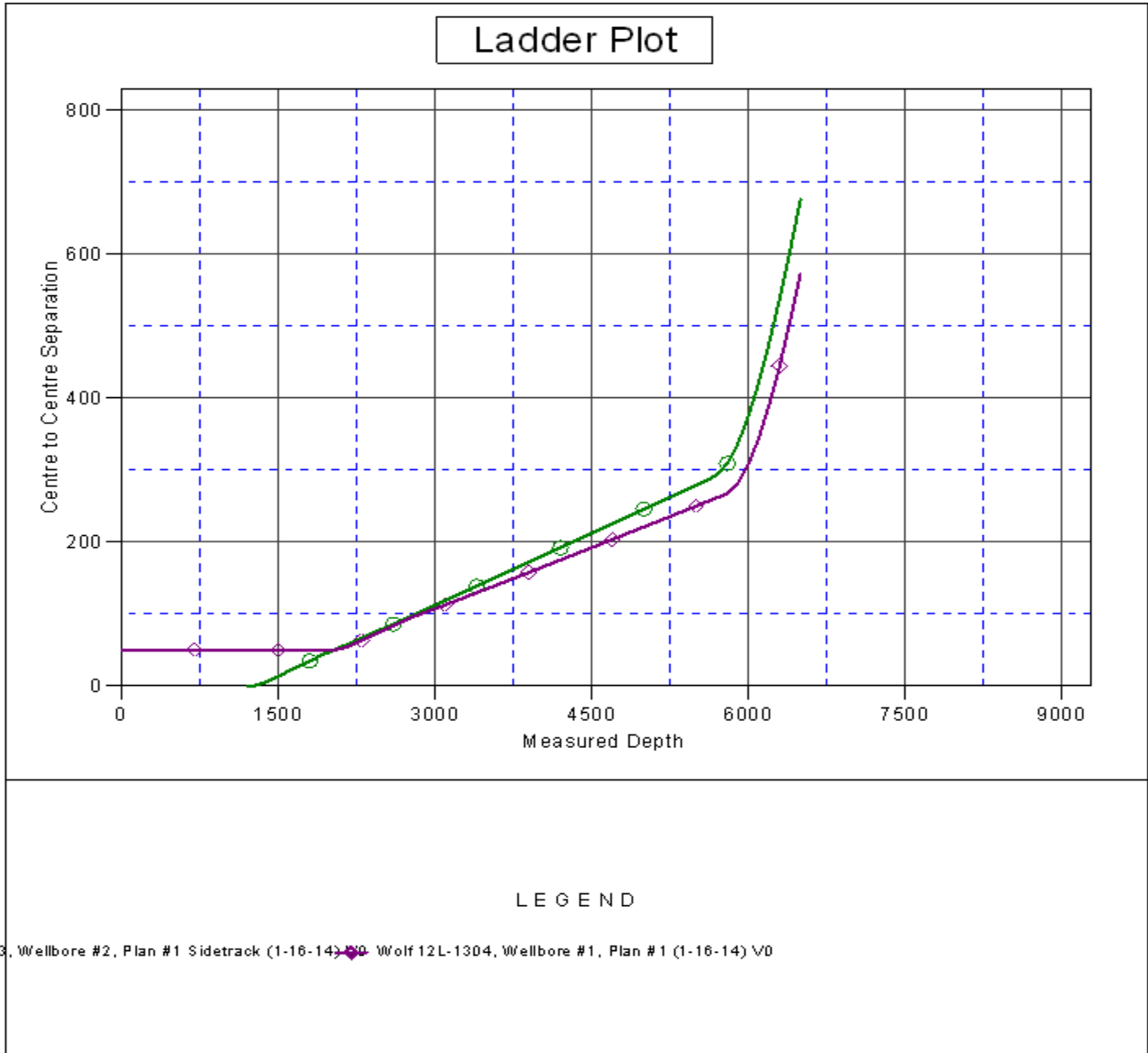
COMPASS 2003.21 Build 46

Company:	Whiting Oil & Gas	Local Co-ordinate Reference:	Well Wolf #12L-0103
Project:	Sec.12-T10N-R59W	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Reference Site:	Wolf 12L Pad Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 Pilot Hole (1-16-14)	Offset TVD Reference:	Offset Datum

Offset Design Wolf 12L Pad Sec.12-T10N-R59W - Wolf 12L-1304 - Wellbore #1 - Plan #1 (1-16-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.0	5,200.0	5,192.2	5,186.5	11.6	11.4	164.85	-224.4	60.8	232.9	210.4	22.46	10.370	
5,300.0	5,300.0	5,292.0	5,286.2	11.8	11.6	165.07	-230.2	61.4	238.7	215.8	22.90	10.422	
5,400.0	5,400.0	5,391.9	5,385.8	12.0	11.9	165.28	-236.0	62.0	244.5	221.1	23.34	10.472	
5,500.0	5,500.0	5,491.7	5,485.5	12.2	12.1	165.49	-241.9	62.6	250.3	226.5	23.79	10.520	
5,600.0	5,600.0	5,591.5	5,585.2	12.5	12.4	165.68	-247.7	63.2	256.0	231.8	24.23	10.567	
5,700.0	5,700.0	5,691.4	5,684.8	12.7	12.6	165.86	-253.5	63.8	261.8	237.2	24.68	10.611	
5,800.0	5,800.0	5,785.8	5,779.1	12.9	12.8	166.04	-259.1	64.4	267.8	242.7	25.11	10.665	
5,900.0	5,900.0	5,850.0	5,842.6	13.1	13.0	166.29	-268.0	65.4	281.8	256.3	25.48	11.057	
6,000.0	6,000.0	5,912.8	5,903.2	13.4	13.3	166.72	-284.2	67.1	307.6	281.8	25.86	11.894	
6,100.0	6,100.0	5,970.1	5,956.5	13.6	13.5	167.21	-305.2	69.3	344.3	318.1	26.23	13.124	
6,200.0	6,200.0	6,022.2	6,002.6	13.8	13.8	167.70	-329.2	71.8	390.5	363.9	26.59	14.687	
6,300.0	6,300.0	6,068.8	6,041.6	14.0	14.1	168.14	-354.5	74.5	444.9	418.0	26.93	16.522	
6,400.0	6,400.0	6,100.0	6,066.4	14.3	14.3	168.43	-373.3	76.4	506.5	479.2	27.23	18.598	
6,500.0	6,500.0	6,150.0	6,103.7	14.5	14.7	168.88	-406.5	79.9	573.3	545.7	27.57	20.794	

Company:	Whiting Oil & Gas	Local Co-ordinate Reference:	Well Wolf #12L-0103
Project:	Sec.12-T10N-R59W	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
Reference Site:	Wolf 12L Pad Sec.12-T10N-R59W	MD Reference:	WELL @ 4969.9ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Wolf #12L-0103	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 Pilot Hole (1-16-14)	Offset TVD Reference:	Offset Datum

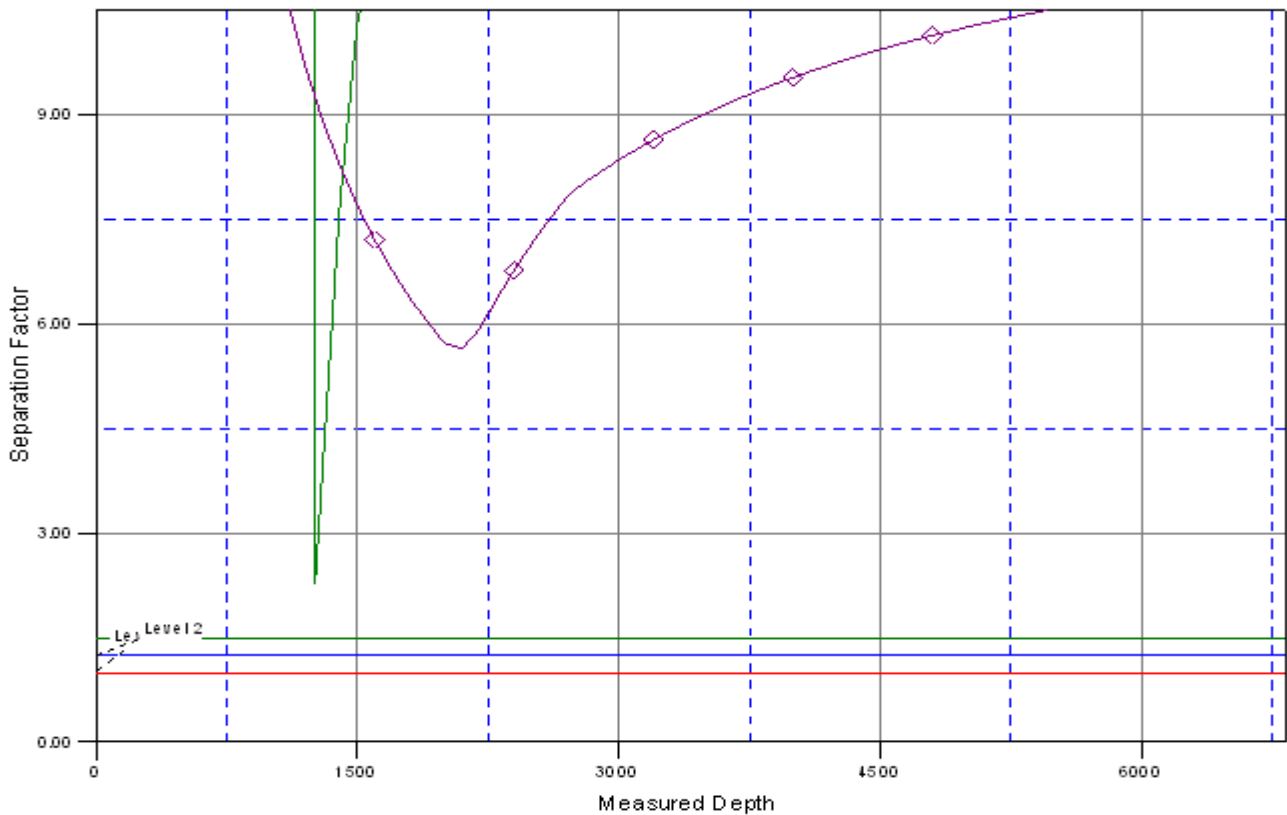
Reference Depths are relative to WELL @ 4969.9ft (Original Well Elev) Coordinates are relative to: Wolf #12L-0103
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 1.01°



Company:	Whiting Oil & Gas	Local Co-ordinate Reference:	Well Wolf #12L-0103
Project:	Sec.12-T10N-R59W	TVD Reference:	WELL @ 4969.9ft (Original Well Elev)
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Reference Depths are relative to WELL @ 4969.9ft (Original Well Elev) Coordinates are relative to: Wolf #12L-0103
 Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
 Central Meridian is -105.500000 ° Grid Convergence at Surface is: 1.01°

Separation Factor Plot



LEGEND

03, Wellbore #2, Plan #1 Sidetrack (1-16-14) 50 Wolf 12L-1304, Wellbore #1, Plan #1 (1-16-14) V0